INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Mitchell E. Daniels, Jr.
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Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
MC 61-53 IGCN 1003
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

TO: Interested Parties / Applicant

DATE: October 26, 2007

RE: Steel Dynamics, Inc./ 033-23028-00043

FROM: Nisha Sizemore
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Effective Immediately

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

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

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

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

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

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

Enclosures
FNPER.dot 03/23/06

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October 26, 2007

Mr. Barry Smith
Environmental Engineer
Steel Dynamics, Inc.
4500 Country Road 59
Butler, IN 46721

Re: 1st Significant Source Modification
033-23028-00043

Dear Mr. Smith:

Steel Dynamics, Inc., located at 4500 County Road 59, Butler, IN 46721, was issued a Part 70 operating permit (033-8068-00043) on October 4, 2006. An application to modify the source was received on April 27, 2006 and amended on February 6, 2007.

Pursuant to 326 IAC 2-7-10.5, the following emission units are approved for construction at the source:

(1) One (1) Pickle Line Acid Regeneration Facility; identified as ARF-1; approved for construction in 2007; exhausting to stack 93; consisting of:

(A) One (1) 21.2 MMBtu/hr natural-gas fired boiler;

(B) One (1) water treatment system; and

(C) Emissions controlled by a scrubber.

(2) One (1) EAF dust silo with emissions controlled by bin vent filter 5c. The silo will store collected dust from the new EAF Baghouse 2.

Pursuant to 326 IAC 2-7-10.5, the source may construct EAF Baghouse 2 and stack 92. The emissions from EAF #2 North will exhaust through this baghouse to stack 92.

The following construction conditions are applicable to the proposed project:

General Construction Conditions

1. The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Quality (OAQ).

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

3. Effective Date of the Permit
Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.

4. Pursuant to 326 IAC 2-1.1-9 and 326 IAC 2-7-10.5(i), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.

6. Pursuant to 326 IAC 2-7-10.5(l) the emission units constructed under this approval shall not be placed into operation prior to revision of the source's Part 70 Operating Permit to incorporate the required operation conditions.

This PSD significant source modification authorizes construction of the new emission units. Operating conditions shall be incorporated into the Part 70 operating permit as a significant permit modification in accordance with 326 IAC 2-7-10.5(l)(2) and 326 IAC 2-7-12. Operation is not approved until the significant permit modification has been issued.

Pursuant to Contract No. A305-5-65, IDEM, OAQ has assigned the processing of this application to Eastern Research Group, Inc., (ERG). Therefore, questions should be directed to Bob Sidner, ERG, 1600 Perimeter Park Drive, Morrisville, North Carolina 27560, or call (703) 633-1701 to speak directly to Mr. Sidner. Questions may also be directed to Duane Van Laningham at IDEM, OAQ, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana, 46204-2251, or call (800) 451-6027 and ask for Duane Van Laningham or extension 3-6878, or dial (317) 233-6878.

Sincerely,

Original signed by

Nisha Sizemore, Chief
Permits Branch
Office of Air Quality

ERG/BS

Attachments:

cc: File - Dekalb County
U.S. EPA, Region V
Dekalb County Health Department
Air Compliance Section Inspector – Dick Sekula
Compliance Data Section - Karen Nowak
Administrative and Development - Sara Cloe
Technical Support and Modeling - Jeffrey Stoakes
Billing, Licensing, and Training Section – Dan Stamatkin

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PART 70 SIGNIFICANT SOURCE MODIFICATION
OFFICE OF AIR QUALITY

Steel Dynamics, Inc.
4500 County Road 59
Butler, Indiana 46721

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Noncompliance with any provision of this permit, except any provision specifically designated as not federally enforceable, constitutes a violation of the Clean Air Act. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.

This permit 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 also addresses certain new source review requirements for existing equipment and is intended to fulfill the new source review procedures pursuant to 326 IAC 2-2 and 326 IAC 2-7-10.5, applicable to those conditions.

1st Significant Source Modification No.: 033-23028-00043	Affected Pages: all
Issued by:Oeiginal signed by Nisha Sizemore, Branch Chief Office of Air Quality	Issuance Date: October 26, 2007. Expiration Date: October 4, 2011

SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1, A.2, A.3 and A.4 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 Permittee to obtain additional permits or seek modification of this permit 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 Permittee owns and operates a stationary steel minimill.

Source Address:	4500 County Rd 59, Butler, Indiana 46721
Mailing Address:	4500 County Rd 59, Butler, Indiana 46721
Phone Number:	260-868-8000
SIC Code:	3312
County Location:	DeKalb
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD Rules 1 of 28 Source Categories Minor Source, Section 112 of the Clean Air Act

A.2 Part 70 Source Definition [326 IAC 2-7-1(22)]

The source consists of:

(a) Steel Dynamics, Inc., located at 4500 County Road 59, Butler, Indiana 46721; and

(b) Iron Dynamics, Inc., located at 4500 County Road 59, Butler, Indiana 46721.

Separate Part 70 permits will be issued to Steel Dynamics, Inc. (033-8068-00043) and Iron Dynamics, Inc. (033-12614-00076), solely for administrative purposes. For this permit, the Permittee is Steel Dynamics, Inc., the primary operation.

A.3 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c) (3)][326 IAC 2-7-5(15)]

Steel Dynamics, Inc. consists of the following emission units and pollution control devices:

Melt Shop Operations

(a) Electric Arc Furnaces (EAF)

Two (2) twin shell electric arc furnaces (EAF #1 South, constructed in 1995 and EAF #2 North, constructed in 1998), each with a nominal capacity of 200 tons per hour, using a direct shell evacuation (DSE) system ("fourth hole" duct), an overhead roof exhaust system consisting of canopy hoods, DSE air gap for carbon monoxide (CO) emissions control, and low-NO_x/oxyfuel burners (combustion control) for nitrogen oxide (NO_x) emissions control. Particulate emissions from EAF #2 North are controlled by EAF Baghouse 2. All emissions from EAF #2 North exhaust to Stack 92 (equipped with a COM). Particulate emissions from EAF #1 South are controlled by EAF Baghouse 1. All emissions from EAF #1 South exhaust to Stack 01 (equipped with a COM).

(b) Continuous Casters

Two (2) continuous casters (CC #1 South, constructed in 1995 and CC #2 North, constructed in 1998), each with a nominal capacity of 225 tons per hour. Particulate

(PM/PM10) emissions are controlled by canopy hoods over each caster exhausting to the EAF baghouse through Stack 01.

(c) Miscellaneous natural gas combustion sources

(1) One (1) ladle dryout station (LDS), with a nominal heat input of 10 MMBtu per hour.

(2) Four (4) ladle preheat stations (LPS), with a nominal heat input of 10 MMBtu per hour each.

(3) Three (3) tundish dryers with nominal heat input capacity of 1.5 MMBtu per hour each,

(4) Two (2) tundish ladle preheaters with a nominal heat input capacity of 9.4 MMBtu per hour each, and

(5) Lancing and cutting of skulls, coils and steel scrap.

(d) Storage Silos and Bins

(1) Eleven (11) storage silos including the following:

(A) Three (3) EAF dust silos consisting of:

(i) Bin vent 5a for particulate matter control constructed in 1995,

(ii) Bin vent 5b for particulate matter control constructed in 1998;

(iii) Bin vent 5c for particulate matter control, approved for construction in 2007.

(B) Six (6) Lime/carbon silos with bin vents 22 through 27 for particulate matter control, and

(C) Two (2) alloy silos with bin vents 28 and 29 for particulate matter control.

(2) Enclosed, indoor and/or pneumatic conveying to control fugitive emissions.

(e) Slag pit digouts associated with each electric arc furnace.

(f) Melt shop building openings, dust handling system and melt shop roof monitors.

Ladle Metallurgical Stations

Two (2) Ladle Metallurgical Stations (LMS) (South constructed in 1995 and North constructed in 1998), each with a nominal capacity of 200 tons per hour. Particulate (PM/PM10) emissions are controlled by the Ladle Metallurgical Furnaces (LMF) baghouse (constructed in 1998) exhausting through Stack 61. The LMS consists of the following:

(a) Three (3) Ladle Metallurgical furnaces (LMF), and

(b) Two (2) stir stations,

Hot Mill Operations - Tunnel Furnaces

(a) One (1) tunnel furnace, No. 1 South, constructed in 1995, using low NOx burners, with a nominal heat input capacity of 117.9 MMBtu per hour (nominal 92 MMBtu per hour in the

heating zone and nominal 25.9 MMBtu per hour in the holding zone), exhausting through Stack 2.

(b) One (1) tunnel furnace, No. 2 North, constructed in 1998, using low NOx burners with a nominal heat input capacity of 92 MMBtu per hour in the heating zone, exhausting through Stack 42.

Cold Mill Operations – Pickling Line

One (1) pickling line, with a nominal capacity of 1.4 million ton per year, constructed in 1997, with a packed scrubber and covered tanks maintained under negative pressure, for Hydrochloric Acid (HCl) control, and a mist eliminator for PM/PM-10 control, exhausting to Stack 17.

Pickle Line Scale Breaker

One (1) scale breaker, constructed in 1997, with a nominal capacity of 1.4 million tons per year that removes scale from the rolled steel prior to the pickling process. Particulate (PM/PM10) emissions are controlled by a baghouse exhausting to Stack 60.

Pickle Line Boilers

Three (3) natural gas fired boilers Nos. 1, 2 and 3, constructed in 1997, equipped with low NOx burners, exhausting to Stacks 15, 16a and 16b. The nominal heat input for each boiler is 20.4 MMBtu per hour and the CP 033-5625-00043, issued August 8, 1996, permitted the heat input per hour for Boilers Nos. 1 and 2 as 11.8 MMBtu per hour each. Boiler No. 3 is a standby boiler. Only two (2) boilers will be utilized at any time.

Reversing Mill

One (1) cold reversing mill, with a nominal capacity of one (1.0) million tons per year, constructed in 1997, with a mist eliminator for particulate (PM/PM10) emissions control, exhausting to Stack 18.

Galvanizing Lines

(a) One (1) hot band galvanizing line with a nominal capacity of 400,000 tons of steel per year, constructed in 1997, heated by a low NOx burner natural gas fired heater with a nominal heat input of 45 MMBtu per hour, exhausting through Stack 19.

(b) Twenty-four (24), natural gas fired radiant tube heaters, added to the hot band galvanizing line in 2002. Each heater has a nominal heat input of 0.3 MMBtu per hour, exhausting inside the building.

(c) One (1) cold rolled galvanizing line with a nominal capacity of 300,000 tons of steel per year, constructed in 1997, heated by a low NOx burner natural gas fired heater with a nominal heat input of 55 MMBtu per hour, exhausting to Stack 19.

Annealing Furnaces

Sixteen (16) low NOx burners, natural gas fired annealing furnaces and forty (40) annealing bases, constructed in 1997. Each furnace has a nominal heat input of four (4) MMBtu per hour, exhausting through roof pipes 30, 31 and 32.

Paint Line (Coil Coating Line)

(a) One (1) 2-side, 2-coat coil coating line, constructed in 2003, using roll coating method, with a nominal capacity of 55,000 pounds per hour of the flat rolled steel, using a 60 MMBtu per hour heat input capacity burner equipped thermal oxidizer to control VOC emissions and exhausting to Stack 78.

(b) Two (2) curing ovens, constructed in 2003, with a combined nominal heat input capacity of 16 MMBtu per hour using a 60 MMBtu per hour nominal heat input capacity burner equipped thermal oxidizer to control VOC emissions and exhausting to Stack 78.

Slag Handling Operation

The following slag handling operations are owned and operated by Edward C. Levy Company - Butler Mill Service.

(a) One (1) grizzly feeder with a nominal capacity of 300 tons per hour, constructed in 1995;

(b) One (1) 36" conveyor (#9), with a nominal capacity of 350 tons per hour, constructed in 1995;

(c) One (1) 30" conveyor (#7), with a nominal capacity of 350 tons per hour, constructed in 1995;

(d) Two (2) 5' by 12' Screens, each with a nominal capacity of 350 tons per hour, constructed in 1995;

(e) One (1) 24" conveyor (#6), with a nominal capacity of 100 tons per hour, constructed in 1995;

(f) One (1) 30" conveyor (#5), with a nominal capacity of 250 tons per hour, constructed in 1995;

(g) Three (3) 6' by 16' Screens, each with a nominal capacity of 250 tons per hour, constructed in 1995;

(h) One (1) 48" Conveyor (#1), with a nominal capacity of 75 tons per hour, constructed in 1995;

(i) One (1) 24" Stacker (#1), with a nominal capacity of 75 tons per hour, constructed in 1995;

(j) One (1) 24" Stacker (#2), with a nominal capacity of 125 tons per hour, constructed in 1995;

(k) One (1) 24" Conveyor (#12); with a nominal capacity of 40 tons per hour, constructed in 1995;

(l) One (1) 24" Stacker (#4), with a nominal capacity of 50 tons per hour, constructed in 1995;

(m) One (1) 4 ¼ Standard Crusher, with a nominal capacity of 50 tons per hour, constructed in 1995;

(n) One (1) 30" Conveyor (#8), with a nominal capacity of 25 tons per hour; constructed in 1995;

(o) Two (2) 30" Conveyors (#10 and #11), with a nominal capacity of 50 tons per hour each, constructed in 2003;

(p) One (1) jaw crusher, with a nominal capacity of 100 tons per hour, constructed in 2003, and

(q) Aggregate Storage Piles.

Fugitive emissions from parts of the slag handling operations are controlled as needed by water sprays.

Fugitive Dust Sources

(a) Paved roads,

(b) Parking areas,

(c) Unpaved roads, and

(d) Traveled open areas.

Acid Regeneration

One (1) Pickle Line Acid Regeneration Facility; identified as ARF-1; approved for construction in 2007; exhausting to stack 93; consisting of:

(a) One (1) 21.2 MMBtu/hr natural-gas fired boiler;

(b) One (1) water treatment system; and

(c) Emissions controlled by a packed scrubber.

A.4 Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

Steel Dynamics, Inc. also includes the following insignificant activities:

1. Specifically regulated insignificant activities, which are specifically regulated as defined in 326 IAC 2-7-1(21): One (1) Temper Mill [326 IAC 6-3-2]

2. Other Insignificant Activities
   - (a) Space heaters, process heaters, or boilers using the following fuels:
     - (i) Natural gas-fired combustion sources with heat input equal to or less than ten million (10,000,000) Btu per hour.
     - (ii) Propane or liquefied petroleum gas, or butane-fired combustion sources with heat input equal to or less than six million (6,000,000) Btu per hour.
   - (b) Equipment powered by diesel fuel fired or natural gas fired internal combustion engines of capacity equal to or less than five hundred thousand (500,000) British thermal units per hour except where total capacity of equipment operated by one (1) stationary source as defined by subdivision (38) exceeds two million (2,000,000) British thermal units per hour.
   - (c) Combustion source flame safety purging on startup.
   - (d) Fuel dispensing activities, including the following:
     - (i) A gasoline fuel transfer dispensing operation handling less than or equal to one thousand three hundred (1,300) gallons per day and filling storage tanks having a capacity equal to or less than ten thousand five hundred (10,500) gallons. Such storage tanks may be in a fixed location or on mobile equipment.
     - (ii) A petroleum fuel other than gasoline dispensing facility, having a storage tank capacity less than or equal to ten thousand five hundred (10,500) gallons, and dispensing three thousand five hundred (3,500) gallons per day or less. A petroleum fuel, other than- gasoline, dispensing facility having a storage capacity less than or equal to 10,500 gallons, and dispensing less than or equal to 230,000 gallons per month.
   - (e) The following VOC and HAP storage containers:
     - (i) Storage tanks with capacity less than or equal to one thousand (1,000) gallons and annual throughputs equal to or less than twelve thousand (12,000) gallons.

(ii) Vessels storing lubricating oils, hydraulic oils, machining oils, and machining fluids.

(f) Refractory storage not requiring air pollution control equipment.

(g) Equipment used exclusively for filling drums, pails, or other packaging containers with the following: Lubricating oils, Waxes and Greases.

(h) Application of: oils; greases; lubricants; and nonvolatile material; as temporary protective coatings.

(i) Machining where an aqueous cutting coolant continuously floods the machining interface.

(j) Closed loop heating and cooling systems.

(k) Activities associated with the treatment of wastewater streams with an oil and grease content less than or equal to 1% by volume.

(l) Any operation using aqueous solutions containing less than 1% by weight of VOCs, excluding HAPS.

(m) Activities associated with the transportation and treatment of sanitary sewage, provided discharge to the treatment plant is under the control of the owner or Operator, that is, an on-site sewage treatment facility.

(n) Any operation using aqueous solutions containing less than or equal to one percent (1%) by weight of VOCs excluding HAPs.

(o) Noncontact cooling tower systems with the following: Forced and induced draft cooling tower system not regulated under a NESHAP.

(p) Replacement or repair of electrostatic precipitators, bags in baghouses and filters in other air filtration equipment.

(q) Heat exchanger cleaning and repair.

(r) Process vessel degassing and cleaning to prepare for internal repairs.

(s) Covered conveyors for solid raw material, including the following:

(i) Coal or coke conveying of less than or equal to three hundred sixty (360) tons per day.

(ii) Limestone conveying of less than or equal to seven thousand two hundred (7,200) tons per day for sources other than mineral processing plants constructed after August 31, 1983.

(t) Purging of gas lines and vessels that is related to routing maintenance and repair of buildings, structures, or vehicles at the source where air emissions from those activities would not be associated with any production process.

(u) Equipment used to collect any material that might be released during a malfunction, process upset, or spill cleanup, including catch tanks, temporary liquid separators, tanks, and fluid handling equipment.

(v) Blow down for any of the following: sight glass; boiler; compressors; pumps; and cooling tower.

(w) Activities associated with emergencies, including the following:

(i) On-site fire training approved by the department.

(ii) Emergency generators as follows: Gasoline generators not exceeding one hundred ten (110) horsepower and Diesel generators not exceeding one thousand six hundred (1,600) horsepower.

(iii) Stationary fire pump engines.

(x) A laboratory as defined in 326 IAC 2-7-1(21)(D)

(y) Degreasing operations that do not exceed 145 gallons per 12 months, except if subject to 326 IAC 20-6.

(z) Cleaners and solvents characterized as follows: Having a vapor pressure equal to or less than 2 kPa; 15 mm Hg; or 0.3 psi measured at 38°C (100°F).

A.5 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); and

(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 D.1 FACILITY OPERATION CONDITIONS (MELT SHOP)

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

Melt Shop Operations

(a) Electric Arc Furnaces (EAF)

Two (2) twin shell electric arc furnaces (EAF #1 South, constructed in 1995 and EAF #2 North, constructed in 1998), each with a nominal capacity of 200 tons per hour, using a direct shell evacuation (DSE) system ("fourth hole" duct), an overhead roof exhaust system consisting of a canopy hoods, DSE air gap for carbon monoxide (CO) emissions control, and low-NO_x/oxyfuel burners (combustion control) for nitrogen oxide (NO_x) emissions control. Particulate emissions from EAF #2 North are controlled by EAF Baghouse 2. All emissions from EAF #2 North exhaust to Stack 92 (equipped with a COM). Particulate emissions from EAF #1 South are controlled by EAF Baghouse 1. All emissions from EAF #1 South exhaust to Stack 01 (equipped with a COM).

(b) Continuous Casters

Two (2) continuous casters (CC #1 South, constructed in 1995 and CC #2 North, constructed in 1998), each with a nominal capacity of 225 tons per hour. Particulate (PM/PM10) emissions are controlled by canopy hoods over each caster exhausting to the EAF baghouse through Stack 01.

(c) Miscellaneous natural gas combustion sources

(1) One (1) ladle dryout station (LDS), with a nominal heat input of 10 MMBtu per hour.
(2) Four (4) ladle preheat stations (LPS), with a nominal heat input of 10 MMBtu per hour each.
(3) Three (3) tundish dryers with nominal heat input capacity of 1.5 MMBtu per hour each,
(4) Two (2) tundish ladle preheaters with a nominal heat input capacity of 9.4 MMBtu per hour each, and
(5) Lancing and cutting of skulls, coils and steel scrap.

(d) Storage Silos and Bins

(1) Eleven (11) outside storage silos including the following:
  (A) Three (3) EAF dust silos, consisting of:
    (i) Bin vent 5a for particulate matter control, constructed in 1995,
    (ii) Bin vent 5b for particulate matter control, constructed in 1998;
    (iii) Bin vent 5c for particulate matter control, approved for construction in 2007.
  (B) Six (6) Lime/carbon silos with bin vents 22 through 27 for particulate matter control, and
  (C) Two (2) alloy silos with bin vents 28 and 29 for particulate matter control.
(2) Enclosed, indoor and/or pneumatic conveying to control fugitive emissions.

(e) Slag pit dig outs associated with each electric arc furnace.

(f) Melt Shop building openings, dust handling system and Melt Shop roof monitors

(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)

D.1.1 Particulate Matter (PM) Limitations [40 CFR Part 60, Subpart AAa]

Pursuant to 40 CFR 60, Subpart AAa (Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarbonization Vessels Constructed After August 7, 1983), particulate matter emissions from the EAF baghouses, due solely to EAF operations, shall not exceed 0.0052 grains per dry standard cubic feet.

D.1.2 Particulate (PM/PM-10) Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to PSD CP 033-8091-00043, issued June 25, 1997, PSD SSM 033-23028-00043 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements):

(1) The PM/PM10 emissions from EAF #1 South shall be controlled by a direct shell evacuation (DSE) system and canopy hood with 100 percent overall capture exhausted to EAF Baghouse 1 with a minimum 99.85 control efficiency for filterable PM/PM10, discharging through Stack 01 at a height of 125 feet above the ground. A slight negative pressure shall be maintained to draw particulate matter through the DSE duct.

(2) The PM/PM10 emissions from EAF #2 North shall be controlled by a direct shall evacuation (DSE) system and canopy hood with 100 percent overall capture and shall exhaust to EAF Baghouse 2 with a minimum 99.85 control efficiency for filterable PM/PM10, which discharges through Stack 92 at a height of 125 feet above the ground. A slight negative pressure shall be maintained to draw particulate matter through the DSE duct.

(3) The PM/PM10 emissions from EAF #2 North and EAF #1 South shall not exceed the limits in the following table:

Unit (Control)	Filterable PM/PM10 Limits		Filterable and Condensable PM10 Limits	
	(gr/dscf)	(lb/hr)	(gr/dscf)	(lb/hr)
EAF #1 South (EAF Baghouse 1)	0.0018	20.1	0.0052	57.9
EAF #2 North (EAF Baghouse 2)	0.0018	15.3	0.0052	44.3

(b) Pursuant to CP 033-9187-00043, March 24, 1998 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), PM/PM10 emissions from the continuous casters shall be controlled by canopy hoods and exhausted to EAF baghouse 1 and then to Stack 01.

(c) Pursuant to CP 033-3692-00043, issued October 7, 1994 and 326 IAC 2-2 (PSD Control Technology Review Requirements), the Permittee shall do the following as needed:

(1) Mechanically reduce skulls, coils and steel scrap in size.

(2) Transport any skulls, coils and steel scrap not mechanically reduced in size to the steel works building and oxygen lance/cut under a furnace canopy using the baghouse to control emissions.

(d) Pursuant to PSD SSM 033-23028-00076 and 326 IAC 2-2-3 (BACT), the filterable PM/PM10 emissions from EAF dust silo 5c shall not exceed 0.01 grains per dry standard cubic foot (gr/dscf).

D.1.3 Nitrogen Oxides (NO_x) Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), the NO_x emissions from the EAFs using low-NOx natural gas fired burners shall not exceed 0.51 pounds per ton of steel produced. The total NOx emissions shall not exceed 204.0 pounds per hour.

(b) Pursuant to A 033-4997-00043, issued November 16, 1995 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), the Ladle Dryout Station (LDS) shall be limited to the use of natural gas, shall not exceed 10 MMBtu per hour heat input and NOx emissions shall not exceed 0.10 lbs/MMBtu.

(c) Pursuant to A 033-4997-00043, issued November 16, 1995 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), the four (4) Ladle Preheat Stations (LPS) shall be limited solely to the use of low-NOx natural gas-fired burners. The four (4) horizontal preheater stations combined shall not exceed 40 MMBtu per hour heat input and the NOx emissions shall not exceed 0.14 lbs/MMBtu.

(d) Pursuant to A 033-4997-00043, issued November 16, 1995 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), the three (3) Tundish dryers shall be limited solely to the use of low-NOx natural gas-fired burners. Each burner shall be limited to 1.5 MMBtu per hour heat input and the NOx emissions shall not exceed 0.10 lbs/MMBtu.

(e) Pursuant to A 033-4997-00043, issued November 16, 1995 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), the two (2) Tundish Preheaters shall be limited solely to the use of low-NOx natural gas-fired burners. Each burner shall not exceed 9.4 MMBtu per hour heat input and the NOx emissions shall not exceed 0.10 lbs/MMBtu.

D.1.4 Sulfur Dioxide (SO_2) Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to CP 033-9187-00043, issued March 24, 1998 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), the combined SO_2 emissions from the LMF (Stack 61), EAF #1 South (Stack 01) and EAF #2 North (Stack 92) shall not exceed 0.20 pounds per ton of steel produced and 80 pounds of SO_2 per hour.

(b) Pursuant to CP 033-8091-00043, issued June 24, 1997 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), the SO2 emissions from the EAFs shall be controlled by the use of high quality scrap and monitoring the sulfur content of the coke.

D.1.5 Carbon Monoxide (CO) Limitations - Best Available Control Technology [326 IAC 2-2]

Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD – Control Technology Review; Requirements), the CO emissions from EAFs shall be controlled by an adjustment gap between the EAF direct shell evacuation system (DSE) and the remaining water cooled duct to common baghouse. The CO emissions from each EAF shall not exceed 2.0 pounds per ton of hot steel produced. The total emissions from EAF #1 South (Stack 1) and EAF #2 North (Stack 92) shall not exceed 800 pounds per hour. A slight negative pressure shall be maintained at the gap.

D.1.6 Volatile Organic Compounds (VOC) Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), VOC emissions from EAFs shall be controlled through the scrap management plan attached to this permit. All grades of scrap shall be free of non-ferrous metals, non-metallic, excessive dirt, oil, grease, and tin plate. Heavily oiled scrap such as used engine blocks and machine shop borings shall not be used.

(b) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), the VOC emissions from the EAFs shall be limited to 0.13 pounds of VOC emissions per ton of steel produced. The total VOC emissions from EAF #1 South (Stack 1) and EAF #2 North (Stack 1) shall not exceed 52.0 pounds

per hour.

D.1.7 VOC General Reduction Requirements (BACT): New Facilities [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6, the EAFs Best Available Control Technology (BACT) requirements for 326 IAC 2-2 are equivalent to BACT requirements for this rule.

D.1.8 Lead Limitations - Best Available Control Technology (BACT) [326 IAC 2-2]

Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD Control Technology Review Requirements), the total lead emissions from EAF Baghouse 1 (Stack 1) and EAF Baghouse 2 (Stack 92) shall not exceed 0.19 pounds per hour.

D.1.9 Mercury Limitations [326 IAC 2-2]

Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD Control Technology Review Requirements), the total mercury emissions from EAF Baghouse 1 and EAF Baghouse 2 shall not exceed 0.022 pounds per hour. Compliance with this limit will render 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable.

D.1.10 Visible Emission Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), visible emissions from the EAF Baghouse 1 and EAF Baghouse 2 stack exhausts (Stack 1 and Stack 92, respectively) shall not exceed three percent (3%) opacity, based on a six (6) minute average (24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9). This condition will satisfy the NSPS 40 CFR Part 60 Subpart AAa, 40 CFR 60.272a.

(b) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), the fugitive emissions generated at the melt shop shall not exceed three percent (3%) opacity from any building opening as determined by a six (6) minute average (24 readings taken in accordance with 40 CFR Part 60,Appendix A, Method 9). Three percent (3%) opacity is reflective of 100 percent capture.

(c) Pursuant to CP 033-3692-00043, issued October 7, 1994 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), the EAF slag pit dig out operation located beneath each furnace shall not exceed five (5%) percent opacity.

(d) Pursuant to CP 033-3692-00043, issued October 7, 1994 and 326 IAC 2-2 (PSD -Control Technology Review Requirements), visible emissions from the building opening and EAF dust handling system shall not exceed three percent (3%) opacity based on a six-minute average(24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9).

(e) Pursuant to A 033-4997-00043, issued November 16, 1995 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), the carbon and flux additive system conveyors and transfer points shall be enclosed and vent through bin vents or shall use a pneumatic conveyance.

(f) Pursuant to PSD SSM 033-23028-00076 and 326 IAC 2-2-3 (BACT), visible emissions of the exhaust from EAF dust silo 5c shall not exceed three percent (3%) opacity, based on a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).

D.1.11 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 EAFs, except when otherwise specified in 40 CFR Part 60, Subpart AAa.

D.1.12 Visible Emissions Limitations (NSPS) [40 CFR Part 60.272(a)]

(a) Pursuant to 40 CFR 60.272(a)(2), the visible emissions from the EAF Baghouse 1 and EAF Baghouse 2 stack exhausts (Stack 1 and Stack 92, respectively) shall not exceed three percent (3%) opacity, based on a six-minute average (24 readings taken in

accordance with 40 CFR Part 60, Appendix A, Method 9).

(b) Pursuant to 40 CFR 60.272(a)(3), the visible emissions from the melt shop due solely to the operations of the electric arc furnace shall not exceed six percent (6%) opacity, based on a six-minute average (24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9).

(c) Pursuant to 40 CFR 60.272(b), the visible emissions from the EAF dust handling system shall not exceed ten percent (10%) opacity, based on a six-minute average (24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9).

D.1.13 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B.10 - Preventive Maintenance Plan, of this permit is required for the EAFs, continuous casters (#1 and #2), EAF dust silo 5c and associated control devices.

Compliance Determination Requirements

D.1.14 Testing Requirements [326 IAC 2-7-6(1),(6)][326 IAC 2-1.1-11]

(a) Within 180 days after initial startup of EAF Baghouse #2 and in order to demonstrate compliance with Condition D.1.2(a), the Permittee shall perform PM/PM10 testing on EAF #1 South and EAF #2 North (Stack 01 and Stack 92) utilizing methods as approved by the Commissioner and in accordance with Condition C.9 - Performance Testing. PM10 includes filterable and condensable PM10. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(b) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.1.3(a), the Permittee shall perform NOx testing on EAF #1 South and EAF #2 North (Stack 01 and Stack 92), utilizing methods as approved by the Commissioner in accordance with Condition C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(c) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Condition D.1.4(a) and (b), the Permittee shall perform simultaneous, SO2 testing on EAF #1 South, EAF #2 North and the LMF (Stack 01, Stack 92 and LMF Stack 61), utilizing methods as approved by the Commissioner in accordance with Condition C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(d) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.1.5, the Permittee shall perform CO testing on EAF #1 South and EAF #2 North (Stack 01 and Stack 92) utilizing methods as approved by the Commissioner in accordance with Condition C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(e) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.1.6(b), the Permittee shall perform VOC testing on EAF #1 South and EAF #2 North (Stack 01 and Stack 92) utilizing methods as approved by the Commissioner in accordance with Condition C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(f) Within 180 days after issuance of this Part 70 permit, and in order to demonstrate compliance with Conditions D.1.8 and D.1.9, the Permittee shall perform lead and mercury testing on EAF #1 South (Stack 01) and EAF #2 North (Stack 92) utilizing methods as approved by the Commissioner in accordance with Condition C.9 -

Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(g) Within 180 days after initial startup of EAF Baghouse #2 and in order to demonstrate compliance with Conditions D.1.8 and D.1.9, the Permittee shall perform lead and mercury testing on EAF #2 North (Stack 92) utilizing methods as approved by the Commissioner in accordance with Condition C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

D.1.15 Particulate Control – (BACT) [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2-3, EAF Baghouse 1 shall be operated at all times when EAF #1 South and the continuous casters are in operation.

(b) Pursuant to 326 IAC 2-2-3, EAF Baghouse 2 shall be operated at all times when EAF #2 North is in operation.

(c) Pursuant to 326 IAC 2-2-3, Bin vent filter 5c shall control emissions from EAF dust silo 5c at all times dust is transferred to or from the silo.

(d) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

D.1.16 CO Control - (BACT) [326 IAC 2-2]

The Direct Shell Evacuation System shall be in operation at all times the EAFs are in operation in a manner to control CO emissions.

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

D.1.17 Visible Emission Observations and Continuous Opacity Monitoring [326 IAC 3-5] [40 CFR 60.273a]

Pursuant to 326 IAC 3-5 and 40 CFR 60.273a, the Permittee shall do the following to demonstrate compliance with Condition D.1.12(a):

(a) The Permittee shall calibrate, maintain, and operate all continuous opacity monitoring systems (COMS) and related equipment required by this permit.

(b) All COMS 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.

(c) In the event that a breakdown of a COMS occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem.

(d) Whenever a COM is malfunctioning or is down for maintenance, or repairs for a period of twenty-four (24) hours or more, and a backup COMS is not online within twenty-four (24) hours of shutdown or malfunction of the primary COMS, the Permittee shall provide a certified opacity reader, who may be an employee of the Permittee or an independent contractor, to self-monitor the emissions from the emission unit stack.

(1) Visible emission readings shall be performed in accordance with 40 CFR 60, Appendix A, Method 9, for a minimum of three (3) consecutive six (6) minute averaging periods beginning not more than twenty-four (24) hours after the start of the malfunction or down time.

(2) Method 9 opacity readings shall be repeated for a minimum of three (3) consecutive six (6) minute averaging periods at least twice per day during daylight operations, with at least four (4) hours between each set of readings, until a COMS is online.

(3) Method 9 readings may be discontinued once a COMS is online.

(4) Any opacity exceedances determined by Method 9 readings shall be reported with the Quarterly Opacity Exceedances Reports.

(e) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous opacity monitoring system pursuant to 326 IAC 3-5 and 40 CFR 60.

D.1.18 Visible Emission Notations

(a) Pursuant to CP 033-8091-00043, issued June 25, 1997, and PSD SSM 033-23028-00043, visible emission notations of the melt shop building openings, dust handling system, melt shop roof monitors and bin vent filter 5c shall be performed once per day during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

(b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(d) 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.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Condition C.16- Response to Excursions or Exceedances. Failure to take response steps in accordance with Condition C.16 - Response to Excursions or Exceedances shall be considered a deviation from this permit.

D.1.19 Parametric Monitoring

(a) The Permittee shall record the pressure drop across the baghouses used in conjunction with the EAFs at least once per day when the respective EAFs are in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 4.0 to 10.0 inches of water or a range established during the latest Stack test, the Permittee shall take reasonable response steps in accordance with Section C.16 - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C.16 - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(b) The instrument used for determining the pressure shall comply with Section C.13 - 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.1.20 New Source Performance Standards – Emission Monitoring [40 CFR 60.273a]

Pursuant to 326 IAC 12 and 40 CFR 60.273a:

(a) Except as provided under paragraphs (b) and (c) of this section, a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subpart.

(b) No continuous monitoring system shall be required on any control device serving the dust-

handling system.

(c) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) is not required on any modular, multi-stack, negative-pressure or positive-pressure fabric filter if observations of the opacity of the visible emissions from the control device are performed by a certified visible emission observer; or on any single-stack fabric filter if visible emissions from the control device are performed by a certified visible emission observer and the owner installs and continuously operates a bag leak detection system according to paragraph (e) of this section. Visible emission observations shall be conducted at least once per day for at least three 6-minute periods when the furnace is operating in the melting and refining period. All visible emissions observations shall be conducted in accordance with Method 9. If visible emissions occur from more than one point, the opacity shall be recorded for any points where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of the visible emission, only one set of three 6-minute observations will be required. In that case, the Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. Records shall be maintained of any 6-minute average that is in excess of the emission limit specified in §60.272a(a).

(d) A furnace static pressure monitoring device is not required on any EAF equipped with a DEC system if observations of shop opacity are performed by a certified visible emission observer as follows: Shop opacity observations shall be conducted at least once per day when the furnace is operating in the meltdown and refining period. Shop opacity shall be determined as the arithmetic average of 24 consecutive 15-second opacity observations of emissions from the shop taken in accordance with Method 9. Shop opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of visible emissions, only one observation of shop opacity will be required. In this case, the shop opacity observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident.

(e) A bag leak detection system must be installed and continuously operated on all single-stack fabric filters if the owner or operator elects not to install and operate a continuous opacity monitoring system as provided for under paragraph (c) of this section. In addition, the owner or operator shall meet the visible emissions observation requirements in paragraph (c) of this section. The bag leak detection system must meet the specifications and requirements of paragraphs (e)(1) through (8) of this section.

(1) The bag leak detection system must be certified by the manufacturer to be capable of detecting particulate matter emissions at concentrations of 1 milligram per actual cubic meter (0.00044 grains per actual cubic foot) or less.

(2) The bag leak detection system sensor must provide output of relative particulate matter loadings and the owner or operator shall continuously record the output from the bag leak detection system using electronic or other means (*e.g.,* using a strip chart recorder or a data logger.)

(3) The bag leak detection system must be equipped with an alarm system that will sound when an increase in relative particulate loading is detected over the alarm set point established according to paragraph (e)(4) of this section, and the alarm must be located such that it can be heard by the appropriate plant personnel.

(4) For each bag leak detection system required by paragraph (e) of this section, the owner or operator shall develop and submit to the Administrator or delegated authority, for approval, a site-specific monitoring plan that addresses the items identified in paragraphs (i) through (v) of this paragraph (e)(4). For each bag leak detection system that operates based on the triboelectric effect, the monitoring plan shall be consistent with the recommendations contained in the U.S. Environmental Protection Agency guidance document “Fabric Filter Bag Leak Detection Guidance” (EPA–454/R–98–015). The owner or operator shall operate and maintain the bag leak detection system according to the site-specific monitoring plan at all times. The plan shall describe the following:

(i) Installation of the bag leak detection system;

(ii) Initial and periodic adjustment of the bag leak detection system including how the alarm set-point will be established;

(iii) Operation of the bag leak detection system including quality assurance procedures;

(iv) How the bag leak detection system will be maintained including a routine maintenance schedule and spare parts inventory list; and

(v) How the bag leak detection system output shall be recorded and stored.

(5) 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 (if applicable).

(6) Following initial adjustment, the owner or operator shall not adjust the averaging period, alarm set point, or alarm delay time without approval from the Administrator or delegated authority except as provided for in paragraphs (e)(6)(i) and (ii) of this section.

(i) Once per quarter, the owner or operator may adjust the sensitivity of the bag leak detection system to account for seasonal effects including temperature and humidity according to the procedures identified in the site-specific monitoring plan required under paragraphs (e)(4) of this section.

(ii) If opacities greater than zero percent are observed over four consecutive 15-second observations during the daily opacity observations required under paragraph (c) of this section and the alarm on the bag leak detection system does not sound, the owner or operator shall lower the alarm set point on the bag leak detection system to a point where the alarm would have sounded during the period when the opacity observations were made.

(7) For negative pressure, induced air baghouses, and positive pressure baghouses that are discharged to the atmosphere through a stack, the bag leak detection sensor must be installed downstream of the baghouse and upstream of any wet scrubber.

(8) Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.

(f) For each bag leak detection system installed according to paragraph (e) of this section, the owner or operator shall initiate procedures to determine the cause of all alarms within 1 hour of an alarm. Except as provided for under paragraph (g) of this section, the cause of the alarm must be alleviated within 3 hours of the time the alarm occurred by taking whatever corrective action(s) are necessary. Corrective actions may include, but are not limited to, the following:

(1) Inspecting the baghouse for air leaks, torn or broken bags or filter media, or any other condition that may cause an increase in particulate emissions;

(2) Sealing off defective bags or filter media;

(3) Replacing defective bags or filter media or otherwise repairing the control device;

(4) Sealing off a defective baghouse compartment;

(5) Cleaning the bag leak detection system probe or otherwise repairing the bag leak detection system; and

(6) Shutting down the process producing the particulate emissions.

(g) In approving the site-specific monitoring plan required in paragraph (e)(4) of this section, the Administrator or delegated authority may allow owners or operators more than 3 hours to alleviate specific conditions that cause an alarm if the owner or operator identifies the condition that could lead to an alarm in the monitoring plan, adequately explains why it is not feasible to alleviate the condition within 3 hours of the time the alarm occurred, and demonstrates that the requested additional time will ensure alleviation of the condition as expeditiously as practicable.

[49 FR 43845, Oct. 31, 1984, as amended at 54 FR 6672, Feb. 14, 1989; 64 FR 10111, Mar. 2, 1999; 70 FR 8532, Feb. 22, 2005]

D.1.21 New Source Performance Standards – Monitoring of Operations [40 CFR 60.274a]

Pursuant to 326 IAC 12 and 40 CFR 60.274a:

(a) The owner or operator subject to the provisions of this subpart shall maintain records of the following information:

(1) All data obtained under paragraph (b) of this section; and

(2) All monthly operational status inspections performed under paragraph (c) of this section.

(b) Except as provided under paragraph (e) of this section, the owner or operator subject to the provisions of this subpart shall check and record on a once-per-shift basis the furnace static pressure (if DEC system is in use, and a furnace static pressure gauge is installed according to paragraph (f) of this section) and either: check and record the control system fan motor amperes and damper position on a once-per-shift basis; install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood; or install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate at the control device inlet and check and record 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 Administrator may require the owner or operator to demonstrate the accuracy of the monitoring device(s) relative to Methods 1 and 2 of appendix A of this part.

(c) When the owner or operator of an affected facility is required to demonstrate compliance with the standards under §60.272a(a)(3) and at any other time that the Administrator may require (under section 114 of the CAA, as amended) either: the control system fan motor amperes and all damper positions, the volumetric flow rate through each separately ducted hood, or the volumetric flow rate at the control device inlet and all damper positions shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the affected facility subject to paragraph (b) of this section. The owner or operator may petition the Administrator for reestablishment of these parameters whenever the owner or operator can demonstrate to the Administrator's satisfaction that the affected facility operating conditions upon which the parameters were previously established are no longer applicable. The values of these parameters as determined during the most recent demonstration of compliance shall be maintained at the appropriate level for each applicable period. Operation at other than baseline values may be subject to the requirements of §60.276a(c).

(d) Except as provided under paragraph (e) of this section, the owner or operator 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.

(e) The owner or operator may petition the Administrator to approve any alternative to either the monitoring requirements specified in paragraph (b) of this section or the monthly operational status inspections specified in paragraph (d) of this section if the alternative will provide a continuous record of operation of each emission capture system.

(f) Except as provided for under §60.273a(d), if emissions during any phase of the heat time are controlled by the use of a DEC system, the owner or operator shall install, calibrate, and maintain a monitoring device that allows the pressure in the free space inside the EAF to be monitored. The pressure shall be recorded as 15-minute integrated averages. The monitoring device may be installed in any appropriate location in the EAF or DEC duct prior to the introduction of ambient air such that reproducible results will be obtained. The pressure monitoring device shall have an accuracy of ±5 mm of water gauge over its normal operating range and shall be calibrated according to the manufacturer's instructions.

(g) Except as provided for under §60.273a(d), when the owner or operator of an EAF controlled by a DEC is required to demonstrate compliance with the standard under §60.272a(a)(3), and at any other time the Administrator may require (under section 114 of the Clean Air Act, as amended), the pressure in the free space inside the furnace shall be determined during the meltdown and refining period(s) using the monitoring device required under paragraph (f) of this section. The owner or operator may petition the Administrator for reestablishment of the pressure whenever the owner or operator can demonstrate to the Administrator's satisfaction that the EAF operating conditions upon which the pressures were previously established are no longer applicable. The pressure determined during the most recent demonstration of compliance shall be maintained at all times when the EAF is operating in a meltdown and refining period. Operation at higher pressures may be considered by the Administrator to be unacceptable operation and maintenance of the affected facility.

(h) During any performance test required under §60.8, and for any report thereof required by §60.276a(f) of this subpart, or to determine compliance with §60.272a(a)(3) of this subpart, the owner or operator shall monitor the following information for all heats covered by the test:

(1) Charge weights and materials, and tap weights and materials;

(2) Heat times, including start and stop times, and a log of process operation, including periods of no operation during testing and the pressure inside an EAF when direct-shell evacuation control systems are used;

(3) Control device operation log; and

(4) Continuous opacity monitor or Method 9 data.

[49 FR 43845, Oct. 31, 1984, as amended at 64 FR 10111, Mar. 2, 1999; 65 FR 61758, Oct. 17, 2000; 70 FR 8533, Feb. 22, 2005]

Record Keeping and Reporting Requirements

D.1.22 Record Keeping Requirements

(a) To demonstrate compliance with Conditions D.1.2 through D.1.12, the Permittee shall maintain records of the metal throughput, natural gas usage and opacity emission records for the melt shop operations.

(b) To document compliance with operation Condition D.1.17, the Permittee shall maintain records:

(1) required under 326 IAC 3-5-6 at the source in a manner so that they may be inspected by the IDEM, OAQ, or the U.S. EPA, if so requested or required.

(2) of visible emission readings at the melt shop stacks and make available upon request to IDEM, OAQ, and the U.S. EPA.

(c) To document compliance with Conditions D.1.10 and D.1.18, the Permittee shall maintain records of visible emission notations required by Condition D.1.18. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(d) To document compliance with Condition D.1.19, the Permittee shall maintain records of the pressure drop readings required by that condition. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of a pressure drop reading (e.g. the process did not operate that day).

(e) All records shall be maintained in accordance with Section C.19 - General Record Keeping Requirements, of this permit.

D.1.23 Record Keeping and Reporting Requirements [40 CFR 60.276a]

Pursuant to 326 IAC 12 and 40 CFR 60.276a:

(a) Records of the measurements required in §60.274a must be retained for at least 2 years following the date of the measurement.

(b) Each owner or operator shall submit a written report of exceedances of the control device opacity to the Administrator semi-annually. For the purposes of these reports, exceedances are defined as all 6-minute periods during which the average opacity is 3 percent or greater.

(c) Operation at a furnace static pressure that exceeds the value established under §60.274a(g) and either operation of control system fan motor amperes at values exceeding ±15 percent of the value established under §60.274a(c) or operation at flow rates lower than those established under §60.274a(c) may be considered by the Administrator to be unacceptable operation and maintenance of the affected facility. Operation at such values shall be reported to the Administrator semiannually.

(d) The requirements of this section remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with this section, provided that they comply with the requirements established by the State.

(e) When the owner or operator of an EAF or AOD is required to demonstrate compliance with the standard under §60.275 (b)(2) or a combination of (b)(1) and (b)(2) the owner or operator shall obtain approval from the Administrator of the procedure(s) that will be used to determine compliance. Notification of the procedure(s) to be used must be postmarked at least 30 days prior to the performance test.

(f) For the purpose of this subpart, the owner or operator shall conduct the demonstration of compliance with §60.272a(a) of this subpart and furnish the Administrator a written report of the results of the test. This report shall include 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 emission capture equipment including other equipment or process(es) ducted to the same control device;

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

(6) Those data required under §60.274a(h) of this subpart;

(i) List of charge and tap weights and materials;

(ii) Heat times and process log;

(iii) Control device operation log; and

(iv) Continuous opacity monitor or 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.

(g) The owner or operator shall maintain records of all shop opacity observations made in accordance with §60.273a(d). All shop opacity observations in excess of the emission limit specified in §60.272a(a)(3) of this subpart shall indicate a period of excess emission, and shall be reported to the administrator semi-annually, according to §60.7(c).

(h) The owner or operator shall maintain the following records for each bag leak detection system required under §60.273a(e):

(1) Records of the bag leak detection system output;

(2) Records of bag leak detection system adjustments, including the date and time of the adjustment, the initial bag leak detection system settings, and the final bag leak detection system settings; and

(3) An identification of the date and time of all bag leak detection system alarms, the time that procedures to determine the cause of the alarm were initiated, if procedures were initiated within 1 hour of the alarm, the cause of the alarm, an explanation of the actions taken, the date and time the cause of the alarm was alleviated, and if the alarm was alleviated within 3 hours of the alarm.

[49 FR 43845, Oct. 31, 1984, as amended at 54 FR 6673, Feb. 14, 1989; 64 FR 10111, Mar. 2, 1999; 65 FR 61758, Oct. 17, 2000; 70 FR 8533, Feb. 22, 2005]

D.1.24 Reporting Requirements [40 CFR 60.276a][326 IAC 3-5-7]

(a) The Permittee shall submit to IDEM, OAQ a quarterly excess emissions report, if applicable, based on the continuous opacity monitor (COM) data, pursuant to 326 IAC 3-5-7. 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.20 - General Reporting Requirements of this permit.

(b) The reports submitted by the Permittee do require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

D.1.25 Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has 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 B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the unit. 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 B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

SECTION D.10 FACILITY OPERATION CONDITIONS (PAINT LINE)

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

Paint Line (Coil Coating Line)

(a) One (1) 2-side, 2-coat coil coating line, constructed in 2003, using roll coating method, with a nominal capacity of 55,000 pounds per hour of the flat rolled steel, using a 60 MMBtu per hour heat input capacity burner equipped thermal oxidizer to control VOC emissions exhausting to Stack 78.

(b) Two (2) curing ovens, constructed in 2003, with a combined nominal heat input capacity of 16 MMBtu per hour using a 60 MMBtu per hour nominal heat input capacity burner equipped thermal oxidizer to control VOC emissions exhausting to Stack 78.

(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)]

D.10.1 Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) [326 IAC 2-2] [40 CFR Subpart SSSS]

Pursuant to SSM 033-15836-00043, issued December 31, 2002 and 326 IAC 2-2 (Prevention of Significant Deterioration) to maintain the minor status for this modification, the VOC emissions shall be limited as follows:

(a) For the 2-side, 2-coat, coil-coating line the input of VOC shall be limited to less than 3894 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month. This VOC usage limitation in conjunction with the operation of thermal oxidizer at 99% overall control efficiency limits VOC emissions from the coil coating line to less than 38.94 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month.

(b) The combined heat input rate for the two curing ovens shall not exceed 16 million Btu per hour and that for the thermal oxidizer shall not exceed 60 million Btu per hour. This limits the VOC emissions from the curing ovens to less than 0.02 tons per twelve (12) consecutive month period.

(c) The items (a) and (b) combined, limits the VOC emissions from the 2-side, 2-coat coil coating line modification to less than 40 tons per 12 consecutive months period, with compliance demonstrated at the end of each month. This limit pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration) makes this modification minor under this rule.

(d) Pursuant to PSD SSM 033-23028-00043:

(1) The single HAP emissions from the coil coating line shall be limited to less than 10 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month.

(2) The combined HAP emissions from the coil coating line shall be limited to less than 14.6 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month.

(3) The thermal oxidizer for the coil coating line shall be in operation whenever the coating line is in operation and shall maintain a minimum overall HAP control efficiency of 99%. This is necessary in order to limit the potential to emit (after control) of a single HAP and any combination of HAPs to less than 10 tons and 14.6 tons per year, respectively.

Compliance with these limits and requirements, in conjunction with HAP limits on the rotary hearth furnace, pickle line and acid regeneration facility, limits the source-wide PTE of a single HAP and a combination of HAPs to less than ten (10) and twenty-five (25) tons per twelve (12) consecutive month period, respectively, and renders the requirements of 40 CFR Part 63, Subpart SSSS not applicable.

D.10.2 Volatile Organic Compounds (VOC) [326 IAC 8-2-4]

(a) Pursuant to SSM 033-15836-00043, issued December 21, 2002 and 326 IAC 8-2-4 (Coil Coating Operations), the volatile organic compound (VOC) discharge to the atmosphere shall be limited to 2.6 pounds VOC per gallon of coating less water delivered to the coating applicator from prime and topcoat or single coat operations.

(b) Pursuant to 326 IAC 8-1-2 (b), the coil coating line VOC emissions shall be limited to no greater than the equivalent emissions, 4.02 pounds of VOC per gallon of coating solids, allowed in (a).

The equivalency emissions are determined by the following equation:

$$E = L / (1 - (L/D))$$

Where:

L = Applicable emission limit from 326 IAC 8 in pounds of VOC per gallon of coating.
D = Density of VOC in coating in pounds per gallon of VOC.
E = Equivalent emission limit in pounds of VOC per gallon of coating solids as applied.

Actual solvent density shall be used to determine compliance of the coil coating operation using the compliance methods in 326 IAC 8-1-2 (a).

(c) Pursuant to 326 IAC 8-1-2(c) the overall control efficiency of the thermal oxidizer shall be no less than the equivalent overall efficiency of 46.04% calculated by the following equation:

$$O = \frac{V - E}{V} \times 100$$

Where:

V = The actual VOC content of the coating or, if multiple coatings are used, the daily weighted average VOC content of all coatings, as applied to the subject coating line as determined by the applicable test methods and procedures specified in 326 IAC 8-1-4 in units of pounds of VOC per gallon of coating solids as applied.
E = Equivalent emission limit in pounds of VOC per gallon of coating solids as applied.
O = Equivalent overall efficiency of the capture system and control device as a percentage.

D.10.3 General Provisions Relating to NSPS [326 IAC 12-1] [40 CFR 60, Subpart A]

The provisions of 40 CFR 60 Subpart A - General Provisions, which are incorporated as 326 IAC 12-1, apply to the facility described in this section except when otherwise specified in 40 CFR 60, Subpart TT.

D.10.4 Metal Coil Surface Coating NSPS [326 IAC 12-1-1] [40 CFR 60, Subpart TT]

This facility is subject to 40 CFR 60, Subpart TT, which is incorporated by reference in 326 IAC 12-1-1. Permittee shall not cause to be discharged into the atmosphere more than:

(a) 1.17 pounds of VOC per gallon of coating solids applied for each calendar month for 2-

side, 2-coat, coating line that continuously uses a thermal oxidizer operated at the most recently demonstrated overall efficiency.

-or-

(b) 10 percent of the VOCs applied for each calendar month (90 percent emission reduction) for each affected facility that continuously uses an emission control device(s) operated at the most recently demonstrated overall efficiency.

D.10.5 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B.10 - Preventive Maintenance Plan, of this permit, is required for the coil coating operation and associated control device.

Compliance Determination Requirements

D.10.6 Permanent Total Enclosure [326 IAC 2-2]

Pursuant to SSM 033-15836-00043, issued December 21, 2002, PSD SSM 033-23028-00043 and 326 IAC 2-2 (Prevention of Significant Deterioration) to maintain the minor status for the 2-side, 2 coat, coil coating line, the Permittee shall use a permanent total enclosure:

(a) The capture system for the 2-side, 2-coat, coil coating line shall meet the criteria for a Permanent Total Enclosure as described in 40 CFR 60, Method 204. The Permanent Total Enclosure will meet the testing requirements in condition D.10.8(c).

(b) Verify 100% capture through other methods as approved by the Commissioner.

D.10.7 Thermal Oxidizer - Best Available Control Technology (BACT) [326 IAC 2-2]

The thermal oxidizer shall operate with a control efficiency of not less than 99% at all times when 2-side, 2-coat, coil coating line is in operation. This efficiency is necessary to ensure compliance with conditions D.10.1, D.10.2, and D.10.4.

D.10.8 Testing Requirements [326 IAC 12, 40 CFR 60.463]

(a) The Permittee shall conduct a performance test for each calendar month for each affected facility according to the procedures under condition D.10.8(c), (d), (e), and (f).

(b) 40 CFR 60.8(d) and (f) do not apply to the performance test.

(c) The Permittee shall determine the overall reduction efficiency (R) for the capture system and the control device to determine compliance with condition D.10.4(b).

The Permittee may use the most recently determined overall reduction efficiency (R) for the performance test, providing control device and capture system operating conditions have not changed. The procedure in paragraphs (c) (1), (2), and (3) of this section, shall be repeated when directed by the Administrator, IDEM, OAQ or when the Permittee elects to operate the control device or capture system at conditions different from the initial performance test.

(A) Determine the fraction (F) of total VOC's emitted by an affected facility that enters the control device using the following equation:

$$F = \frac{\sum_{i=1}^{l} C_{bi} Q_{bi}}{\sum_{i=1}^{l} C_{bi} Q_{bi} + \sum_{i=1}^{p} C_{fi} Q_{fi}}$$

Where:

C_b = the VOC concentration in each gas stream entering the control device (parts per million by volume, as carbon).
Q_b = the volumetric flow rate of each gas stream entering the control device (dry standard cubic meters per hour).
C_{fi} = the VOC concentration in each gas stream emitted directly to the atmosphere (parts per million by volume, as carbon).
Q_{fi} = the volumetric flow rate of each gas stream emitted directly
l = the number of gas streams entering the control device, and
p = the number of gas streams emitted directly to the atmosphere.

(2) Determine the destruction efficiency of the control device (E) using values of the volumetric flow rate of each of the gas streams and the VOC content (as carbon) of each of the gas streams in and out of the device by the following equation:

$$E = \frac{\sum_{i=1}^{n} C_{bi} Q_{bi} - \sum_{i=1}^{m} C_a Q_a}{\sum_{i=1}^{n} C_{bi} Q_{bi}}$$

Where:

C_a = the VOC concentration in each gas stream leaving the control device and entering the atmosphere (parts per million by volume, as carbon).
Q_a = the volumetric flow rate of each gas stream leaving the control device and entering the atmosphere (dry standard cubic meters per hour).
n = the number of gas streams entering the control device, and
m = the number of gas streams leaving the control device and entering the atmosphere.

The Permittee shall construct the VOC emission reduction system so that all volumetric flow rates and total VOC emissions can be accurately determined by the applicable test methods and procedures specified in § 60.466.

(3) Determine overall reduction efficiency (R) using the following equation:

$$R = EF$$

If the overall reduction efficiency (R) is equal to or greater than 0.90, the affected facility is in compliance and no further computations are necessary. If the overall reduction efficiency (R) is less than 0.90, the average total VOC emissions to the atmosphere per unit volume of coating solids applied (N) shall be computed as specified in sections (d) and (e) below.

(d) Calculate the volume-weighted average of the total mass of VOC's per unit volume of coating solids applied (G) during each calendar month for each affected facility as follows:

(1) Calculate the volume-weighted average of the total mass of VOC's consumed per unit volume of coating solids applied (G) during each calendar month for each affected facility, except as provided under paragraph (c)(1)(iv) of 40 CFR 60.463 as follows:

(A) Calculate the mass of VOC's used (Mo+Md) during each calendar month for each affected facility by the following equation:

$$M_o + M_d = \sum_{i=1}^{n} L_{ci} D_{ci} W_{oi} + \sum_{j=1}^{m} L_{dj} D_{dj}$$

Where:

M_o = Mass of VOC's in coatings consumed, as received in kilogram (kg)
M_d = Mass of VOC-solvent added to the coatings, in kg
L_c = the volume of each coating consumed, as received in liters
L_d = the volume of each VOC-solvent added to the coatings in liters (l)
W_o = the proportion of VOC's in each coating, as received (fraction by weight)
D_d = density of each VOC-solvent added to the coatings (kg/l)
$\Sigma L_d j D_{dj}$ = will be 0 if no VOC solvent is added to the coatings, as received
n = the number of different coatings used during calendar month, and
m = the number of different VOC solvents added to coatings used during the calendar month.

(B) Calculate the total volume of coating solids used (Ls) in each calendar month for each affected facility by the following equation:

$$L_s = \sum_{i=1}^{n} V_{si} L_{ci}$$

Where

V_s = the proportion of solids in each coating, as received (fraction by volume).
L_c = the volume of each coating consumed, as received in liters
L_s = total volume of solids used in a calendar month
n = the number of different coatings used during the calendar month.

(e) Calculate the volume-weighted average mass of VOC's used per unit volume of coating solids applied (G) during the calendar month for each affected facility by the following equation:

$$G = \frac{M_o + M_d}{L_s}$$

(e) Calculate the volume-weighted average of VOC emissions to the atmosphere (N) during each calendar month by the following equation:

$$N = G\,(1-R)$$

(f) If the volume-weighted average mass of VOC's emitted to the atmosphere for each calendar month (N) is less than or equal to 0.14 kg/l of coating solids applied, the affected facility is in compliance. Each monthly calculation is a performance test.

D.10.9 Testing Requirements [326 IAC 3-6] [326 IAC 2-7-6(1), (6)]

(a) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.10.1 and D.10.2, the Permittee shall perform VOC emissions and thermal oxidizer control efficiency testing utilizing methods

as approved by the Commissioner. This testing shall be repeated once every five (5) years from the date of the most recent valid compliance demonstration.

(b) The Permittee shall determine the hourly average temperature, minimum operating temperature and duct pressure or fan amperage for the thermal oxidizer from the most recent valid Stack test that demonstrates compliance with the limits in conditions D.10.1 and D.10.2 as approved by IDEM.

(c) In order to demonstrate compliance with Condition D.10.1(d), within 180 days of the issuance of PSD SSM 033-23028-00043, the Permittee shall perform inlet and outlet HAP testing on the thermal oxidizer controlling emissions from the coil coating line. Testing shall be done utilizing Method 18 or other methods approved by the Commissioner, for the HAP used at the source that has the lowest destruction efficiency, as estimated by the manufacturer and approved by IDEM. This test shall be repeated at least once every 2.5 years from the date of valid compliance demonstration.

(d) Testing shall be conducted in accordance with Section C.9 - Performance Testing.

D.10.10 Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP)

Pursuant to SSM 033-15836-00043, issued December 1, 2002, and PSD SSM 033-23028-00043:

(a) Compliance with Condition D.10.1 shall be demonstrated at the end of each month. This shall be based on the total volatile organic compound emitted for the previous month, and adding it to previous 11 months total VOC emitted so as to arrive at VOC emission rate for 12 consecutive months period. The VOC emissions for a month can be arrived at using the following equation for VOC usage:

VOC emitted = [(VOC input) x (100 - Overall control efficiency of thermal oxidizer)] + [uncontrolled VOC]

Where VOC input is based on the formulation data supplied by the coating manufacturer. IDEM, OAQ reserves the authority to determine compliance using Method 24 in conjunction with the analytical procedures specified in 326 IAC 8-1-4.

(b) In order to demonstrate compliance with Condition D.10.1(d), the Permittee shall determine the single and combination HAP emissions for each month using the following methodology:

HAP emitted = [(HAP usage) x (1.0 - (DE x CE))] + [uncontrolled HAP]

Where:

DE = Destruction efficiency of the oxidizer determined by the latest stack test using Method 18

CE = Capture efficiency determined by the latest stack test

Until the initial Method 18 stack test is performed, an overall control efficiency of 99% shall be used in place of the (DE x CE) quantity in the equation above

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

D.10.11 Thermal Oxidizer [326 IAC 12, 40 CFR 60.464]

(a) A continuous monitoring system shall be calibrated, maintained, and operated on the thermal oxidizer to continuously record the combustion temperature of any effluent gases incinerated to achieve compliance with D.10.1, D.10.2 and D.10.4. This system shall have an accuracy of ±2.5^{o}C or ±0.75 percent of the temperature being measured expressed in degrees Celsius, whichever is greater.

(b) The Permittee shall record all periods (during actual coating operations) in excess of 3 hours during which the average temperature in the thermal oxidizer used to control VOC emissions from an affected facility remains more than 28°C (50°F) below the temperature at which compliance with limit in D.10.1, D.10.2 and D.10.4 was demonstrated during the most recent measurement of thermal oxidizer efficiency required by D.10.7 and D.10.8.

(c) The records required by 40 CFR 60.7 shall identify each such occurrence and its duration.

(d) The Permittee shall observe the duct pressure or fan amperage at least once per day when the thermal oxidizer is in operation. The duct pressure or fan amperage shall be maintained within the normal range as established in most recent compliant Stack test.

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

D.10.12 Record keeping and Reporting Requirements [326 IAC 12, 40 CFR 60.465]

(a) The Permittee shall identify, record, and submit awritten report to IDEM, OAQ every calendar quarter of each instance in which the volume-weighted average of the total mass of VOC's emitted to the atmosphere per volume of applied coating solids (N) is greater than the limit specified under D.10.4. If no such instances have occurred during a particular quarter, a report stating this shall be submitted to IDEM, OAQ, quarterly.

(b) The Permittee shall include in the quarterly reports, instances when the thermal oxidizer temperature drops as defined under D.10.11. If no such periods occur, the owner or operator shall state this in the report.

(c) The Permittee shall maintain at the source, for a period of at least two (2) years, records of all data and calculations used to determine monthly VOC emissions from each affected facility and to determine the monthly emission limit, where applicable. The Permittee shall maintain, at the source, daily records of the thermal oxidizer combustion temperature.

D.10.13 Record Keeping Requirements

(a) To document compliance with Condition D.10.1, the Permittee shall maintain records in accordance with (1) through (5) below. Records maintained for (1) through (5) shall be taken monthly and shall be complete and sufficient to establish compliance with the VOC usage limits and/or the VOC emission limits established in Condition D.10.1.

(1) The VOC content of each coating material and solvent used less water.

(2) The amount of coating material and solvent used on a monthly basis.

Records shall include purchase orders, invoices, and material safety data sheets (MSDS) or any other information necessary to verify the type and amount used.

(3) The total VOC usage for each month.

(4) The continuous temperature records (on a three hour average basis) for the thermal oxidizer and the average temperature used to demonstrate compliance during the most recent compliant Stack test.

(5) Daily records of the duct pressure or fan amperage. The Permittee shall include in its daily record when a pressure or amperage reading is not taken and the reason for the lack of pressure or amperage reading (e.g. the process did not operate that day).

(b) To document compliance with the single and combined HAP limits in Condition D.10.1(d), the Permittee shall maintain records in accordance with (1) through (4) below. Records maintained for (1) through (4) shall be taken monthly and shall be complete and sufficient to establish compliance with the HAP emission limits established in Condition D.10.1(d).

(1) The amount and HAP content of each coating material and solvent used. records shall include inventory records and Material Safety Data Sheets (MSDS) necessary to verify the type and amount used.

(2) A log of the dates of use.

(3) The single and combined HAP usage for each month.

(4) The weight of the single and combined HAPs emitted for each compliance period.

(c) To document compliance with Condition D.10.11, the Permittee shall maintain a log of the thermal oxidizer temperature.

(d) All records shall be maintained in accordance with Section C.19- General Record Keeping Requirements, of this permit.

D.10.14 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.10.1 shall be submitted to the address listed in Section C.20 - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, no later than thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

SECTION D.13 FACILITY OPERATION CONDITIONS

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

Acid Regeneration

One (1) Pickle Line Acid Regeneration Facility; identified as ARF-1; approved for construction in 2007; exhausting to stack 93; consisting of:

(a) One (1) 21.2 MMBtu/hr natural-gas fired boiler;

(b) One (1) water treatment system; and

(c) Emissions controlled by a scrubber.

(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)]

D.13.1 PM/PM10 Limitations - Best Available Control Technology [326 IAC 2-2-3]

Pursuant to 326 IAC 2-2-3 (PSD - BACT):

(a) A scrubber shall control PM/PM10 emissions from the Pickle Line Acid Regeneration Facility.

(b) PM emissions from the Pickle Line Acid Regeneration Facility shall not exceed 0.022 grains per dry standard cubic foot (gr/dscf) and 2.5 pounds per hour (lb/hr).

(c) PM10 emissions from the Pickle Line Acid Regeneration Facility shall not exceed 0.022 grains per dry standard cubic foot (gr/dscf) and 2.5 pounds per hour (lb/hr).

(d) Visible emissions of the exhaust from the Pickle Line Acid Regeneration Facility shall not exceed five percent (5%) opacity, as determined by a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).

Compliance with these limitations satisfies the requirements of 326 IAC 2-2-3.

D.13.2 HAP Emissions [40 CFR Part 63, Subpart CCC][40 CFR Part 63, Subpart EEEE] [326 IAC 20]

The HCl emissions from the Pickle Line Acid Regeneration Facility shall not exceed 0.74 pounds per hour. Compliance with this limit in conjunction with the other HAP limitations on SDI's EAFs, IDI's RHF, and SDI's coating line will limit the source-wide potential to emit HCl to less than 10 tons per year and the potential to emit any combination of HAPs to less than 25 tons per year, and render the requirements of 40 CFR Part 63, Subparts CCC and EEEE not applicable.

D.13.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and its control device.

Compliance Determination Requirements

D.13.4 Particulate and HCl Control

Except as otherwise provided by statute, rule, or in this permit, and in order to comply with Conditions D.13.1 and D.13.2, the scrubber, used to control PM/PM10 and HCl emissions, shall be in operation at all times the Pickle Line Acid Regeneration Facility is in operation.

D.13.5 Testing Requirements [326 IAC 2-7-6(1),(6)][326 IAC 2-1.1-11]

(a) Within 180 days after initial start up, the Permittee shall perform PM/PM_{10} and opacity testing on the stack emissions from the Pickle Line Acid Regeneration Facility in order to demonstrate compliance with Condition D.13.1. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. PM_{10} includes filterable and condensable PM_{10}. Testing shall be completed using methods approved by the Commissioner and conducted in accordance with Condition C.9 - Performance Testing.

(b) Within 180 days after initial start up, the Permittee shall perform HCl testing on the stack emissions from the Pickle Line Acid Regeneration Facility in order to demonstrate compliance with Condition D.13.2. This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be completed using methods approved by the Commissioner and conducted in accordance with Condition C.9 - Performance Testing.

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

D.13.6 Scrubber Monitoring

(a) The Permittee shall monitor the recirculation pump discharge pressure and scrubbant flow rate at least once per day when the scrubber is in operation.

(b) When for any one reading, the recirculation pump discharge pressure is outside the normal range as specified by the manufacturer, or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(c) When for any one reading, the scrubbant flow rate is less than a minimum specified by the manufacturer or established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(d) The instrument used for determining the pressure or flow rate shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

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

D.13.7 Record Keeping Requirements

(a) To document compliance with Condition D.13.5, the Permittee shall maintain records of the results from the tests required by that condition.

(b) To document compliance with Condition D.13.6, the Permittee shall maintain records of the required scrubber operating parameters required by that condition. The Permittee shall include in its daily record when a discharge pressure or flow rate reading is not taken and the reason for the lack of a reading (e.g. the process did not operate that day).

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

SECTION D.14 FACILITY OPERATION CONDITIONS

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

Insignificant Activities

1. Specifically regulated insignificant activities as define in 326 IAC 20-6: One (1) Temper Mill [326 IAC 6-3-2]

2. Other Insignificant activities
   - (a) Space heaters, process heaters, or boilers using the following fuels:
     - (i) Natural gas-fired combustion sources with heat input equal to or less than ten million (10,000,000) Btu per hour.
     - (ii) Propane or liquefied petroleum gas, or butane-fired combustion sources with heat input equal to or less than six million (6,000,000) Btu per hour.
   - (b) Equipment powered by diesel fuel fired or natural gas fired internal combustion engines of capacity equal to or less than five hundred thousand (500,000) British thermal units per hour except where total capacity of equipment operated by one (1) stationary source as defined by subdivision (38) exceeds two million (2,000,000) British thermal units per hour.
   - (c) Combustion source flame safety purging on startup.
   - (d) Fuel dispensing activities, including the following:
     - (i) A gasoline fuel transfer dispensing operation handling less than or equal to one thousand three hundred (1,300) gallons per day and filling storage tanks having a capacity equal to or less than ten thousand five hundred (10,500) gallons. Such storage tanks may be in a fixed location or on mobile equipment.
     - (ii) A petroleum fuel other than gasoline dispensing facility, having a storage tank capacity less than or equal to ten thousand five hundred (10,500) gallons, and dispensing three thousand five hundred (3,500) gallons per day or less. A petroleum fuel, other than gasoline, dispensing facility having a storage capacity less than or equal to 10,500 gallons, and dispensing less than or equal to 230,000 gallons per month.
   - (e) The following VOC and HAP storage containers:
     - (i) Storage tanks with capacity less than or equal to one thousand (1,000) gallons and annual throughputs equal to or less than twelve thousand (12,000) gallons.
     - (ii) Vessels storing lubricating oils, hydraulic oils, machining oils, and machining fluids.
   - (f) Refractory storage not requiring air pollution control equipment.
   - (g) Equipment used exclusively for filling drums, pails, or other packaging containers with the following: Lubricating oils, Waxes and Greases.
   - (h) Application of: oils; greases; lubricants; and nonvolatile material; as temporary protective coatings.
   - (i) Machining where an aqueous cutting coolant continuously floods the machining interface.
   - (j) Closed loop heating and cooling systems.
   - (k) Activities associated with the treatment of wastewater streams with an oil and grease content less than or equal to 1% by volume.
   - (l) Any operation using aqueous solutions containing less than 1% by weight of VOCs, excluding HAPS.

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

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

Insignificant Activities (continued):

(m) Activities associated with the transportation and treatment of sanitary sewage, provided discharge to the treatment plant is under the control of the owner or Operator, that is, an on-site sewage treatment facility.

(n) Any operation using aqueous solutions containing less than or equal to one percent (1%) by weight of VOCs excluding HAPs.

(o) Noncontact cooling tower systems with the following: Forced and induced draft cooling tower system not regulated under a NESHAP.

(p) Replacement or repair of electrostatic precipitators, bags in baghouses and filters in other air filtration equipment.

(q) Heat exchanger cleaning and repair.

(r) Process vessel degassing and cleaning to prepare for internal repairs.

(s) Covered conveyors for solid raw material, including the following:

(i) Coal or coke conveying of less than or equal to three hundred sixty (360) tons

(ii) Limestone conveying of less than or equal to seven thousand two hundred (7,200) tons per day for sources other than mineral processing plants constructed after August 31, 1983.

(t) Purging of gas lines and vessels that is related to routing maintenance and repair of buildings, structures, or vehicles at the source where air emissions from those activities would not be associated with any production process.

(u) Equipment used to collect any material that might be released during a malfunction, process upset, or spill cleanup, including catch tanks, temporary liquid separators, tanks, and fluid handling equipment.

(v) Blow down for any of the following: sight glass; boiler; compressors; pumps; and cooling tower.

(w) Activities associated with emergencies, including the following:

(i) On-site fire training approved by the department.

(ii) Emergency generators as follows: Gasoline generators not exceeding one hundred ten (110) horsepower and Diesel generators not exceeding one thousand six hundred (1,600) horsepower.

(iii) Stationary fire pump engines.

(x) A laboratory as defined in 326 IAC 2-7-1(21)(D)

(y) Degreasing operations that do not exceed 145 gallons per 12 months, except if subject to 326 IAC 20-6.

(z) Cleaners and solvents characterized as follows: Having a vapor pressure equal to or less than 2 kPa; 15 mm Hg; or 0.3 psi measured at 38 C (100°F).

(The information describing the processes 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)]

D.14.1 Particulate [326 IAC 6-3-2]

(a) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), the allowable particulate emission pound per hour limitation from the temper mill shall be calculated using the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of 60,000 pounds per hour shall be accomplished by use of the equation:

$E = 55.0\ P^{0.11} - 40$ where E = rate of emission in pounds per hour; and P = process weight rate in tons per hour

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

Part 70 Quarterly Report

Source Name: Steel Dynamics, Inc.
Source Address: 4500 County Road 59, Butler, IN 46721
Mailing Address: 4500 County Road 59, Butler, IN 46721
Part 70 Permit No.: T033-8068-00043
Facility: 2-side, 2-coat, coil coating line (paint line)
Parameter: single HAP emissions
Limits: 10 tons per 12 consecutive month period with compliance demonstrated on a monthly basis

Quarter _____ YEAR:_____

	Column 1	Column 2	Column 3 Column 1 + Column 2
Month	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

☐ No deviations occurred in this quarter.
☐ Deviation/s occurred in this quarter.

Submitted by: _____
Title/Position: _____
Signature: _____
Date: _____
Phone: _____

Attach a signed certification to complete this report.

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

Part 70 Quarterly Report

Source Name: Steel Dynamics, Inc.
Source Address: 4500 County Road 59, Butler, IN 46721
Mailing Address: 4500 County Road 59, Butler, IN 46721
Part 70 Permit No.: T033-8068-00043
Facility: 2-side, 2-coat, coil coating line (paint line)
Parameter: combination of HAP emissions
Limits: 14.6 tons per 12 consecutive month period with compliance demonstrated on a monthly basis

Quarter _____ YEAR:_____

	Column 1	Column 2	Column 3 Column 1 + Column 2
Month	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

☐ No deviations occurred in this quarter.

☐ Deviation/s occurred in this quarter.

Submitted by: _____
Title/Position: _____
Signature: _____
Date: _____
Phone: _____

Attach a signed certification to complete this report.

Indiana Department of Environmental Management
Office of Air Quality

Addendum to the Technical Support Document
for a
Significant Source Modification and Significant Permit Modification
to a Part 70 Permit

Source Background and Description

Source Name:	Steel Dynamics, Inc.
Source Location:	4500 County Road 59, Butler, Indiana 46721
County:	Dekalb
SIC Code:	3312
Operation Permit No.:	T033-8068-00043
Operation Permit Issuance Date:	October 4, 2006
Significant Source Modification No.:	033-23028-00043
Significant Permit Modification No.:	033-24411-00043
Permit Reviewer:	ERG/BS

On August 3, 2007, the Office of Air Quality (OAQ) had a notice published in the Auburn Evening News of Butler, Indiana, stating that Steel Dynamics, Inc. ("SDI") had applied for a Significant Source Modification and a Significant Permit Modification to a Part 70 Permit relating to: the construction of a pickle line acid regeneration facility, re-routing emissions from one of its electric arc furnaces to a new baghouse and stack, and the construction of a new dust silo. The notice also stated that OAQ proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

On September 3, 2007, SDI submitted an edited version of the permit documents as a substitution for comments on the proposed documents. The following is description of the proposed edits and IDEM responses to the proposed edits. Added text is shown as bold and deleted text is shown as strikeout. When conditions are added or deleted, the other conditions are renumbered accordingly, and the Table of Contents modified to reflect these changes.

Comment 1:

Please make the following changes to the title page:

The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit, ***except where it is otherwise stated in the permit,*** *is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Noncompliance with any provision of this permit, except any provision specifically designated as not federally enforceable, constitutes a violation of the Clean Air Act****,*** ***except where it is otherwise stated in the permit****. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.*

Response to Comment 1:

IDEM, OAQ believes that the cover page sufficiently describes the subject matter contained therein and should not be edited as proposed.

No changes were made to the permit as a result of this comment.

Comment 2:

Please remove the construction dates from the facility descriptions in the A.2 and D Sections of the permit.

Response to Comment 2:

The year in which an emission in built is provided in the facility descriptions because that vital information is used to determine the applicability of state and federal regulations. This information is included in all source modifications and Part 70 permits.

No changes were made to the permit as a result of this comment.

Comment 3:

Please make the following descriptive changes to Sections A.1 and D:

1. Specify that the listed capacity of emission units is the nominal capacity. This is already done for some emission units.

2. Remove the construction dates for all emission units.

3. Specify that the 'F' in LMF is Furnaces, not Facility.

Response to Comment 3:

IDEM, OAQ includes construction dates for emission units because that information can be a necessary factor in determining rule applicability. The construction dates will remain in the permit.

The following changes were made to the permit:

(Section A.3 and Section D)

(b) Continuous Casters

Two (2) continuous casters (CC #1 South, constructed in 1995 and CC #2 North, constructed in 1998), each with a **nominal** capacity of 225 tons per hour. Particulate (PM/PM10) emissions are controlled by canopy hoods over each caster exhausting to the EAF baghouse through Stack 01.

...

(c) Miscellaneous natural gas combustion sources

(1) One (1) ladle dryout station (LDS), with a **nominal** heat input of 10 MMBtu per hour.

(2) Four (4) ladle preheat stations (LPS), with a **nominal** heat input of 10 MMBtu per hour each.

(3) Three (3) tundish dryers with **nominal** heat input capacity of 1.5 MMBtu per hour each,

(4) Two (2) tundish ladle preheaters with a **nominal** heat input capacity of 9.4 MMBtu per hour each, and

(5) Lancing and cutting of skulls, coils and steel scrap.

...

Ladle Metallurgical Stations

Two (2) Ladle Metallurgical Stations (LMS) (South constructed in 1995 and North constructed in 1998), each with a nominal capacity of 200 tons per hour. Particulate (PM/PM10) emissions are controlled by the Ladle Metallurgical ~~Facility~~ **Furnaces** (LMF) baghouse (constructed in 1998) exhausting through Stack 61. The LMS consists of the following:

...

Slag Handling Operation

...

Fugitive emissions from **parts of** the slag handling operations are controlled as needed by water sprays.

Comment 4:

Change the description of the acid regeneration facility to indicate that the water treatment system is not a part of the facility and that the scrubber is integral. The scrubber serves a primary purpose other than pollution control, the acid regeneration facility can not operate without it and the scrubber has an overwhelming positive net economic effect.

In addition, delete Conditions D.13.1(a) and D.13.4 which require the use of the scrubber. Revise Condition D.13.3 – a PMP should not be required for integral controls.

Response to Comment 4:

SDI has not provided sufficient information in support of its claim that the scrubber is integral to the operation of the acid regeneration facility. For example, SDI indicates that the scrubber has an overwhelming positive net economic effect. However, SDI has not provided an economic analysis. If SDI would like to address this matter further, it may submit a complete permit modification application to IDEM, OAQ.

No changes were made to the permit as a result of this comment.

Comment 5:

SDI does not operate brazing equipment, cutting torches, soldering equipment, and welding equipment related to manufacturing activities not resulting in the emission of HAPS. Please remove it from Sections A.4 and D.14.

Response to Comment 5:

The following changes were made to Sections A.4 and D.14 of the permit as a result of this comment:

1. Specifically regulated insignificant activities, which are specifically regulated as defined in 326 IAC 2-7-1(21): **One (1)**
   ~~(a)~~ Temper Mill [326 IAC 6-3-2]**.**
   ~~(b) The following equipment related to manufacturing activities not resulting in the emission of HAPS: brazing equipment, cutting torches, soldering equipment, welding equipment. [326 IAC 6-3-2]~~

Comment 6:

Please add the following phrase to the headers of Sections D.1, D.10 and D.14:

To the extent not already superseded, all operating permit conditions found in previously-issued construction permits relating to the units described in this Section D.1 Facility Description are hereby superseded by this Section D.1 of PSD/SSM 033-23028-00043.

Response to Comment 6:

Condition B.13 (Prior Permit Superseded) adequately addresses the supersession of permits and additional language in the permit D sections is not necessary.

No changes were made to the permit as a result of this comment.

Comment 7:

In Section D.1, please:

1. Remove all references to past permits in the permit conditions;

2. Revise Condition D.1.1 to clarify that the Subpart AAa limit only applies to filterable PM emissions due solely to EAF operations;

3. Revise Condition D.1.2(a)(1) to clarify that the required controls address only filterable particulates and not condensable particulate;

4. Revise Condition D.1.2(a)(3) to indicate that the filterable limits for EAF #1 South and EAF #2 North are for PM10 and not PM;

5. Revise Condition D.1.2(a)(3) to indicate that the filterable particulate limit for EAF #1 South is 0.0032 gr/dscf and 35.7 pounds per hour;

6. Revise Condition D.1.2(a) to remove the capture, control and stack height requirements;

7. Remove Condition D.1.2(d);

Response to Comment 7:

New Source Review (NSR) conditions include references to past permits in which the respective requirements were established for the purpose of historical documentation. Such references contribute to the accuracy and clarity of the permit. Should a question arise regarding the nature of a NSR requirement, the reference directs interested parties to the founding document.

IDEM recognizes that 326 IAC 12 and 40 CFR Part 60, Subpart AAa states that the 0.0052 gr PM/dscf limit applies to only emissions from EAF operations.

IDEM, OAQ acknowledges that baghouses are not required to control condensable PM10 and that Condition D.1.2 can be revised to clarify this fact. However, the DSE system and canopy hoods do capture condensable PM10.

PM emissions from the modification are subject to PSD review. The BACT determination included in Appendix B indicates that the filterable limits for the EAFs cover PM and PM10. That BACT determination indicates that the respective filterable PM/PM10 limits on EAF #1 South are 0.0018 gr/dscf and 20.1 pounds per hour.

Appendix B states that PM/PM10 BACT for the EAF baghouses includes capture, control and stack height requirements.

Condition D.1.2(d) is a PM/PM10 BACT requirement for proposed EAF dust silo 5c. See the TSD for an explanation for why this requirement is necessary. This condition will not be removed.

The following changes were made as a result of these comments:

D.1.1 Particulate Matter (PM) Limitations [40 CFR Part 60, Subpart AAa]

Pursuant to 40 CFR 60, Subpart AAa (Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarbonization Vessels Constructed After August 7, 1983), particulate matter emissions from the EAF baghouse**s, due solely to EAF operations,** shall not exceed 0.0052 grains per dry standard cubic feet.

D.1.2 Particulate (PM/PM-10) Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to PSD CP 033-8091-00043, issued June 25, 1997, PSD SSM 033-23028-00043 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements):

(1) The PM/PM10 emissions from EAF #1 South shall be controlled by a direct shell evacuation (DSE) system and canopy hood with 100 percent overall capture exhausted to EAF Baghouse 1 with a minimum 99.85 control efficiency **for filterable PM/PM10**, discharging through Stack 01 at a height of 125 feet above the ground. A slight negative pressure shall be maintained to draw particulate matter through the DSE duct.

(2) The PM/PM10 emissions from EAF #2 North shall be controlled by a direct shall evacuation (DSE) system and canopy hood with 100 percent overall capture and shall exhaust to EAF Baghouse 2 with a minimum 99.85 control efficiency **for filterable PM/PM10,** which discharges through Stack 92 at a height of 125 feet above the ground. A slight negative pressure shall be maintained to draw particulate matter through the DSE duct.

Comment 8:

Please revise Condition D.1.3 (NOx Limitations - Best Available Control Technology) by removing:

(1) The requirement to use low NOx burners, and

(2) The limitations on heat input capacity.

Response to Comment 8:

The respective provisions are PSD BACT requirements. Revisions to existing PSD BACT requirements will not be considered unless the appropriate permit application is received by IDEM, OAQ and it includes a re-evaluation of PSD BACT. At this time, SDI has not submitted an application in support of the proposed changes.

No changes were made to the permit as a result of this comment.

Comment 9:

Please clarify the emission limits in Condition D.1.5 by including references to the electric arc furnaces (EAFs).

In addition, remove the phrase "to ensure further combustion of the CO" as this information is descriptive and not part of the BACT requirement.

Also remove the requirement to maintain an adjustment gap.

Response to Comment 9:

The requirement to maintain an adjustment gap between the EAF direct shell evacuation system (DSE) and the remaining water cooled duct to common baghouse is a PSD BACT requirement. Revisions to existing PSD BACT requirements will not be considered unless the appropriate permit application is received by IDEM, OAQ and it includes a re-evaluation of PSD BACT. At this time, SDI has not submitted an application in support of the proposed changes.

The following changes were made to the permit as a result of this comment:

D.1.5 Carbon Monoxide (CO) Limitations - Best Available Control Technology [326 IAC 2-2]

Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD – Control Technology Review; Requirements), the CO emissions from EAFs shall be controlled by an adjustment gap between the EAF direct shell evacuation system (DSE) and the remaining water cooled duct to common baghouse. The CO emissions **from each EAF** shall not exceed 2.0 pounds per ton of hot steel produced. The total emissions **from EAF #1 South (Stack 1) and EAF #2 North (Stack 92)** shall not exceed 800 pounds per hour. A slight negative pressure shall be maintained at the gap ~~to ensure further combustion of the CO~~.

Comment 10:

Condition D.1.6: Please:

(1) Remove the word "extensive" as this is a subjectively descriptive term;

(2) Clarify that a scrap management plan, not a program, is attached to the permit;

(3) Remove the statement "All grades of scrap shall be free of non-ferrous metals, non-metallic, excessive dirt, oil, grease, and tin plate. Heavily oiled scrap such as used engine blocks and machine shop borings shall not be used."; and

(4) Clarify that the VOC emission limits apply to the EAFs and not the baghouses. The EAFs are the sources of emissions.

Response to Comment 10:

SDI proposes to remove the existing BACT requirement regarding grades and types of scrap used at the source. Revisions to existing PSD BACT requirements will not be considered unless the appropriate permit application is received by IDEM, OAQ and it includes a re-evaluation of PSD BACT. At this time, SDI has not submitted an application in support of the proposed changes.

The following changes were made to the permit as a result of this comment:

D.1.6 Volatile Organic Compounds (VOC) Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), VOC emissions from EAFs shall be controlled through the ~~extensive~~ scrap management ~~program~~ **plan** attached to this permit. All grades of scrap shall be free of non-ferrous metals, non-metallic, excessive dirt, oil, grease, and tin plate. Heavily oiled scrap such as used engine blocks and machine shop borings shall not be used.

(b) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), the VOC emissions from the EAFs shall be limited to 0.13 pounds of VOC emissions per ton of steel produced. The total VOC emissions from ~~EAF Baghouse 1~~ **EAF #1 South (Stack 1)** and ~~EAF Baghouse 2~~ **EAF #2 North (Stack 1)** shall not exceed 52.0 pounds per hour.

Comment 11:

Condition D.1.8: Clarify that the lead emission limits apply to the EAFs and not the baghouses. The EAFs are the sources of emissions.

Response to Comment 11:

The lead emission limits apply to the stacks of the EAF baghouses – they are the post-control exhaust points for the emission units covered by the limit. As a result, the following changes were made to the permit as a result of this comment:

D.1.8 Lead Limitations - Best Available Control Technology (BACT) [326 IAC 2-2]

Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD Control Technology Review Requirements), the total lead emissions from EAF Baghouse 1 **(Stack 1)** and EAF Baghouse 2 **(Stack 92)** shall not exceed 0.19 pounds per hour.

Comment 12:

Remove Condition D.1.9 (Mercury Emissions - Best Available Control Technology).

Response to Comment 12:

Condition D.1.9 is a PSD BACT requirement and will not be removed from the permit. Revisions to existing PSD BACT requirements will not be considered unless the appropriate permit application is received by IDEM, OAQ and it includes a re-evaluation of PSD BACT. At this time, SDI has not submitted an application in support of the proposed changes.

Comment 13:

Please make the following changes to Condition D.1.10:

1. Remove the statement relating opacity and capture in D.1.10(b).

2. Remove Condition D.1.10(c).

3. Remove Condition D.1.10(f).

Response to Comment 13:

Condition D.1.10(b) is from CP 033-8091-00043, issued June 25, 1997, and provides a relationship between capture efficiency of the direct shell evacuation system/canopy hood and the opacity of fugitive emissions from the meltshop. In addition, SDI has not provided an explanation justifying its request to remove the condition.

Condition D.1.10(c) is a PSD BACT requirement from CP 033-3692-00043, issued October 7, 1994. Revisions to existing PSD BACT requirements will not be considered unless the appropriate permit application is received by IDEM, OAQ and it includes a re-evaluation of PSD BACT. At this time, SDI has not submitted an application in support of the proposed changes.

Condition D.1.10(f) is a PSD BACT requirement established by this permit. See Appendix B for the corresponding BACT determination.

No changes were made to the permit as a result of these comments.

Comment 14:

In Conditions D.1.10 and D.1.12, please replace all references to EAF Baghouse 1 and EAF Baghouse 2 with EAF #1 South (Stack 1) and EAF #2 North (Stack 92), respectively.

Response to Comment 14:

The opacity emission limits apply to the stacks of the EAF baghouses – they are the post-control exhaust points for the emission units covered by the limit. As a result, the following changes were made to the permit as a result of this comment:

D.1.10 Visible Emission Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review Requirements), visible emissions from the EAF Baghouse 1 and EAF Baghouse 2 stack exhausts **(Stack 1 and Stack 92, respectively)** shall not exceed three percent (3%) opacity**,** based on a six (6) minute average (24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9). This condition will satisfy the NSPS 40 CFR Part 60 Subpart AAa, 40 CFR 60.272a.

…

D.1.12 Visible Emissions Limitations (NSPS) [40 CFR Part 60.272(a)]

(a) Pursuant to 40 CFR 60.272(a)(2), the visible emissions ~~from stacks exhausting emissions~~ from the EAF Baghouse 1 and EAF Baghouse 2 stack exhausts **(Stack 1 and Stack 92, respectively)** shall not exceed three percent (3%) opacity, based on a six-minute average (24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9).

…

Comment 15:

Remove the reference to EAF dust silo 5c from Conditions D.1.13, D.1.15(c), and D.1.18(a).

Response to Comment 15:

EAF dust silo 5c must comply with a PSD BACT PM/PM10 emission limitation. In order to ensure continuous compliance with that limit, SDI must install and operate a bin vent filter (Condition D.1.15(c)), create, maintain and follow a Preventative Maintenance Plan (Condition D.1.13), and conduct visible emission notations (Condition D.1.18(a)) of the exhaust from the silo. SDI has not provided a justification in support of its request.

No changes were made to the permit as a result of this comment.

Comment 16:

Regarding Condition D.1.14:

1. Revise the condition to indicate that the testing required by the condition must be completed within 365 days after initial startup of EAF Baghouse #2.

2. Remove the statement that requires testing to be completed in accordance with Section C.9. It is Condition C.9 that contains general testing requirements. Please state as such.

3. Delete Condition D.1.14(g).

Response to Comment 16:

SDI has not provided a justification in support of its requests. IDEM, OAQ believes that the testing schedule and requirements included in Condition D.1.14 are appropriate.

The following changes were made to the permit as a result of this comment:

D.1.14 Testing Requirements [326 IAC 2-7-6(1),(6)][326 IAC 2-1.1-11]

(a) Within 180 days after initial startup of EAF Baghouse #2 and in order to demonstrate compliance with Condition D.1.2(a), the Permittee shall perform PM/PM10 testing on EAF #1 South and EAF #2 North (Stack 01 and Stack 92) utilizing methods as approved by the Commissioner and in accordance with ~~Section~~ **Condition** C.9 - Performance Testing. PM10 includes filterable and condensable PM10. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(b) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.1.3(a), the Permittee shall perform NOx testing on EAF #1 South and EAF #2 North (Stack 01 and Stack 92), utilizing methods as approved by the Commissioner in accordance with ~~Section~~ **Condition** C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(c) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Condition D.1.4(a) and (b), the Permittee shall perform simultaneous, SO2 testing on EAF #1 South, EAF #2 North and the LMF (Stack 01, Stack 92 and LMF Stack 61), utilizing methods as approved by the Commissioner in accordance with ~~Section~~ **Condition** C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(d) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.1.5, the Permittee shall perform CO testing on EAF #1 South and EAF #2 North (Stack 01 and Stack 92) utilizing methods as approved by the Commissioner in accordance with ~~Section~~ **Condition** C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(e) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.1.6(b), the Permittee shall perform VOC testing on EAF #1 South and EAF #2 North (Stack 01 and Stack 92) utilizing methods as approved by the Commissioner in accordance with ~~Section~~ **Condition** C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(f) Within 180 days after issuance of this Part 70 permit, and in order to demonstrate compliance with Conditions D.1.8 and D.1.9, the Permittee shall perform lead and mercury testing on EAF #1 South (Stack 01) **and EAF #2 North (Stack 92)** utilizing methods as approved by the Commissioner in accordance with ~~Section~~ **Condition** C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(g) Within 180 days after initial startup of EAF Baghouse #2 and in order to demonstrate compliance with Conditions D.1.8 and D.1.9, the Permittee shall perform lead and mercury testing on EAF #2 North (Stack 92) utilizing methods as approved by the Commissioner in accordance with ~~Section~~ **Condition** C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

Comment 17:

Regarding Condition D.1.17:

1. Clarify that only the COMS required by the permit must be calibrated, maintained and operated.

2. Pursuant to 40 CFR 60.273a, the averaging periods for visible emission readings are a minimum of three 6-minute periods. Revise Condition D.1.17(d), accordingly.

3. Delete D.1.17(e).

Response to Comment 17:

SDI has not provided a justification in support of its request to delete Condition D.1.17(e). IDEM, OAQ believes that the condition is necessary as it clarifies that the Permittee must operate the COMS pursuant to 326 IAC 3-5 and 40 CFR Part 60.

The following changes were made to the permit as a result of this comment:

D.1.17 Visible Emission Observations and Continuous Opacity Monitoring [326 IAC 3-5] [40 CFR 60.273a]

Pursuant to 326 IAC 3-5 and 40 CFR 60.273a, the Permittee shall do the following to demonstrate compliance with Condition D.1.12**(a)**:

(a) The Permittee shall calibrate, maintain, and operate all ~~necessary~~ continuous opacity monitoring systems (COMS) and related equipment **required by this permit**.

(b) All COMS 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.

(c) In the event that a breakdown of a COMS occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem.

(d) Whenever a COM is malfunctioning or is down for maintenance, or repairs for a period of twenty-four (24) hours or more**,** and a backup COMS is not online within twenty-four (24) hours of shutdown or malfunction of the primary COMS, the Permittee shall provide a certified opacity reader, who may be an employee of the Permittee or an independent contractor, to self-monitor the emissions from the emission unit stack.

(1) Visible emission readings shall be performed in accordance with 40 CFR 60, Appendix A, Method 9, for a minimum of ~~five (5)~~ **three (3)** consecutive six (6) minute averaging periods beginning not more than twenty-four (24) hours after the start of the malfunction or down time.

(2) Method 9 opacity readings shall be repeated for a minimum of ~~five (5)~~ **three (3)** consecutive six (6) minute averaging periods at least twice per day during daylight operations, with at least four (4) hours between each set of readings, until a COMS is online.

(3) Method 9 readings may be discontinued once a COMS is online.

(4) Any opacity exceedances determined by Method 9 readings shall be reported with the Quarterly Opacity Exceedances Reports.

(e) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous opacity monitoring system pursuant to 326 IAC 3-5 and 40 CFR 60.

Comment 18:

Revise Condition D.1.18(e) to clarify that Condition C.16 contains general information regarding how the Permittee should respond to abnormal emissions.

In addition, delete the statement in Conditions D.1.18(e) and D.13.6 regarding failure to take response steps.

Response to Comment 18:

IDEM, OAQ believes that Conditions D.1.18(e) and D.13.6 are necessary and accurate. Failure to take response steps in accordance with Condition C.16 shall be considered a deviation from the permit so the respective statement will remain in the permit.

However, the following changes were made to the permit as a result of this comment:

D.1.18 Visible Emission Notations

…

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with ~~Section~~ **Condition** C.16 - Response to Excursions or Exceedances. Failure to take response steps in accordance with ~~Section~~ **Condition** C.16 - Response to Excursions or Exceedances shall be considered a deviation from this permit.

Comment 19:

Delete Condition D.1.19 and the corresponding record keeping requirements in Condition D.1.21(d).

Response to Comment 19:

SDI has not provided a justification in support of its request to delete Condition D.1.19. IDEM, OAQ believes that the condition is necessary to ensure continuous compliance with the permit requirements relating to the EAF baghouses.

No changes were made to the permit as a result of this comment.

Comment 20:

Condition D.1.20 does not match 40 CFR 60.273a and 40 CFR 60.274a. Please replace it with the exact language from the New Source Performance Standard.

Response to Comment 20:

The following changes were made to the permit as a result of this comment:

~~D.1.20 Monitoring of Operations [40 CFR 60.274a] [40 CFR 60.273a]~~

~~Pursuant to CP 033-8091-00043 and 40 CFR 60.274a, the Permittee shall comply with the following monitoring requirements for the EAFs:~~

~~(a) Except as provided under item (c) of this condition, the Permittee shall check and record on a once per shift basis the furnace static pressure if the DEC system is in use, and a furnace static pressure gauge is installed according to item (d) of this condition and either:~~

~~(1) check and record the control system fan motor amperes and damper positions on a once-per-shift basis;~~

~~(2) calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood; or~~

~~(3) calibrate, and maintain a monitoring device that continuously records the volumetric flow rate at the control device inlet and checks 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 ± plus or minus ten (10%) percent over its normal operating range and shall be calibrated according to the manufacturer's instructions.~~

~~The IDEM, OAQ, or the U.S. 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) The Permittee of an EAF, shall determine either:~~

~~(1) the control system fan motor amperes and all damper positions or~~
~~(2) the volumetric flow rate through each separately ducted hood~~

~~during all periods in which a hood is operated for the purpose of capturing emissions from the EAFs.~~

~~(c) 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) Except as provided under item (f) of this condition, if emissions during any phase of the heat time are controlled by the use of a DEC system, the Permittee shall, calibrate, and maintain a monitoring device that allows the pressure in the free space inside the EAF to be monitored. The pressure shall be recorded as 15-minute integrated averages.~~

~~The monitoring device may be installed in any appropriate location in the EAF or DEC duct prior to the introduction of ambient air such that reproducible results will be obtained.~~

~~The pressure monitoring device shall have an accuracy of ± 5 millimeter of water gauge over its normal operating range and shall be calibrated according to the manufacturer's instructions.~~

~~(e) Except as provided under item (f) in this condition, when the Permittee is required to demonstrate compliance with the standard under Condition D.1.12(a) and at any other time the U.S. EPA may require under Section 114 of the CAA, the pressure in the free space inside the EAF shall be determined during the melting and refining period(s) using the monitoring device required under item (d) of this condition.~~

~~The pressure determined during the most recent demonstration of compliance shall be maintained at all times when the EAF is operating in a meltdown and refining period.~~

~~(f) Pursuant to 40 CFR 60.273a(d), a furnace static pressure monitoring device is not required on any EAF equipped with a DEC system if observations of the shop opacity are performed by a certified visible emission observer as follows:~~

~~(1) Shop opacity observations shall be conducted at least once per day when the furnace is operating in the meltdown and refining period.~~

~~(2) Shop opacity shall be determined as the arithmetic average of 24 consecutive 15-second opacity observations of emissions from the shop taken in accordance with Method 9.~~

~~(3) Shop opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of visible emissions, only one observation of shop opacity will be required.~~

~~(4) In this case, the shop opacity observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident.~~

D.1.20 New Source Performance Standards – Emission Monitoring [40 CFR 60.273a]

Pursuant to 326 IAC 12 and 40 CFR 60.273a:

(a) Except as provided under paragraphs (b) and (c) of this section, a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subpart.

(b) No continuous monitoring system shall be required on any control device serving the dust-handling system.

(c) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) is not required on any modular, multi-stack, negative-pressure or positive-pressure fabric filter if observations of the opacity of the visible emissions from the control device are performed by a certified visible emission observer; or on any single-stack fabric filter if visible emissions from the control device are performed by a certified visible emission observer and the owner installs and continuously operates a bag leak detection system according to paragraph (e) of this section. Visible emission observations shall be conducted at least once per day for at least three 6-minute periods when the furnace is operating in the melting and refining period. All visible emissions observations shall be conducted in accordance with Method 9. If visible emissions occur from more than one point, the opacity shall be recorded for any points where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of the visible emission, only one set of three 6-minute observations will be required. In that case, the Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. Records shall be maintained of any 6-minute average that is in excess of the emission limit specified in §60.272a(a).

(d) A furnace static pressure monitoring device is not required on any EAF equipped with a DEC system if observations of shop opacity are performed by a certified visible emission observer as follows: Shop opacity observations shall be conducted at least once per day when the furnace is operating in the meltdown and refining period. Shop opacity shall be determined as the arithmetic average of 24 consecutive 15-second opacity observations of emissions from the shop taken in accordance with Method 9. Shop opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of visible emissions, only one observation of shop opacity will be required. In this case, the shop

opacity observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident.

(e) A bag leak detection system must be installed and continuously operated on all single-stack fabric filters if the owner or operator elects not to install and operate a continuous opacity monitoring system as provided for under paragraph (c) of this section. In addition, the owner or operator shall meet the visible emissions observation requirements in paragraph (c) of this section. The bag leak detection system must meet the specifications and requirements of paragraphs (e)(1) through (8) of this section.

(1) The bag leak detection system must be certified by the manufacturer to be capable of detecting particulate matter emissions at concentrations of 1 milligram per actual cubic meter (0.00044 grains per actual cubic foot) or less.

(2) The bag leak detection system sensor must provide output of relative particulate matter loadings and the owner or operator shall continuously record the output from the bag leak detection system using electronic or other means (*e.g.,* using a strip chart recorder or a data logger.)

(3) The bag leak detection system must be equipped with an alarm system that will sound when an increase in relative particulate loading is detected over the alarm set point established according to paragraph (e)(4) of this section, and the alarm must be located such that it can be heard by the appropriate plant personnel.

(4) For each bag leak detection system required by paragraph (e) of this section, the owner or operator shall develop and submit to the Administrator or delegated authority, for approval, a site-specific monitoring plan that addresses the items identified in paragraphs (i) through (v) of this paragraph (e)(4). For each bag leak detection system that operates based on the triboelectric effect, the monitoring plan shall be consistent with the recommendations contained in the U.S. Environmental Protection Agency guidance document "Fabric Filter Bag Leak Detection Guidance" (EPA–454/R–98–015). The owner or operator shall operate and maintain the bag leak detection system according to the site-specific monitoring plan at all times. The plan shall describe the following:

(i) Installation of the bag leak detection system;

(ii) Initial and periodic adjustment of the bag leak detection system including how the alarm set-point will be established;

(iii) Operation of the bag leak detection system including quality assurance procedures;

(iv) How the bag leak detection system will be maintained including a routine maintenance schedule and spare parts inventory list; and

(v) How the bag leak detection system output shall be recorded and stored.

(5) 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 (if applicable).

(6) Following initial adjustment, the owner or operator shall not adjust the averaging period, alarm set point, or alarm delay time without approval from the Administrator or delegated authority except as provided for in paragraphs (e)(6)(i) and (ii) of this section.

(i) Once per quarter, the owner or operator may adjust the sensitivity of the bag leak detection system to account for seasonal effects including temperature and humidity according to the procedures identified in the site-specific monitoring plan required under paragraphs (e)(4) of this section.

(ii) If opacities greater than zero percent are observed over four consecutive 15-second observations during the daily opacity observations required under paragraph (c) of this section and the alarm on the bag leak detection system does not sound, the owner or

operator shall lower the alarm set point on the bag leak detection system to a point where the alarm would have sounded during the period when the opacity observations were made.

(7) For negative pressure, induced air baghouses, and positive pressure baghouses that are discharged to the atmosphere through a stack, the bag leak detection sensor must be installed downstream of the baghouse and upstream of any wet scrubber.

(8) Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.

(f) For each bag leak detection system installed according to paragraph (e) of this section, the owner or operator shall initiate procedures to determine the cause of all alarms within 1 hour of an alarm. Except as provided for under paragraph (g) of this section, the cause of the alarm must be alleviated within 3 hours of the time the alarm occurred by taking whatever corrective action(s) are necessary. Corrective actions may include, but are not limited to, the following:

(1) Inspecting the baghouse for air leaks, torn or broken bags or filter media, or any other condition that may cause an increase in particulate emissions;

(2) Sealing off defective bags or filter media;

(3) Replacing defective bags or filter media or otherwise repairing the control device;

(4) Sealing off a defective baghouse compartment;

(5) Cleaning the bag leak detection system probe or otherwise repairing the bag leak detection system; and

(6) Shutting down the process producing the particulate emissions.

(g) In approving the site-specific monitoring plan required in paragraph (e)(4) of this section, the Administrator or delegated authority may allow owners or operators more than 3 hours to alleviate specific conditions that cause an alarm if the owner or operator identifies the condition that could lead to an alarm in the monitoring plan, adequately explains why it is not feasible to alleviate the condition within 3 hours of the time the alarm occurred, and demonstrates that the requested additional time will ensure alleviation of the condition as expeditiously as practicable.

[49 FR 43845, Oct. 31, 1984, as amended at 54 FR 6672, Feb. 14, 1989; 64 FR 10111, Mar. 2, 1999; 70 FR 8532, Feb. 22, 2005]

D.1.21 New Source Performance Standards – Monitoring of Operations [40 CFR 60.274a]

Pursuant to 326 IAC 12 and 40 CFR 60.274a:

(a) The owner or operator subject to the provisions of this subpart shall maintain records of the following information:

(1) All data obtained under paragraph (b) of this section; and

(2) All monthly operational status inspections performed under paragraph (c) of this section.

(b) Except as provided under paragraph (e) of this section, the owner or operator subject to the provisions of this subpart shall check and record on a once-per-shift basis the furnace static pressure (if DEC system is in use, and a furnace static pressure gauge is installed according to paragraph (f) of this section) and either: check and record the control system fan motor amperes and damper position on a once-per-shift basis; install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood; or install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate at the control device inlet and

check and record 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 Administrator may require the owner or operator to demonstrate the accuracy of the monitoring device(s) relative to Methods 1 and 2 of appendix A of this part.

(c) When the owner or operator of an affected facility is required to demonstrate compliance with the standards under §60.272a(a)(3) and at any other time that the Administrator may require (under section 114 of the CAA, as amended) either: the control system fan motor amperes and all damper positions, the volumetric flow rate through each separately ducted hood, or the volumetric flow rate at the control device inlet and all damper positions shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the affected facility subject to paragraph (b) of this section. The owner or operator may petition the Administrator for reestablishment of these parameters whenever the owner or operator can demonstrate to the Administrator's satisfaction that the affected facility operating conditions upon which the parameters were previously established are no longer applicable. The values of these parameters as determined during the most recent demonstration of compliance shall be maintained at the appropriate level for each applicable period. Operation at other than baseline values may be subject to the requirements of §60.276a(c).

(d) Except as provided under paragraph (e) of this section, the owner or operator 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.

(e) The owner or operator may petition the Administrator to approve any alternative to either the monitoring requirements specified in paragraph (b) of this section or the monthly operational status inspections specified in paragraph (d) of this section if the alternative will provide a continuous record of operation of each emission capture system.

(f) Except as provided for under §60.273a(d), if emissions during any phase of the heat time are controlled by the use of a DEC system, the owner or operator shall install, calibrate, and maintain a monitoring device that allows the pressure in the free space inside the EAF to be monitored. The pressure shall be recorded as 15-minute integrated averages. The monitoring device may be installed in any appropriate location in the EAF or DEC duct prior to the introduction of ambient air such that reproducible results will be obtained. The pressure monitoring device shall have an accuracy of ±5 mm of water gauge over its normal operating range and shall be calibrated according to the manufacturer's instructions.

(g) Except as provided for under §60.273a(d), when the owner or operator of an EAF controlled by a DEC is required to demonstrate compliance with the standard under §60.272a(a)(3), and at any other time the Administrator may require (under section 114 of the Clean Air Act, as amended), the pressure in the free space inside the furnace shall be determined during the meltdown and refining period(s) using the monitoring device required under paragraph (f) of this section. The owner or operator may petition the Administrator for reestablishment of the pressure whenever the owner or operator can demonstrate to the Administrator's satisfaction that the EAF operating conditions upon which the pressures were previously established are no longer applicable. The pressure determined during the most recent demonstration of compliance shall be maintained at all times when the EAF is operating in a meltdown and refining period. Operation at higher pressures may be considered by the Administrator to be unacceptable operation and maintenance of the affected facility.

(h) During any performance test required under §60.8, and for any report thereof required by §60.276a(f) of this subpart, or to determine compliance with §60.272a(a)(3) of this subpart, the owner or operator shall monitor the following information for all heats covered by the test:

(1) Charge weights and materials, and tap weights and materials;

(2) Heat times, including start and stop times, and a log of process operation, including periods of no operation during testing and the pressure inside an EAF when direct-shell evacuation control systems are used;

(3) Control device operation log; and

(4) Continuous opacity monitor or Method 9 data.

[49 FR 43845, Oct. 31, 1984, as amended at 64 FR 10111, Mar. 2, 1999; 65 FR 61758, Oct. 17, 2000; 70 FR 8533, Feb. 22, 2005]

Comment 21:

Regarding Condition D.1.21:

1. Delete the requirement to record metal throughput and gas usage from Condition D.1.21(a).

2. Condition D.1.21(c) has redundant conditions. Please delete the second and third sentences.

3. Replace Condition D.1.21(e) with the exact record keeping and reporting language from 40 CFR 60.276a.

4. Revise Condition D.1.21(f) to indicate that Condition C.19 includes general record keeping requirements.

Response to Comment 21:

The permit contains a number of hourly PSD BACT limits based on limits in terms of pounds (of pollutant) per MMBtu and pounds (of pollutant) per ton of metal produced. As a result, records of the metal produced and natural gas consumed by the EAFs is necessary.

Condition D.1.21(c) consists of only two sentences. Both state and clarify the necessary record keeping requirements for visible emission notations.

IDEM, OAQ believes that Condition D.1.21(f) is sufficient and does not require revisions to clarify its meaning.

The following changes were made to the permit as a result of this comment:

D.1.~~21~~ **22** Record Keeping Requirements ~~[40 CFR 60.276a]~~

(a) To demonstrate compliance with Conditions D.1.2 through D.1.12, the Permittee shall maintain records of the **metal** throughput, natural gas usage and opacity emission records for the melt shop operations.

…

~~(e) Pursuant to 40 CFR 60.276a, records of the measurements required in 40 CFR 60.274a, as also required in condition D.1.20, must be retained for at least 5 years following the date of the measurement.~~

~~(f)~~**(e)** All records shall be maintained in accordance with Section C.19 - General Record Keeping Requirements, of this permit.

D.1.23 Record Keeping and Reporting Requirements [40 CFR 60.276a]

Pursuant to 326 IAC 12 and 40 CFR 60.276a:

(a) Records of the measurements required in §60.274a must be retained for at least 2 years following the date of the measurement.

(b) Each owner or operator shall submit a written report of exceedances of the control device opacity to the Administrator semi-annually. For the purposes of these reports, exceedances are defined as all 6-minute periods during which the average opacity is 3 percent or greater.

(c) Operation at a furnace static pressure that exceeds the value established under §60.274a(g) and either operation of control system fan motor amperes at values exceeding ±15 percent of the value established under §60.274a(c) or operation at flow rates lower than those established under §60.274a(c) may be considered by the Administrator to be unacceptable operation and maintenance of the affected facility. Operation at such values shall be reported to the Administrator semiannually.

(d) The requirements of this section remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with this section, provided that they comply with the requirements established by the State.

(e) When the owner or operator of an EAF or AOD is required to demonstrate compliance with the standard under §60.275 (b)(2) or a combination of (b)(1) and (b)(2) the owner or operator shall obtain approval from the Administrator of the procedure(s) that will be used to determine compliance. Notification of the procedure(s) to be used must be postmarked at least 30 days prior to the performance test.

(f) For the purpose of this subpart, the owner or operator shall conduct the demonstration of compliance with §60.272a(a) of this subpart and furnish the Administrator a written report of the results of the test. This report shall include 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 emission capture equipment including other equipment or process(es) ducted to the same control device;

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

(6) Those data required under §60.274a(h) of this subpart;

(i) List of charge and tap weights and materials;

(ii) Heat times and process log;

(iii) Control device operation log; and

(iv) Continuous opacity monitor or 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.

(g) The owner or operator shall maintain records of all shop opacity observations made in accordance with §60.273a(d). All shop opacity observations in excess of the emission limit specified in §60.272a(a)(3) of this subpart shall indicate a period of excess emission, and shall be reported to the administrator semi-annually, according to §60.7(c).

(h) The owner or operator shall maintain the following records for each bag leak detection system required under §60.273a(e):

(1) Records of the bag leak detection system output;

(2) Records of bag leak detection system adjustments, including the date and time of the adjustment, the initial bag leak detection system settings, and the final bag leak detection system settings; and

(3) An identification of the date and time of all bag leak detection system alarms, the time that procedures to determine the cause of the alarm were initiated, if procedures were initiated within 1 hour of the alarm, the cause of the alarm, an explanation of the actions taken, the date and time the cause of the alarm was alleviated, and if the alarm was alleviated within 3 hours of the alarm.

[49 FR 43845, Oct. 31, 1984, as amended at 54 FR 6673, Feb. 14, 1989; 64 FR 10111, Mar. 2, 1999; 65 FR 61758, Oct. 17, 2000; 70 FR 8533, Feb. 22, 2005]

D.1.~~22~~ **24** Reporting Requirements [40 CFR 60.276a][326 IAC 3-5-7]

(a) The Permittee shall submit to IDEM, OAQ a quarterly excess emissions report, if applicable, based on the continuous opacity monitor (COM) data, pursuant to 326 IAC 3-5-7. 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.20 - General Reporting Requirements of this permit.

~~(b) Pursuant to 40 CFR 60.276a, the Permittee shall comply with the following reporting requirements:~~

~~(1) The Permittee shall submit a semi-annual written report of exceedances of the control device opacity to IDEM, OAQ, and the U.S. EPA.~~

~~(2) The Permittee shall submit semi-annually any values that exceed 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) to IDEM, OAQ, and the U.S. EPA.~~

(~~c~~ **b**) The reports submitted by the Permittee do require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Comment 22:

Delete Condition D.10.1(e); the condition is no longer applicable. The coating line has been in operation for years.

Response to Comment 22:

The following changes were made to the permit as a result of this comment:

D.10.1 Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) [326 IAC 2-2] [40 CFR Subpart SSSS]

Pursuant to SSM 033-15836-00043, issued December 31, 2002 and 326 IAC 2-2 (Prevention of Significant Deterioration) to maintain the minor status for this modification, the VOC emissions shall be limited as follows:

…

~~(e) During the first twelve (12) months of operation, the input of VOC shall be limited such that the total usage divided by the accumulated months of operation shall not exceed total tons per year as shown in item (a) above divided by twelve (12) months, which equals 324.5 tons per month for the 2-side, 2-coat, coil coating line.~~

Comment 23:

Revise Condition D.10.9(a) to require testing no later than 365 days after this permit. In addition, delete Condition D.10.9(c).

Response to Comment 23:

SDI has not provided a justification in support of its requests. IDEM, OAQ believes that the testing requirements of Condition D.10.9 are appropriate.

No changes were made to the permit as a result of this comment.

Comment 24:

Revise Condition D.10.13 to state that records may, not shall, include purchase orders, invoices, MSDSs, and inventory records. Also, delete Condition D.10.13(b)(2) which requires record keeping of the dates on which coatings are used.

Response to Comment 24:

IDEM, OAQ believes that records of dates, orders, invoices, MSDSs, and inventory records relating to coating use should be maintained to ensure compliance with the requirements of Section D.10. SDI has not provided a justification in support of its requests.

No changes were made to the permit as a result of this comment.

Comment 25:

Remove the 0.022 gr/dscf PM/PM10 and opacity limits from Condition D.13.1.

Response to Comment 25:

Those limits have been determined to be BACT. See Appendix B. SDI has not provided a justification in support of its requests.

No changes were made to the permit as a result of this comment.

Comment 26:

Delete the 40 CFR references in the title of Condition D.13.2.

Response to Comment 26:

Condition D.13.2 limits the HAP emissions from the acid regeneration facility in order to render the requirements of 40 CFR Part 63, Subparts CCC and EEEE not applicable.

No changes were made to the permit as a result of this comment.

Comment 27:

Regarding Condition D.13.5:

1. Revise the condition to indicate that the testing required must be completed within 365 days after initial startup of the acid regeneration facility.

2. Remove the statement that requires testing to be completed in accordance with Section C.9. It is Condition C.9 that contains general testing requirements. Please state as such.

Response to Comment 27:

SDI has not provided a justification in support of its requests. IDEM, OAQ believes that the testing requirements included in Condition D.13.5 are appropriate.

However, the following changes were made to the permit as a result of this comment:

D.13.5 Testing Requirements [326 IAC 2-7-6(1),(6)][326 IAC 2-1.1-11]

(a) Within 180 days after initial start up, the Permittee shall perform PM/PM_{10} and opacity testing on the stack emissions from the Pickle Line Acid Regeneration Facility in order to demonstrate compliance with Condition D.13.1. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. PM_{10} includes filterable and condensable PM_{10}. Testing shall be completed using methods approved by the Commissioner and conducted in accordance with ~~Section~~ **Condition** C**.9** - Performance Testing.

(b) Within 180 days after initial start up, the Permittee shall perform HCl testing on the stack emissions from the Pickle Line Acid Regeneration Facility in order to demonstrate compliance with Condition D.13.2. This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be completed using methods approved by the Commissioner and conducted in accordance with ~~Section~~ **Condition** C**.9** - Performance Testing.

Comment 28:

Delete Condition D.13.6(d).

Response to Comment 28:

IDEM, OAQ believes that Condition D.13.6(d) is necessary to clarify that an instrument used to determine the pressure drop or flow rate shall comply with Section C – Instrument Specifications.

No changes were made to the permit as a result of this comment.

On August 31, 2007 and September 4, 2007, Berger & Berger submitted comments on the proposed documents on behalf of several residents that live in the vicinity of SDI. The following is a summary of the comments and responses to all comments. Added text is shown as bold and deleted text is shown as strikeout. When conditions are added or deleted, the other conditions are renumbered accordingly, and the Table of Contents modified to reflect these changes.

Comment 1:

The applicant, SDI, proposes to add a new baghouse to service the melt shop building and to add a hydrochloric acid regeneration facility to recycle spent pickle liquor. These new emission sources are being permitted as Significant Source Modification No. 033-23028-00043 and Significant Permit Modification 033-24411-00043 ("the Project"). This comment addresses the new baghouse and Comment II addresses the new acid regeneration facility.

The Project includes a new melt shop baghouse that will handle 1,100,000 acfm of flow. 4/27/06 Ap., p. 1; 3/23/07 Letter Baugues to Sidner. The melt shop includes three processes: an electric arc furnace ("EAF"), a ladle metallurgical station, and a continuous caster. The EAF melts scrap metal, scrap substitutes, pebbled lime, and coke into molten steel. Alloys are added at the ladle metallurgical station, and continuous slabs of steel are produced in the continuous caster.

The emissions from the melt shop consist of two components. Process emissions are captured by the direct shell evacuation ("DSE") system or hoods and vented through the baghouse. These process emissions are currently routed to existing baghouses, including EAF Baghouse 1 North, the subject of the modification. Emissions not captured by the DSE and the canopy hoods are referred to as "fugitive" emissions and are vented directly to the atmosphere through an uncontrolled roof vent, referred to as a "roof monitor." Draft Permit, p. 8.

It is unclear exactly what emissions will be vented to the new EAF Baghouse 2. This question is important to answer as it determines the magnitude of the emissions and which pollutants are subject to PSD review. The Draft Permit, TSD, and file produced by IDEM do not clearly answer this question.

The Project includes a new baghouse. TSD, p. 3. However, the file produced by IDEM does not contain a process flow diagram that shows what emission streams will be treated by the new baghouse. Further, the correspondence in the IDEM-produced file is contradictory and confusing as to what streams will be treated by the new baghouse, variously suggesting that the new baghouse would collect dusts from existing EAF Baghouse 1, melt house fugitive dust, and the LMF/caster building dust.

First, some correspondence and the TSD indicate that the EAF 1 North exhaust will be routed to new EAF Baghouse 2, which will exhaust to stack 92. TSD, p. 3 & Appx. B, p. 1. Second, other correspondence indicates the new baghouse will control fugitive emissions from the melt shop building, using a fugitive collection system to improve the building air quality and protect workers. 4/27/06 Ap., p. 2; 8/31/06 Phone Log; 9/20/06 E-mail Smith to Sidner ("We expect to capture more than that [2%] since 1.5 MMcfm will draw more internal dust to the roof capture system. This is what we want in order to solve the internal dust problem for our employees.") Some of this dust otherwise would have been deposited on the floor of the melt shop building and represents new PM/PM10 emissions. Third, other correspondence indicates the new baghouse will serve the purpose of and supplant the need for the LMF/caster building

dust collection system. 3/23/07 Letter Baugues to Sidner, p. 2; 7/5/06 Response to NOD #1, BACT Analysis, p. 13 ("The new baghouse is expected to capture fugitive Pb emissions from the ladle metallurgical furnace and the caster areas."). Finally, in July 2007, SDI proposed to route the emissions from the Continuous Casters from existing EAF Baghouse 1 to the new EAF Baghouse 2. 7/26/07 E-mail Sidner to Robin & Stuckey. It is unclear whether all or some subset of these possibilities will actually be constructed.

The Draft Permit and TSD are also equivocal as to what is intended. The TSD states that "[t]he addition of the new baghouse will increase the amount of particulates captured and consequently reduce the amount of dust that settles in the LMF/Caster building." TSD, p. 3 & Appx. B, p. 1. Because a baghouse taken alone does not capture any dust, this statement implies a dust collection system that would route fugitive dust to the baghouse for control. However, the Draft Permit itself and the TSD's description of the proposed modification do not disclose a dust collection system, which would require a separate BACT analysis. TSD, p. 3; Draft Permit, p. 8. Rather, the TSD appears to only explicitly recognize the rerouting of EAF Baghouse 1 exhaust to the new baghouse for only one pollutant, PM/PM10. Finally, the Draft Permit also appears to limit the emissions below those that the applicant intends to emit. 6/8/07 E-mail Hatchett to Sidner.

Response to Comment 1:

This comment can be summarized into two questions: 1) what emissions will be vented to EAF Baghouse 2 and 2) why was only one pollutant addressed regarding the addition of EAF Baghouse 2.

As stated on page 3 of the TSD and page 1 of Appendix B, the new baghouse, EAF Baghouse 2, will control particulate emissions from Electric Arc Furnace (EAF) #2 North and is expected to improve the air quality of the meltshop by capturing additional particulate emissions. EAF Baghouse 2 is NOT an emissions unit. Pursuant to 326 IAC 2-2-1, an "emissions unit" is defined as "any part of a stationary source that emits or would have the potential to emit any regulated NSR pollutant." The EAF is an emission unit and the magnitude of its emissions is the result of how much steel is produced. Pursuant to 326 IAC 1-2-3, a pollution control device is defined as "equipment which is not, aside from air pollution control requirements, vital to production of the normal product of the source or to its normal operation. Equipment is vital if the source could not produce its normal product or operate without it." The operation of the EAFs is not dependent on the use of a baghouse. As a result, EAF Baghouse 2 is a pollutant control device.

While the addition of EAF Baghouse 2 will cause additional evacuation of air from the meltshop, it does not generate or increase emissions. Existing PM and PM10 emissions from the EAF are calculated based on the baghouse exhaust air flow whereas non-particulate emissions (SO2, NOx, CO, and VOC) are calculated based on steel production. For this reason, a proposed increase in exhaust air flow indicates that there is a potential PM and PM10 emissions increase associated with the modification. Note that the steel production capacity of the EAF, and the resulting emissions, will not change as a result of the modification. Section D.1 of the permit contains appropriate PSD emission limits for SO2, NOx, CO, VOC, lead, and mercury.

The commenter is correct regarding the nature of the emissions from EAF #2 North; they are either exhausted to a baghouse or released into the meltshop building. However, the commenter overlooked the fact that the emissions in the meltshop building do not terminate in the meltshop. Specifically, emissions from EAF #2 North that are captured by the direct shell evacuation system and canopy hoods are routed to a baghouse and ultimately to a stack. Emissions not captured by those controls are released into the meltshop building and may be emitted from building openings and vents. For this reason, Condition D.1.10(b) limits the opacity of emissions from building openings to 3%.

Therefore, the addition of EAF Baghouse 2 will capture additional emissions and consequently prevent their release from the meltshop building. Despite the calculation of potential emissions,

this effect is expected to reduce the actual emissions associated with EAF #2 North and the meltshop.

No changes were made to the permit as a result of this comment.

Comment 2:

The TSD only includes emission calculations for PM/PM10 for the new baghouse. TSD, p. 5. The TSD is silent as to why emissions of SO2, VOC, CO, NOx, and lead from the new baghouse are zero. If the new baghouse is treated as a new emission unit, as apparently assumed in the TSD, then rerouting EAB Baghouse 1 exhaust to EAB Baghouse 2 would increase emissions of all criteria pollutants from new EAB Baghouse 2, not just PM/PM10. The Application included emissions for these pollutants from the new baghouse and concluded that BACT was required for each of them. The change in the TSD is not explained.

The Project would result in an increase in only PM/PM10 (and lead) if the TSD emissions represent the net increase in PM/PM10 and the Project includes a fugitive emission capture system. The TSD does not include any net emission calculations (e.g., no baseline, no projected future emissions, no identification of a source of any net increase). Further, the TSD and Draft Permit do not authorize the construction of a fugitive emission capture system.

Thus, the TSD and Draft Permit should be revised to explain why all criteria pollutants are not increased due to the Project and thus subject to BACT or, in the alternative, to include a calculation of net emission increase and a description of the fugitive emissions control system.

Response to Comment 2:

The addition of EAF Baghouse 2 will not cause an increase in emissions of SO2, VOC, NOx, CO or lead. EAF Baghouse 2 is not an emissions unit; it is a control device. See Response to Comment 1 for an explanation of why only PM/PM10 emissions were calculated.

No changes were made to the permit as a result of this comment.

Comment 3:

Regardless of the resolution of the issue discussed above, the TSD should have included lead emissions. Lead is a criteria pollutant and is subject to federal PSD BACT review if a facility has the potential to emit more than 0.6 tons of lead per year. Lead is present in two forms in emissions from the melt shop, filterable and condensable. The “filterable” lead is absorbed to or otherwise associated with fine particulate matter that is not removed by the baghouse. The “condensable” lead is present as a gas or aerosol in the exhaust gases and condenses out during sampling. Condensable lead is not controlled by the baghouse.

(Lead Potential To Emit Underestimated)

The TSD did not estimate the increase in lead emissions from the Project, instead it tacitly assumes there would be no increase. TSD, p. 5. However, some lead is present in the PM/PM10 emissions and thus must be accounted for in the emission calculations.

The Project would increase PM/PM10 emissions, presumably by collecting fugitive emissions from the melt shop building and venting them through EAF Baghouse 2. Lead is present in these melt shop emissions and thus lead emissions would increase in tandem with PM/PM10. Analyses of melt shop dusts indicate that the lead content ranges between about 0.5% and 2%. The TSD indicates that filterable PM emissions from EAF Baghouse 2 would increase by 67.1 ton/yr. TSD, p. 5 & Appx. A, p. 1. Thus, filterable lead emissions from EAF Baghouse 2 would range from 0.34 to 1.34 ton/yr. The TSD also estimates total PM/PM10 emissions of 193.8 ton/yr. Ibid. Thus, the TSD implicitly assumes that 65% of the total lead

emissions is present as condensable lead. Thus, total lead emissions from the new baghouse would range from 1.03 (0.34/0.35) to 3.82 ton/yr (1.34/0.35).

This is consistent with the original Application, which included a controlled lead BACT limit for the melt shop of 0.00048 pounds of lead per ton of steel produced ("lb/ton"). Ap., p. 2. The facility consists of two electric arc furnaces, each with a nominal capacity of 200 ton/yr. Draft Permit, p. 8. Thus, the melt shop would process 400 ton/hr of steel. Thus, the new baghouse could emit up to 0.19 lb/hr or 0.84 ton/yr of lead, close to the lower end of the range of 1.03 ton/yr, estimated above.

Regardless of the set of assumptions, lead emissions would exceed the PSD significance threshold of 0.6 ton/yr, requiring a BACT analysis for lead.

Response to Comment 3:

IDEM believes that the commenter has misunderstood the nature of the modification. As described in Response to Comment #1, SDI applied for the addition of a new baghouse and this does not involve any changes to emission units so no new lead emissions are being created by the process. In addition, SDI must comply with an existing lead emissions limit of 0.19 pounds per hour; see Condition D.1.8.

The commenter presents two methods of estimating an increase of lead emissions attributable to the addition of a baghouse. Their first method is to make some assumptions regarding the lead content of EAF dust. The commenter suggests that SDI adds lead to its steel for metallurgical reasons, which then increases the lead content of the EAF dust, but that is not correct. Carbon steel mini-mill facilities do not intentionally add any lead to the steel they produce. As a flat-rolled steel producer, this facility uses high-quality scrap that contains only trace amounts of lead. As a result, the average lead content of EAF dust at this facility from 2006-2007 is 0.28%, which is consistent with prior data from the source. This lead content is significantly less than the one from the 1983 report cited by the commenter.

The commenter's second method of calculating an increase in lead emissions is also incorrect. The commenter assumes that lead emissions double because the airflow increases. However, as explained in Response to Comment 1, the production capacity of the corresponding emission unit is not changing. Emissions would not be expected to double due to the construction of an additional pollution control device without some sort of increase in production.

For the reasons identified above, lead emissions will not exceed the PSD significance threshold of 0.6 tons per year and the modification is not subject to the requirements of 326 IAC 2-2 with respect to lead emissions.

Comment 4:

BACT for lead is not necessarily the same as BACT for PM/PM10 for two reasons. First, 65% of the lead emissions is condensable material which is not captured by the baghouse, requiring other control methods to be considered. Lead is volatilized in the EAF and condenses as very fine particulate matter or nanoparticles (<2.5 microns). The highest concentrations of lead are consistently found in the smallest particles. The particulate collection efficiency for baghouses designed to collect PM and PM10 is generally lower for these nanoparticles that contain most of the lead than for larger particles. Thus, a baghouse designed to meet BACT for PM and PM10 does not necessarily meet BACT for particles smaller than 10 microns where most of the lead is found. These smaller particles also cause proportionately more of the adverse health impacts because they can penetrate deep into the lung.

A BACT analysis for lead must consider methods to enhance the removal of these finer particles. Methods to enhance the control of fine lead particles include: (1) use of filtration media with a higher removal efficiency for nanoparticles; (2) use of a wet electrostatic precipitator; and (3) use of an agglomerator upstream of the baghouse. An agglomerator uses electrical charges

to attach nanoparticles to larger particles, which are then more efficiently removed by the baghouse. Agglomerators have been used to reduce opacity (caused by nanoparticles). Second, the proposed baghouse coupled with existing controls in the melt shop are not BACT for either PM/PM10 or lead. Emissions from the melt shop are controlled by a direct shell evacuation system (the fourth hole duct) and canopy hoods, vented through a baghouse. All emissions not captured by this system are vented through an uncontrolled roof vent. Draft Permit, p. 8.

There are a number of controls that can be used in addition to these that would improve the capture and control efficiency for both particulate matter and lead. These include side draft hoods, partial furnace enclosures, and total furnace enclosures. Many facilities use a DCE and canopies as well as other controls, such as total building enclosures. South Carolina, for example, does not allow any roof vents and requires that all emissions are routed to a baghouse. IDEM required the use of a segmented canopy hood, scavenger duct, cross-draft partitions, and no roof monitor at SDI's Columbia City mill to control fugitive emissions, which include lead and PM/PM10.

In sum, lead emissions exceed the PSD significance threshold of 0.6 tons/yr. Therefore, IDEM should conduct a formal BACT analysis for lead and require additional controls, beyond the new baghouse.

Response to Comment 4:

As explained in Response to Comment #3, the modification is not subject to the requirements of 326 IAC 2-2-3 with respect to lead emissions. Therefore, a BACT determination for lead is not necessary.

SDI has taken several steps over the years to reduce lead emissions. SDI does not use roof monitors in the furnace bays, maintains sheeting between the furnaces and casting bays, operates collection hoods of the furnaces and removes lead from scrap, where possible.

No changes were made to the permit as a result of this comment.

Comment 5:

The Draft Permit establishes a BACT limit for total lead emissions from EAF Baghouse 1 and EAF Baghouse 2 not to exceed 0.19 lb/hr. Draft Permit, p. 11, Condition D.1.8. BACT emission limits "must be met on a continual basis at all levels of operation (e.g., limits written in pound/MMbtu or percent reduction achieved)... and be enforceable as a practical matter (contain appropriate averaging times, compliance verification procedures and recordkeeping requirement)." NSR Manual, pp. B.56, c.3 -c.6. Compliance with this lead (and new baghouse PM/PM10 limit) is determined from a stack test every 2.5 years and measuring the pressure drop across the baghouse once per day. Draft Permit, p. 12, Condition D.1.14(f) & p. 14, Condition D.1.19.

The lead limit is not enforceable via these methods because the limit does not include an averaging time, it does not include a detection limit, it does not specify a test method, it does not limit lead in the EAF dust, and compliance cannot be continuously verified.

(Averaging Time)

The NSR Manual is clear that an averaging time must be included in an enforceable permit. See the discussion of this issue in the NSR Manual at pages B.56 and c.4. The Draft Permit does not contain any averaging time for lead.

(Test Method And Detection Limit)

The permit should state how compliance will be determined with each emission limit, including, but not limited to, the test method(s) that will be used. NSR Manual, p. H.6. The

Permit does not disclose the method that will be used to demonstrate compliance with the lead BACT limit or require that a method be selected such that the detection level is below the lead permit limit.

The Permit should be revised to be consistent with SDI's Columbia City Permit, which requires that lead emissions be tested using Method 12, such that the method detection level is below the emission limit. SDI Columbia City Permit, Condition D.1.15(d).

(Compliance)

The Draft Permit uses two methods to determine compliance with the lead limit, a stack test every 2.5 years and daily monitoring of baghouse pressure differential. Neither of these methods, either individually or in combination are adequate to assure continuous compliance with the lead limit.

First, a stack test every 2.5 years is not adequate on its face to demonstrate continuous compliance because lead emissions can vary over an order of magnitude or more from test to test. This amounts to testing only about 0.01% of the time, hardly adequate given that lead from melt shops is highly variable. At least annual lead stack tests should be conducted, consistent with other steel mill permits, including Gallatin, IPSCO, and Nucor.

Lead in varying amounts is added to steel to provide steel with good machining properties, as a metallic coating, and an internal lubricant, among others. Therefore, most of the lead emitted from the melt shop originates in the scrap. Scrap lead content is highly variable because scrap comes from a wide range of sources with varying compositions. This is clearly demonstrated by three consecutive source tests for Arkansas Steel, conducted in March of 1998, 1999, and 2000 on the same EAF. The lead emission factor measured in these three tests ranges from 0.000205 lb/ton to 0.0025 lb/hr or over a factor of ten for a single facility. Therefore, to assure that lead emissions do not exceed the BACT permit limit, more frequent testing than once every 2.5 years is required.

This lead variability can be monitored by requiring that the lead content of the EAF dust be sampled and analyzed on a monthly basis. This will ensure no significant increases in lead in the scrap, as any increase in scrap lead would show up in the EAF dust. Thus, we suggest that conditions be added to the Permit to limit lead in the EAF dust to 0.5%, as assumed in emissions calculations (0.19/[20.1+15.3]), and to require monthly testing of the EAF dust for lead, similar to the conditions in the SDI Columbia City Permit.

Second, the permit requires monitoring of the pressure drop across the baghouses at least once per day. Draft Permit, p. 14, Condition d.1.19. Inlet-to-outlet pressure drop across baghouses cannot detect leaks in individual bags or even several individual bags. This requires the use of a much more effective bag leak detection system. The Permit for the SDI Columbia City facility requires the installation and continuous operation of a bag leak detection system. This is the same type of requirement that is included in the NESHAP for secondary lead smelters, 40 CFR 63, Subpart X, in order to ensure continuous compliance with lead emission limits. As discussed in Comment I.C.1, the loss of a single bag can cause a substantial increase in emissions.

The EPA prefers continuous monitoring where feasible. NSR Manual, p. c.4. Although lead cannot be directly monitored continuously, the three-tiered system described above, annual lead stack testing, monthly EAF lead dust monitoring, and a continuously operating bag leak detection system, would provide additional assurance that the lead emission limit is being met.

(Limits Must Be Expressed Two Ways)

The Draft Permit expresses the lead emission limit in pollutant mass per unit of time (in pounds per hour) or as 0.19 lb/hr. This limit does not assure compliance with BACT at all levels of operation. An emission limit should be expressed in two ways to assure that it is met on a

continual basis under all levels of operation, as mass-per-unit-time and mass-per-unit-process. NSR Manual, pp. B.56, H.2, H.5, I.2, I.4. This issue has been adjudicated by the EAB for emissions from SDI's Columbia City EAF and remanded to the IDEM to express the NOx and CO emission limits in two ways. In re Steel Dynamics, Inc., 9 E.A.D. 165 (EAB 2000) at 220–225. The permit should be revised to include a lead limit expressed as pounds per tons of steel.

Response to Comment 5:

The commenter states that the draft permit "establishes a BACT limit for total lead emissions from EAF Baghouse 1 and EAF Baghouse 2 not to exceed 0.19 lb/hr." This is incorrect. As stated in Response to Comment #3, the modification is not subject to 326 IAC 2-2-3 (PSD – BACT) with respect to lead and does not include a BACT evaluation for lead emissions. The Proposed Changes section of the TSD shows all the proposed changes to T033-8068-00043, issued on October 4, 2006. Page 13 of the TSD indicates that the PSD BACT lead emission limit (Condition D.1.8) that applies to EAF #2 North and EAF #1 South was established by CP 033-8091-00043, issued on June 25, 1997. From the time that the lead BACT was established, EAF #2 North and EAF #1 South have exhausted to EAF Baghouse 1. Therefore, the limit was structured to state that the lead emissions from EAF Baghouse 1 shall not exceed the established BACT limit 0.19 lb/hr. The limit never applied to EAF Baghouse #1 because it is not an emissions unit. As a result, only the structure of Condition D.1.8 was changed to clarify that the existing limit applies to EAF #1 and EAF #2 and not to EAF Baghouse #1. The nature and magnitude of the lead emission limit has not been changed by this modification.

As for the enforceability of the existing 0.19 pound per hour lead emission limit, IDEM believes the permit provisions are sufficient. Condition D.1.14(g) specifies that the Permittee will use test methods approved by the Commissioner. The specific test methods and testing environment will be specified in the test protocol submitted by the Permittee as required in Condition C.9 (Performance Testing) and will be evaluated by IDEM, OAQ prior to the stack test. The most up to date EPA approved test method will be required to be used; therefore, the test method and corresponding averaging time is not specified in the permit.

The commenter indicated that the frequency of testing is not consistent with other IDEM permits. IDEM does not agree. The requirement to test lead emissions every 2.5 years is consistent with other permits for steel mills and iron foundries issued by IDEM. See SPM 107-24284-00038, issued on August 8, 2007 (Nucor Steel) and T033-19475-00092, issued on May 31, 2005 (Auburn Nugget). The emissions data from Arkansas Steel referred to by the commenter are of little value in determining the lead emissions from SDI. Too little is known about the test factors and process factors to make an effective comparison.

The commenter indicated that the proposed monitoring is not adequate to assure continuous compliance and recommended the inclusion of a requirement to utilize a bag leak detection system. IDEM, OAQ believes the permit contains adequate and appropriate compliance monitoring requirements, as well as testing, record keeping and reporting requirements. Compliance with these requirements will ensure that SDI is in continuous compliance with all emission limits and standards. The specific monitoring requirements in the permit regarding control devices lessen the likelihood of violations of permit requirements. For example, monitoring of the static pressure drop across a baghouse can alert the operator to relative changes (such as dust cake resistance or bag breaks) over a period of time. The operator can use this information to chart trends and determine if the unit is operating within the optimal range as determined by baseline testing of the unit and manufacturer's specifications. Any deviations from the normal operational range of the unit, whether gradual or sudden, should alert the operator that the unit needs maintenance. IDEM believes that once per day monitoring of the baghouse is generally sufficient to ensure proper operation of the baghouse and provides a reasonable measure of ensuring continuous compliance. This type of compliance monitoring has been included in similar permits issued by IDEM. In addition, the Permittee is required to take reasonable response steps when a compliance monitoring parameter is determined to be out of range or abnormal under Condition C.16 - Response to Excursions or Exceedances. This condition ensures that the control equipment is returned to proper operation as soon as

practicable, while still allowing the Permittee the flexibility to respond to situations that were not anticipated. Also, each year SDI is required to certify whether it is in compliance with the permit. This certification must be signed by SDI's responsible official. Falsification of any required record or report is a criminal offense. Note that the Part 70 permit for SDI's Columbia City plant (T183-17160-00030, issued July 3, 2007) does not include a requirement to monitor EAF dust.

The commenter indicated that the existing lead emission limit should be expressed in units of mass-per-unit-time and mass-per-unit-process. IDEM does not agree. The inclusion of a second limit, in mass-per-unit-process (i.e. lb lead per ton of metal produced) is not necessary. Compliance with the existing lead limit is ensured through testing and adherence to a scrap management plan. The hourly production rate of the EAFs (ton of metal per hour) applied to the pound per hour emission limit is sufficient to determine both the short term and annual emissions of the EAFs.

No changes were made to the permit as a result of this comment.

Comment 6:

The TSD estimated particulate matter emissions of 67 ton/yr of PM and 193.8 ton/yr of PM10 from applicant-supplied grain loadings and air flow rates. TSD, p. 5 & Appx. A, p. 1. The file produced by IDEM contains no support for these assumptions beyond applicant e-mail correspondence. It is standard practice to request a copy of the vendor guarantee when emission calculations are based solely on vendor supplied data.

These emissions are underestimated. Further, BACT was not required for PM/PM10 emissions.

(PM/PM10 Emissions Are Underestimated)

The emissions from the new baghouse cannot be accurately estimated without much more information than was included in the file produced by IDEM. The sine qua non for estimating baghouse emissions is a process flow diagram that shows what exhaust streams will be vented through the baghouse and a description of the individual emission sources or processes that would produce the vented exhaust streams. This information is missing from the file that was produced by IDEM. However, two sources of information suggest that emissions have been underestimated.

First, SDI commented on the pre-public draft of the permit that “Condition D.1.2(a)(5): It appears that there is a typo in the particulate lb/hr limit. The 35.7 lb/hr figure does not reflect the second baghouse’s air flow and should be adjusted upward (we believe the figure should almost double).” 6/8/07 E-mail Hatchett to Sidner. The Draft Permit does not contain these doubled emissions. However, Condition D.1.2(a)(3) shows the combined PM/PM10 emissions from EAF #1 South and EAF #2 North baghouses as 35.4 lb/hr, which is half the value claimed by SDI indicated.

Second, the emission calculations do not include any emissions that occur during baghouse upset conditions. Industry personnel, environmental control officials, and equipment vendors indicate that baghouse operating problems may result in significant periods during which the control equipment is shut down or operating inefficiently. Typical causes of malfunctions are torn bags that allow excess emissions from the control device outlet and plugging of the bags, which creates excess emissions at the source. The potential-to-emit calculation must include these emissions and the air dispersion modeling must also address them.

A recent study, for example, shows that 15% of the gas bypasses the baghouse and flows out the stack without being cleaned when only one bag fails. When 10% of the bags are broken, greater than 90% of the gas is untreated. Assuming a design control efficiency of 99.9%, a single broken bag reduces baghouse efficiency to about 85% and the outlet dust loading is about 150 times higher than design.

The Draft Permit allows operations to continue indefinitely after bag failure has occurred, as long as "reasonable response steps" are taken in accordance with Section C.16. Thus, upset emissions could be long term and high. The term "reasonable response steps" is ambiguous and thus not enforceable. The cited Section C.16 is not included anywhere in the Draft Permit. The Draft Permit does not require that IDEM be notified in the event of baghouse failure, a common requirement in many other IDEM permits. Excess emissions during bag failure could be minimized by requiring that the facility maintain a supply of spare equipment, including bags, air leak maintenance parts and equipment, parts for blowback equipment, and motors and gearboxes.

The excess emissions that occur during these periods should be estimated, included in the potential to emit calculations for processes controlled by baghouses, and the air dispersion modeling revised to address these emissions.

Response to Comment 6:

The commenter is incorrect. The PM/PM10 potential to emit of EAF Baghouse #2 is based on established grain loading emission factors (0.0018 gr/dscf and 0.0052 gr/dscf) from the RACT-BACT-LAER-Clearinghouse (RBLC) and not a vendor guarantee. Those emission factors were determined to be BACT and are as stringent as, or more stringent than, other limits established for similar sources. Therefore, the PM/PM10 emissions associated with the addition of EAF Baghouse 2 are not underestimated. See Response to Comment #1 for more information.

Condition D.1.15 of the permit requires the use of EAF Baghouse 2 at all times, except during baghouse malfunction, when EAF #2 North is in operation. This operating requirement, coupled with the specific monitoring requirements in the permit regarding baghouses ensures that baghouse malfunctions are minimized. The Permittee is required to take reasonable response steps when a compliance monitoring parameter is determined to be out of range or abnormal under Condition C.16 - Response to Excursions or Exceedances. This condition ensures that the control equipment is returned to proper operation as soon as practicable, while still allowing the Permittee the flexibility to respond to situations that were not anticipated. In addition, visible emission notations are also used as a trigger that the source performs some corrective action on the facility if visible emissions are abnormal, which helps ensure continuous compliance with emission limitations. As a result, IDEM, OAQ believes that emissions that occur during baghouse upset conditions are very minimal and do not warrant calculation and inclusion in the potential to emit.

In addition, Condition D.1.17 requires the use of a continuous opacity monitoring system (COMS). The EAFs have an opacity limit of 3% and baghouse operational problems are quickly indicated through opacity monitoring results.

However, IDEM, OAQ has made the following changes to the permit to clarify the Permittee's responsibility during baghouse failure:

D.1.15 Particulate Control – (BACT) [326 IAC 2-2]

(a) **Pursuant to 326 IAC 2-2-3,** EAF Baghouse 1 shall be operated at all times when EAF #1 South and the continuous casters are in operation.

(b) **Pursuant to 326 IAC 2-2-3,** EAF Baghouse 2 shall be operated at all times when EAF #2 North is in operation.

(c) **Pursuant to 326 IAC 2-2-3,** Bin vent filter 5c shall control emissions from EAF dust silo 5c at all times dust is transferred to or from the silo.

(d) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly

notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

D.1.25 Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has 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 B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the unit. 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 B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

Comment 7:

The TSD concludes that BACT for PM/PM10 is a filterable limit of 0.0018 grains per dry standard cubic feet ("gr/dscf") and a total PM10 limit of 0.0052 gr/dscf, achieved using a baghouse. TSD, Appx. B, p. 9. This is not BACT for PM/PM10 emissions from the melt house for several reasons.

"All available" control technologies must be evaluated. The TSD evaluated a baghouse, electrostatic precipitator, wet scrubber, and high efficiency air filter. TSD, Appx. B, p. 8. There are three problems with this selection.

First, selecting a baghouse alone does not go far enough. Baghouse performance depends upon the type of bags (e.g., fiberglass, Ryton, P-84), the number of bags per module, and the cleaning method that is employed (e.g., pulse jet, reverse air, shaker). The BACT analysis and Draft Permit do not provide any of this information for the proposed baghouse, precluding any meaningful commentary.

Second, there are numerous other technologies that could be used to reduce PM/PM10 emissions from the melt shop. These include the process modifications discussed previously and post-processing controls including a wet electrostatic precipitator, ultra low penetration air filters ("ULPA"), cyclone separators, settling chambers, and a wider range of wet scrubbers than the single scrubber listed, including collision scrubbers, ionizing wet scrubbers, catenary grid scrubbers, and Waterloo scrubbers, among many others. U.S. EPA 2/96, Chpt. 6; Hesketh 1991, Chpt. 6; Flagan and Seinfeld 1988, Chpt. 7. The ULPA, for example, can remove 99.9995% of the particles with a diameter of 0.12 microns and a wet electrostatic precipitator can remove 99.9% of the particles.

Third, the TSD also failed to consider combinations of technologies. Many of these technologies in combination with other processes, can achieve greater than 99.85% reduction in PM10.

Response to Comment 7:

IDEM, OAQ does not consider the BACT requirement as a means to change the fundamental scope of the project when considering available control technologies. SDI applied to construct a baghouse. And the BACT evaluation indicates that the addition of a baghouse as described in the TSD is BACT. Several other control technologies were evaluated to provide a comparison and was not intended to be all-inclusive. Therefore, the various particulate control technologies highlighted by the commenter were not considered as an available control technology as part of the BACT analysis. The PM/PM10 BACT determination relating to EAF Baghouse 2 illustrates that the newly established BACT requirements are equivalent to those established for identical operations (i.e. Electric Arc Furnaces).

No changes were made to the permit as a result of these comments.

Comment 8:

The term "best available control technology" means "an emission limitation based on the maximum degree of reduction of each pollutant…." The TSD and the file produced by IDEM contain no evidence that the proposed PM/PM10 BACT limits are based on the maximum degree of reduction that is achievable. The TSD does not contain any ranking of control alternatives comparable to the examples in the NSR Manual in Tables B-2 and B-3. Instead, it contains a chart that ranks control technologies. TSD, Appx. B, p. 8. There are several problems with this chart.

(Maximum Degree of Reduction Not Required)

First, the TSD lists four technologies – a baghouse, (dry) electrostatic precipitator, wet scrubber, and high efficiency air filter. TSD, Appx. B, p. 8. In Step 2, one of these, the wet electrostatic precipitator, is eliminated. However, the chart does not list the high efficiency air filter, which was not eliminated in Step 2. The EPA sources that the TSD relied upon report that a high efficiency air filter removes 99.97% of the particles 0.3 microns or smaller. Thus, it is the top ranked technology evaluated in the TSD, yet it is omitted from the chart and was not eliminated as technically infeasible. Second, the chart contains a control technology, a high efficiency cyclone, that was not listed in Step 1. Thus, the BACT analysis contains some errors and omissions that need to be corrected.

Second, the TSD BACT analysis concludes that BACT is satisfied by a baghouse with a control efficiency of 99.85%. TSD, Appx. B, p. 9. No support is provided for the 99.85% beyond the fact that it was in the existing permit. BACT is set at the time of issuance of the instant Permit, not a permit issued nearly a decade ago. Baghouses in similar applications routinely achieve greater than 99.9% PM/PM10 control. See, for example, the EPA Air Pollution Control Technology Fact Sheet for pulsed-jet and reverse-air baghouses, relied on by the TSD. TSD, Appx. B, p. 8. The TSD should justify its selection or propose a higher control efficiency, consistent with available stack test data, and reduce the proposed emission limits accordingly.

Third, the technology rankings report control efficiencies as "greater than" rather than as a range or an upper limit. TSD, Appx. B, p. 8. BACT is not a lower bound but rather the maximum degree of reduction. Specifying only a lower bound leaves the reviewer to guess what the upper end of the control range is for a baghouse. In this case, the upper end of the range is at least 99.9%, higher than selected as BACT for this Project. The TSD contains no explanation for why the upper end of the range is not BACT.

Fourth, the Draft Permit does not require any testing to assure that the 99.85% BACT control efficiency is complied with. Draft Permit, Condition D.1.14.

Fifth, the Draft Permit does not provide any nexus between the proposed BACT limits and the BACT control efficiency. There is no demonstration that 0.018 gr/dscf of filterable PM

and 0.0052 gr/dscf of total PM10 correspond to the maximum degree of reduction, specified as 99.85%. Thus, BACT has not been determined.

(Lower Emission Limits Have Been Permitted and Achieved)

The TSD picks the top technology, a baghouse, and accepts in Step 5 the applicant's BACT emission limits: 0.0018 gr/dscf filterable and 0.0052 gr/dscf total. Lower limits have been permitted and achieved. The TSD offers no explanation for why these lower limits are not BACT.

As to total PM/PM10, the TSD lists four limits of the "most recent records" from the RBLC, all identical at 0.0052 gr/dscf. TSD, Appx. B, p. 7. The TSD has weeded out lower limits with no explanation. Lower limits are identified in e-mail correspondence, but no justification was found for excluding them from the BACT analysis. 2/12/07 E-mail from Sidner to Smith (Nucor Steel at 0.005 gr/dscf; Charter Manufacturing at 0.0024 gr/dscf; Timken at 0.0032 gr/dscf).

The applicant's BACT analyses identify BACT determinations on similar sources that are lower than those proposed for the SDI Butler facility. The initial April 2006 Application proposed a total BACT PM/PM10 limit of 0.0032 gr/dscf, based on a permitted level for Nucor Steel. Ap., p. 2. The applicant's response to IDEM's first notice of deficiency, citing a BACT analysis for a similar project at IDI, likewise identifies total PM/PM10 limits as low as 0.0032 gr/dscf at two other facilities, compared to the limit of 0.0052 gr/dscf proposed for SDI Butler. An e-mail from SDI's permit consultant, Keramida, in February 2007 states: "After some thought, SDI agrees that the PM-10 limit for the EAF should be 0.0032 gr/dscf (consistent with the existing limit)." 2/16/07 E-mail Baugues to Sidner.

The TSD is silent as to why this lower limit, 0.0032 gr/dscf, is not BACT when it was proposed in two SDI BACT analyses, required by the existing permit, and confirmed by SDI's permitting consultant. The applicant explains in its response to NOD #4, that it is "the same as our existing baghouse," but then appears to argue that it should be allowed to emit at the higher 0.0052 gr/dscf level because IDEM has permitted other facilities at this level. 3/6/07 E-mail Smith to Sidner. As explained above, previously permitted levels do not determine BACT. The lower level has been permitted and achieved at the subject facility and is thus BACT.

As to filterable PM, baghouses serving melt shops have routinely achieved much lower filterable PM concentrations than proposed as BACT for the new baghouse. The U.S. EPA surveyed the U.S. EAF steel manufacturing category in 1992 and received responses from 75% of the 110 EAF facilities. EPA 1993. The resulting baghouse data shows that 21 out of 57 facilities reporting actual PM measurements achieved PM concentrations lower than the 0.0018 gr/dscf proposed by IDEM as BACT. Further, the IPSCO Iowa facility achieved a PM/PM-10 concentration of 0.0008 gr/dscf in its November 17-20 1998 source test. AAS 11/98. The lowest achieved in practice filterable PM limit based on the U.S. EPA data is 0.0001 gr/dscf, and the lowest filterable PM limit that was achieved based on IDEM's previous review of SDI's Columbia City mill is 0.0008 gr/dscf. The TSD should be revised to explain why these much lower achieved in practice PM/PM10 emission limits do not constitute BACT in this case.

(Permit Limits Do Not Establish BACT)

The BACT analysis is based solely on levels that have been previously permitted. A BACT limit must represent the lowest limit "achievable" for the source—not the lowest limit previously permitted by similar sources in the past. This forward-looking emphasis is the "most important" mechanism promoting the Clean Air Act's "philosophy of encouragement of technology development." S. Rep. No. 95-127 at 18. See also Alabama Power v. Costle, 636 F.2d 323, 372 (D.C. Cir. 1980) (noting that Prevention of Significant Deterioration Program is intended to be "technology forcing"). The BACT standard is intended to require use of "the latest technological developments [in pollution control] as a requirement in granting the permit," so as to "lead to rapid adoption of improvements in technology as new sources are built," rather than "the stagnation that occurs when everyone works against a single national standard for new sources." S. Rep. No. 95-127 at 18. The proffered BACT limits do not satisfy this goal as they are based solely on

dated BACT determinations from the period 1998 to 2003 and fail to consider the advances in baghouse technology in the intervening years.

The file produced by IDEM contains no evidence that an analysis was conducted to determine emission levels that are "achievable" with the selected BACT technology, as opposed to permitted. SDI should have collected and evaluated test data, discussed technology performance and guarantees with vendors, and then made an engineering judgment based on physical and chemical characteristics of the gas stream, to determine what limits are "achievable" for the new baghouse. The limits in permits for baghouses built in the past or permitted in the past serve only as the starting point for the BACT analysis of what is achievable for a baghouse to be built in the future. Those limits cannot also be the end of the BACT analysis; limits permitted in the past are a floor, not the ceiling for the BACT determination of what is "achievable" for a new baghouse.

(RACT/BACT/LAER (RBLC) Clearinghouse Not Adequate Sole Source)

The BACT analysis relied solely on the RACT/BACT/LAER Clearinghouse ("RBLC") and failed to consider other sources of information acknowledged in the TSD (Appx. B, p. 2) and the NSR Manual (p. B.11). TSD, Appx. B, p. 7. The RBLC is a database that summarizes issued permits. As discussed in Comment I.C.2.d, previous permitting decisions alone do not determine BACT. Even if they did, the RBLC is neither a comprehensive nor an up-to-date source of permits. Indiana, for example, in response to an EPA survey on its New Source Review permitting procedures, states: "The RBLC is helpful as a starting point – but the State rarely is able to rely on it without a follow up call to the permitting agency." In this case, IDEM has not followed its own stated procedures.

BACT postings on the RBLC are voluntary. Many BACT determinations are never posted, and determinations that are posted are often posted long after the determination is made or are incomplete and inaccurate. Indiana, for example, admits that it is "a few years behind schedule" in entering determinations into the RBLC. Therefore, this source is generally acknowledged in the field to be incomplete and out of date.

A recent study of 28 state air pollution control agencies in the eastern half of the U.S. found that only 14% of the most recent BACT/LAER determinations made for gas turbines were included in the RBLC. Another recent investigation by the Virginia Department of Environmental Quality concluded that the RBLC is missing about 60% of the data from permits issued nationwide.

The NSR Manual recommends that other sources be consulted, including guidelines of other districts, control technology vendors, new source review permits and associated inspection and performance test reports, environmental consultants, trade literature, and EPA's New Source Review bulletin board. NSR Manual, p. B.11. The Application and Draft Permit contain no evidence that the wide array of other sources that are normally used to determine BACT was consulted.

In sum, for the above ten reasons, the PM/PM10 BACT determination should be revised to cure the above-identified defects. This should result in much lower PM/PM10 BACT emission limits.

Response to Comment 8:

IDEM, OAQ followed the NSR Manual in conducting its BACT determination and created the charts located in Appendix B of the TSD. The charts found at Tables B-2 and B-3 referred to by commenter are sample charts that, according to the NSR Manual, rank "control technology options." (NSR Manual, B.25 - B.26) The ranking chart is then used to compare the control alternatives during step 4 of the BACT selection process. (NSR Manual, B.26) IDEM listed the control technology options in a table form and used that table to compare the control alternatives in the next step of the BACT determination. See Appendix B.

High efficiency particulate filters and ultra low particulate filters, as provided in the EPA fact sheet referenced by the commenter, are best utilized in applications with a low flow rate and low pollutant concentration. Specifically, these filters are currently limited to low capacity air flow applications, generally only up to 2,000 scfm. The air flow rate of EAF Baghouse 2 is over 900,000 dscfm. Therefore, high efficiency air filters and ultra low particulate filters are technically infeasible as a means for controlling PM and PM10.

The EPA Air Pollution Control Technology Fact Sheet for pulsed-jet, reverse air, and mechanical shaker-cleaned type of baghouses do not state that the respective control devices "routinely achieve" greater than 99.9% PM/PM10 control. Rather, the fact sheets all state that design control efficiencies range from 99% to 99.9%. The established BACT efficiency of 99.85% is within and at the top end of that range. In any event, control efficiency is not the best measure of a baghouse's operation, especially where a batch process that naturally has large particulate loading swings is an issue. Rather, outlet grain loading and mass per hour limits are the best measures for compliance.

IDEM, OAQ determined that 0.0052 gr/dscf is BACT for filterable plus condensable PM10. While the RBLC includes an emission limit of 0.0024 gr/dscf for Charter Manufacturing, it does not indicate if that limit accounts for condensable emissions. In fact, Charter Manufacturing only tested filterable emissions and did not include testing for the condensable fraction. Regarding the other limits cited by commenter, it could not be confirmed that those limits were for filterable plus condensable emissions; and IDEM, OAQ believes that the limits were for only filterable PM10. As stated in Appendix B, more recent Indiana BACT determinations use 0.0052 gr/dscf for filterable plus condensable limits. Note that a limit has to be achievable at all levels of operation and there is insufficient stack test data to establish that a limit lower than 0.0052 gr/dscf is achievable all the time, especially when considering that the condensable fraction is not directly controlled by a baghouse.

Regarding the BACT limits for filterable PM, a BACT limit must be achievable at all levels of operation, not merely achievable once. Just because a lower concentration of filterable PM can be achieved during a stack test of limited duration does not mean that it is capable of being achieved at all levels of operation. The BACT review in Appendix B did not reveal a lower filterable PM emission limit than that placed in the permit, or 0.0018 gr/dscf.

The RBLC generally contains permit limits rather than stack test results because permit limits indicate that the emission levels are achievable continuously and at all levels of operation, are technically feasible, and are not economically prohibitive.

SDI supplied the information requested and required by IDEM, OAQ in order to conduct a BACT determination. As set out in Appendix B of the TSD, IDEM, OAQ reviewed not just the limits set out in the RBLC, but also reviewed the technical feasibility of control options other than a baghouse. During this process, IDEM, OAQ relied on the RBLC, other Indiana permits, and USEPA technical resources for information regarding the best control options for the Permittee's facility. Complete stack test information is hard to obtain and not necessarily reflective of typical operations at different facilities. Vendor guarantees are not always achievable because the vendor isn't knowledgeable of specific source characteristics that affect performance of the control equipment. In addition, the usefulness of a vendor guarantee diminishes considerably given that the Permittee and other similar sources have specific experience with similar BACT limits for particulate.

Stack testing and monitoring will ensure compliance is achieved by the source.

As documented above and described in Appendix B, IDEM, OAQ utilized other Indiana permits and US EPA technical resources in addition to information found in the RBLC to determine BACT.

No changes were made to the permit as a result of these comments.

Comment 9:

In June 2007, SDI recognized that it omitted a third EAF dust silo. 6/8/07 E-mail Hatchett to Sidner. The TSD indicates that the dust silo (p. 4) is limited to PM/PM10 emissions of 0.01 gr/dscf (p. 9, Condition D.1.2(d)) and 0.45 ton/yr (TSD, p. 5), but does not provide any supporting emission calculations. The TSD also does not estimate HAP emissions from this source. The TSD should be modified to include this missing information.

Response to Comment 9:

As indicated in the TSD, the EAF dust silo will store collected dust from EAF Baghouse 2. As a result, the silo only has the potential to emit PM/PM10. The controlled PM/PM10 potential to emit of the EAF dust silo is calculated and presented on page 12 of Appendix B and reproduced below:

0.01 gr/dscf x 1,200 dscf/min x 0.03754 ton-min/gr-yr = 0.45 ton PM/PM10 per year

As stated in Response to Comment 3, the average lead content of EAF dust at this facility from 2006 - 2007 is 0.28%. Using that figure, the lead potential to emit of the new EAF dust silo is 0.00126 ton per year (0.45 ton per year x 0.0028).

Since IDEM, OAQ prefers that the TSD reflect the permit that was on public notice, no changes were made as a result of these comments.

Comment 10:

The Draft Permit establishes BACT limits for filterable and total PM/PM10. Draft Permit, p. 9, Condition D.1.2. Compliance with these limits is determined from a stack test every 2.5 years and by measuring the pressure drop across the baghouse once per day. Draft Permit, p. 12, Condition D.1.14(a) & p. 14, Condition D.1.19. These limits are not enforceable because the Draft Permit does not specify an averaging time or test method and compliance cannot be continuously verified. The issues here are identical to those discussed above for lead in Comment I.B.3, which is incorporated here by reference. We recommend that continuous compliance with the filterable PM/PM10 limit be demonstrated by using a PM CEMS.

Response to Comment 10:

IDEM believes that the appropriate requirements are in place to ensure the enforceability of the established PM/PM10 limits.

Condition D.1.14(a) specifies that the Permittee will use test methods approved by the Commissioner. The specific test methods and testing environment will be specified in the test protocol submitted by the Permittee as required in Condition C.9 (Performance Testing) and will be evaluated by IDEM, OAQ prior to the stack test. The most up to date EPA approved test method will be required to be used; therefore, the test method and corresponding averaging time is not specified in the permit.

The commenter indicated that the proposed permit limits are not enforceable and recommended the inclusion of a requirement to utilize a PM continuous emission monitoring system. IDEM, OAQ believes the permit contains adequate and appropriate compliance monitoring requirements, as well as testing, record keeping and reporting requirements that make the particulate emission limits enforceable. Specifically, Section D.1 contains an opacity limit on the EAF Baghouse 1 and 2 exhausts, requires periodic emissions testing, baghouse pressure drop monitoring, and continuous opacity monitoring. Compliance with these requirements will ensure that SDI is in continuous compliance with all emission limits and standards. The specific monitoring requirements in the permit regarding control devices lessen the likelihood of violations of permit requirements. In addition, the Permittee is required to take reasonable response steps when a compliance monitoring parameter is determined to be out of range or abnormal under

Condition C.16 - Response to Excursions or Exceedances. This condition ensures that the control equipment is returned to proper operation as soon as practicable, while still allowing the Permittee the flexibility to respond to situations that were not anticipated. Also, each year SDI is required to certify whether it is in compliance with the permit. This certification must be signed by SDI's responsible official. Falsification of any required record or report is a criminal offense.

No changes were made to the permit as a result of these comments.

Comment 11:

The regeneration of spent pickle liquor produces a solid stream (powder or pellets) of iron oxide, sulphate or chloride, depending upon the processing chemistry. The TSD discloses a solid byproduct stream and discloses iron oxide sales to industrial customers (TSD, Appx. B, p. 3), but fails to include any emissions from the handling of this stream. There will be fugitive PM/PM10 and HAP emissions from discharging, storing, and transporting this solid to its end use.

The acid regeneration plant also includes a water treatment system. TSD, p. 3; Draft Permit, p. 26. The TSD and the file produced by IDEM contain no descriptive information on this treatment plant. However, waste water treatment systems in acid regeneration plants generally produce a sludge that must be disposed. The TSD does not contain any fugitive emissions from handling and disposal of this sludge. There will be fugitive PM/PM10 and HAP emissions

Response to Comment 11:

Appendix B provides a general description for acid regeneration facilities. That information does not state that SDI intends to sell the acid regeneration facility byproduct to industrial customers.

The commenter claims, but offers no basis for the assertion, that fugitive PM/PM10 and HAP emissions will be generated from the solid by-product stream or the handling and disposal of wastewater treatment sludge. First, the proposed acid regeneration facility will not generate any wastewater, so no wastewater sludge will be produced. Second, the only by-product from this process is iron pellets, a solid material which will be reused on-site as a supplemental feedstock to the EAFs. This process is not expected to generate fugitive PM/PM10 or HAP emissions. Note that the acid regeneration facility is designed to alleviate the current practice of transporting waste pickle liquor off-site, which should actually reduce emissions associated with truck traffic. Therefore, new fugitive PM/PM10 emissions are not expected from the transport of any by-product.

No changes were made to the permit as a result of these comments.

Comment 12:

The TSD calculated PM/PM10 emissions from the acid regeneration facility to be 10.9 ton/yr, based on proposed manufacturer specifications, including a flow rate of 13,333 dscf/min and an outlet PM/PM10 concentration of 0.022 gr/dscf. TSD, Appx. A, p. 2. There are two problems with this information.

First, the file produced by IDEM does not contain a vendor guarantee for the values used to calculate the 10.9 ton/yr figure, nor does it contain any evidence that IDEM made an effort to confirm these assumptions. It is standard practice to request a copy of the vendor guarantee when a vendor guarantee is relied on to estimate emissions. This is particularly important in this case, given the number of changes made in the record and the general confusion surrounding the acid regeneration facility. See, e.g., 3/2/07 E-mail Sidner to Smith. The Permit should be revised to require that vendor guarantees be provided to IDEM to support the PM/PM10 emission calculations prior to start of construction of the acid regeneration plant.

Second, the grain loading is characterized as “PM,” which is typically just filterable PM. A significant condensable fraction is expected due to the presence of hydrogen chloride and

chlorine. Thus, total PM/PM10 emissions may be underestimated and BACT improperly determined.

Response to Comment 12:

As indicated in Appendix A, the 10.9 ton per year PM/PM10 figure is based on a vendor-provided scrubber emission rate of 0.022 gr/dscf. Nothing in 326 IAC 2 requires the validation of vendor-provided emission rates or acquisition of vendor guarantees. The permit contains the necessary provisions to ensure continuous compliance with the 0.022 gr/dscf emission rate which has been determined to be BACT.

The 0.022 gr/dscf emission rate is for PM and PM10. And by definition, PM10 includes condensable PM10.

No changes were made to the permit as a result of these comments.

Comment 13:

The TSD reported hydrogen chloride ("HCl") emissions to be 3.2 ton/yr, but did not provide any supporting calculations, leaving the reviewer to guess as to its origin. TSD, Appx. A, p. 2. The file produced by IDEM indicates that these emissions were calculated from manufacturer specifications, including a flow rate of 13,333 scf/min and a hydrogen chloride concentrations 12 ppmv. TSD, Appx. A, p. 2. There are two problems with this calculation.

First, the file produced by IDEM does not contain a vendor guarantee for the values used to calculate the 3.24 ton/yr of HCl emissions, nor does it contain any evidence that IDEM made an effort to confirm these assumptions. As noted above, it is standard practice to request a copy of the vendor guarantee when a vendor guarantee is relied on to estimate emissions. This is particularly important in this case, given the number of changes made in the record and the general confusion surrounding the acid regeneration facility. The Permit should be revised to require that vendor guarantees be provided to IDEM to support the HCl emission calculations prior to startup of the acid regeneration plant.

Second, the PM/PM10 emissions from the facility result largely from HCl entrained in the exhaust (and a small amount of combustion particulates). 3/2/07 E-mail Sidner to Smith. The PM/PM10 emissions from the acid regeneration facility are 10.9 ton/yr, while the HCl emissions are only 3.24 ton/yr. TSD, p. 5. The TSD should identify the chemicals that make up the difference between these two numbers, or 7.7 ton/yr, because if they are HAPS (e.g., chlorine), this difference alone would push the total HAPS over the 25 ton/yr major source significance threshold.

Response to Comment 13:

The HCl emission calculations for the acid regeneration system are provided on page 2 of Appendix A and are based on a vendor-provided outlet emission rate of 12 ppmv. As explained in Response to Comments 8 and 12, vendor guarantees are not required for a BACT determination.

Non-HCl condensable PM10 is expected to be the difference between the PM/PM10 emissions estimate (10.9 tons per year) and HCl emissions estimate (3.24 tons per year) for the acid regeneration facility.

No changes were made to the permit as a result of these comments.

Comment 14:

The acid generation facility will fire 21.2 MMBtu of natural gas to generate process heat. 3/23/07 Letter Baugues to Sidner. The TSD combustion emission calculations are based on AP-

42 emission factors for small, natural-gas-fired boilers equipped with low NOx burners. AP-42, Table 1.4-1 and TSD, Appx. A, p. 2. The Draft Permit identifies one 21.2 MMBtu/hr natural-gas fired boiler, but does not require the use of low NOx burners. Further, it is unclear whether a boiler will be used, or whether the 21.2 MMBtu/hr is simply the firing rate of the burners in the circulating fluidized bed. This point should be clarified.

Response to Comment 14:

IDEM believes the TSD and permit are sufficiently clear. The nominal firing rate of the burners in the circulating fluidized bed of the acid regeneration facility is 21.2 MMBtu/hr and corresponding emission calculations were completed and provided in Appendix A.

Emission rates for natural gas burners continue to improve with each passing year and what was considered "low NOx" 15 years ago would now emit more NOx than a gas burner manufactured today. Other than AP-42 factors, which generally estimate higher emissions than any current technology burner emits, there is no particular emission rate ascribed to "low NOx." A low NOx burner is not a specific product in the marketplace. Therefore, it is unnecessary for IDEM, OAQ to describe the burners used in the acid regeneration facility as "low NOx."

No changes were made to the permit as a result of this comment.

Comment 15:

The Draft Permit requires the use of a generic "scrubber" to control emissions from the acid regeneration facility. Draft Permit, p. 26, Condition D.13.4. However, e-mail correspondence indicates that no add-on control device would be used and describes instead a "venturi circulation system" which is part of the acid regeneration facility itself. 4/20/07 E-mail Hatchett to Sidner. Further, the applicant indicates that a mist eliminator will be used to control HCl. 3/23/07 Letter Baugues to Sidner, p. 1. The Draft Permit and TSD do not identify a mist eliminator.

Response to Comment 15:

Conditions D.13.1 and D.13.2 specify PM and HCl emission limits for the acid regeneration system. SDI has indicated that it will use a scrubber to comply with those limitations. The specific type and configuration of the scrubber does not need to be included in the permit as long as SDI complies with the respective limitations. A mist eliminator will not be used as particulate control.

No changes were made to the permit as a result of this comment.

Comment 16:

The Draft Permit only requires a stack test every five years for PM/PM10 and HCl, which is not adequate to assure that emissions remain below the total HAP threshold of 25 ton/yr and to assure continuous compliance with the PM/PM10 BACT limit. The Permit should be revised to require continuous monitoring for HCl using an HCl CEMS, or, in the alternative, annual stack tests and parametric monitoring. See discussion in Comment I.B.3, which is incorporated here by reference. Further, the Permit should be modified to clarify whether the PM/PM10 limits are filterable or filterable plus condensable particulate matter.

The Permit requires scrubber monitoring of the recirculation pump discharge pressure and scrubbant flow rate. Draft Permit, p. 27, Condition D.13.6. However, this does not cure the failure to monitor frequently.

First, the Draft Permit fails to set a specific threshold or range for these parameters required to assure acceptable operation, apparently because the vendor had not provided SDI with a design flow rate. 4/20/07 E-mail Hatchett to Sidner. However, this does not excuse IDEM

from requiring that a study be conducted to collect the requisite information and the Permit modified at a later time.

Second, the Draft Permit does not require any demonstration of a relationship between these scrubber parameters and HCl.

Third, the Draft Permit does not state that an exceedance of these parameters constitutes a per se violation of the HCl limit nor trigger additional monitoring. The only way to assure that HCl emissions remain below 3.24 ton/yr is to monitor HCl emissions at the outlet of the scrubber. Parametric monitoring must be enforceable and related to the parameter of interest.

Response to Comment 16:

The acid regeneration facility is by design an acid recovery operation that reduces the need for purchasing virgin acid and for shipping waste pickle liquor off-site. HCl is a critical component in the steel pickling process and it is in SDI's interest to maximize HCl recapture. The scrubber, a Venturi Circulation System, is necessary to recover large amounts of HCl. While the scrubber's primary purpose is to provide the conditions necessary for effective HCl recovery, it simultaneously performs as a pollution control device. In order for the system to work properly and perform both its primary function as well as pollution control, the system requires free-flowing water; i.e. the scrubbant. Therefore, the best way to monitor the scrubber is to monitor the scrubbant flow rate and recirculation pump discharge pressure.

The Permit sets a specific range for both the scrubbant flow rate and recirculation pump discharge pressure to ensure proper operation and resultant HCl recovery – the values established by either the manufacturer or the latest stack test. Condition D.13.6 requires actions to be taken pursuant to Condition C.16 (Response to Excursions or Exceedances) when either of these parameters are outside the values established by either the manufacturer or the latest stack test. IDEM, OAQ requires SDI to obtain compare values from testing and monitoring in order to determine the necessity of taking response steps. The values obtained during either a stack test or from the manufacturer for these two parameters will establish the relationship between proper operation of the system and proper control of HCl.

If a reading is outside the respective parameter, Condition D.13.6 states that failure to take response steps in accordance with Condition C.16 shall be considered a deviation. Depending on the specific situation, additional monitoring is an option that may be taken under Condition C.16. SDI is required to report deviations in a quarterly report and also to report compliance with this condition in its annual compliance certification. This certification must be signed by SDI's responsible official. Falsification of any required record or report is a criminal offense.

IDEM, OAQ does not believe that CEMS can be used to reliably monitor HCl. Neither does IDEM, OAQ believe that a HCl CEMS is commercially available.

No changes were made to the permit as a result of these comments.

Comment 17:

The TSD concludes that a wet scrubber with an outlet grain loading of 0.022 gr/dscf, achieving 90% PM/PM10 control, is BACT for the acid generation plant. TSD, Appx. B, p. 5. This is not BACT for PM/PM10 emissions from the acid regeneration plant for several reasons, largely identical to those previously described for the BACT analysis for the new baghouse in Comment I.C.2.

(All Available Technologies Not Evaluated)

"All available" technologies must be evaluated. The TSD evaluated a baghouse, dry electrostatic precipitator, wet scrubber, and high efficiency air filter. TSD, Appx. B, p. 4. This list is not adequate for two reasons.

First, the source cited in the TSD, the EPA's Air Pollution Control Technology Fact Sheets, cited many additional available technologies. TSD, Appx. B, p. 5. These include: extended media, cyclone, elutriators, mechanically-aided separators, momentum separators, settling chambers, fiber-bed scrubber, mechanically-aided scrubber, orifice scrubber, packed-bed/packed-tower wet scrubber, venture scrubber, spray-chamber/spray-tower scrubber, and wet electrostatic precipitator. The TSD did not evaluate any of these.

Second, the TSD evaluated a dry electrostatic precipitator ("dry ESP"), which is not appropriate for an acid regeneration plant due to the nature of the flue gas, but failed to evaluate a wet electrostatic precipitator ("wet ESP"), which is ideal for flue gases from an acid regeneration plant and has the highest PM/PM10 removal efficiency among the available control technologies, up to 99.9% or 100 times more efficient than the scrubber that was selected as BACT.

Wet ESPs use the same three-step process used in dry ESPs to collect particles, namely charging, collecting and cleaning particles from plates. However, in a wet ESP, cleaning of the collecting electrodes is performed by washing the electrode surface with liquid, rather than mechanically rapping the collection plates. This significantly affects the nature of the particles that can be captured, the performance efficiency that can be achieved, and the design parameters of the equipment.

A wet ESP is ideal for gases with a high moisture content, that contain sticky particulate, that contain sub-micron particles, that contain acid droplets, and whose temperature is below the dew point. Thus, they are ideal for acid regeneration plant gases. A wet ESP is significantly different from dry ESP and was not considered in the TSD.

Wet ESPs have been used in a wide range of industries for a century to control acid mists and particulate matter, including non-ferrous smelters, steel industry, spent acid plants, paper industry, incineration, and power plants. Thousands of wet ESP modules are in worldwide commercial operation. The removal efficiency of a wet ESP for PM/PM10, which includes a large component of acid mist, ranges from 99 to 99.9%, which is much higher than the 90% wet scrubber selected as BACT in the TSD. Thus, the wet ESP is the top technology and should be required as BACT at the facility, absent a demonstration of unique adverse energy, environment, or cost impacts. We are aware of none. This technology would result in a much lower BACT PM/PM10 limit than the selected technology and is thus BACT for PM/PM10 emissions from the acid regeneration plant.

Third, the TSD also failed to consider combinations of technologies. Many of these technologies in combination with other processes, can achieve greater than 99.85% reduction in PM10. A typical acid regeneration plant uses a mist eliminator, venturi scrubber and scrubber column to control emissions. The TSD failed to evaluate combinations of controls.

(Scrubber Is Inconsistent With Project Description)

The TSD selects a generic "wet scrubber" as BACT for PM/PM10. TSD, Appx. B, p. 5. The Draft Permit requires the use of a generic "scrubber" to control emissions from the acid regeneration facility. Draft Permit, p. 26, Condition D.13.4. However, e-mail correspondence indicates that no add-on control device would be used and instead describes a "venturi circulation system" which is part of the acid regeneration facility itself. The Application, revised form GSD-06, lists the following control measures for the acid generation plant, emission point 93: a random packed bed scrubber, followed by an absorber, followed by water spray nozzles followed by an agglomerator. 9/20/06 E-mail from Smith to Sidner and attached GSD-06.

The record is unclear as to whether this listed equipment is part of the "venturi circulation system" or downstream process control equipment. The TSD, in fact, fails to disclose important

details of the proposed acid regeneration facility, such as the existence of the above-described equipment, preventing meaningful public review. It has taken commenters excessive amounts of time to piece together a basic project description from e-mail correspondence. This is not acceptable. The TSD and Permit should be revised to accurately describe the proposed acid regeneration plant, including its control train. The BACT analysis should be revised to analyze the proper facility.

(Maximum Degree of Reduction Not Required)

As explained previously, BACT is an emission limitation based on the maximum degree of reduction that is achievable. The TSD and the file produced by IDEM contain no evidence that the proposed PM/PM10 BACT limits for the acid regeneration plant are based on the maximum degree of reduction that is achievable. The TSD does not contain any ranking of control alternatives comparable to the examples in the NSR Manual in Tables B-2 and B-3.

The TSD picked a 90% efficient wet scrubber as the top control technology and then concluded, without the intervening step of identifying uncontrolled emissions and calculating outlet loading, that BACT was an outlet grain loading of 0.022 gr/dscf. The selected grain loading, rather than being calculated from uncontrolled emissions, was based on the applicant's unsupported assertion that "we believe this should be the appropriate BACT limit for this unit." 3/23/07 Letter Baugues to Sidner, p. 1. BACT is not an applicant's belief. The TSD and the file produced by IDEM do not disclose the degree of reduction represented by 0.022 gr/dscf and, in fact, contain no support whatsoever for the selected grain loading beyond the applicant's belief.

The BACT analysis also contains no support for the selected 90% efficiency attributed to the wet scrubber. The source that the TSD relied upon indicates that wet scrubbers can control up to 99% of the PM/PM10. The BACT analysis does not explain why the SDI acid regeneration scrubber can only achieve 90%, while its source document reports PM/PM10 control levels up to 99%.

(Lower Emission Limits Have Been Proposed)

The original BACT analysis in the April 2006 Application (Ap., p. 3) and the BACT analysis produced in response to IDEM NOD#1 proposed a BACT PM/PM10 limit of 0.01 gr/dscf. The response to IDEM NOD#4 recants, stating that "[w]e cannot support the 0.01 gr/dscf limit for BACT that was submitted earlier." 3/23/07 Letter Baugues to Sidner, p. 1. Elsewhere, SDI explained that the 0.01 gr/dscf value was based on vendor information for a roaster type facility. The new PM/PM10 limit is the vendor guarantee for a fluidized bed system, the current proposal. 9/20/06 E-mail from Smith to Sidner.

However, this should not be the end of the story. Vendor guarantees do not determine BACT, but rather a top-down BACT analysis. The results of the top-down analysis should be supplied to the vendor, who then quotes a system capable of delivering the BACT emission levels. Apparently, this process was not followed as SDI proposes as BACT whatever its vendor proposes. The 0.022 gr/dscf value is based on a venturi circulation system, which is an integral part of the fluidized bed system. It apparently does not contemplate any add-on controls, as required in a BACT analysis. The record contains no evidence that IDEM questioned or investigated this late-offered limit. The record should reflect the basis for increasing the PM/PM10 BACT limit and address the fact that much lower limits can be achieved using more efficient control technology, including add-on technology. For example, if a 90% efficient scrubber were added, the limit would be reduced to 0.0022 gr/dscf.

Response to Comment 17:

Regarding the evaluation of available control technologies, only one other acid regeneration system was identified, at Nucor Steel in Crawfordsville, Indiana. The PM10 limit for the Nucor acid regeneration system is 2.0 pounds per hour based upon the use of a scrubber and has not been verified by stack test. The Nucor system utilizes a roaster technology which is considerably

different than the fluidized bed system proposed by SDI. The nominal size of the Nucor unit is 7.3 MMBTU/hr. On a lb/MMBTU basis, the Nucor PM10 limit is 0.274 lb/MMBTU (2 lb/hr / 7.3 MMBTU/hr). The nominal size of the proposed SDI unit is 21.2 MMBTU/hr. The proposed PM10 emission limit for the SDI unit is 0.118 lb/MMBTU (2.5 lb/hr / 21.2 MMBTU/hr). Therefore, the proposed PM10 limit is less than half of the Nucor limit on a lb/MMBTU basis. Note that, as stated in Appendix B, scrubbers are the only technically feasible control option identified. The use of electrostatic precipitators (ESPs), wet or dry, is not a technically feasible control option for the acid regeneration system. 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. Dissolved iron in the spent pickle liquor would stick to the collection plants, leading to decreased collection efficiency and eventual failure of the wet ESP.

As explained in Appendix B, wet scrubbers are a class of control that includes Venturi scrubbers. Although the particular technology used may vary by scrubber type, all wet scrubbers use a scrubbing medium to remove pollutants from an air stream. The Venturi Circulation System to be used by SDI is a type of wet scrubber, and is consistent with general terms like “wet scrubber” or “scrubber” used in the permit documents.

As explained in Response to Comment 8, IDEM, OAQ has followed the NSR Manual in conducting its BACT Determination. Tables B-2 and B-3 referred to by commenter are sample charts that, according to the NSR Manual, rank “control technology options.” (NSR Manual, B.25-B.26.) The chart is then used in comparing the control alternatives during step 4 of the BACT selection process. (NSR Manual, B.26.) IDEM listed the technically feasible control technology options in a table form as well, to be used in comparing the control alternatives in the next step of the BACT determination.

BACT was not chosen for this modification based on SDI’s position of what should be BACT. Rather, IDEM, OAQ conducted a top-down BACT analysis reviewing the RBLC for other facilities that implemented BACT to control PM/PM-10 emissions from an acid regeneration system. As stated in Appendix, the limit proposed by SDI is more stringent than the only PM/PM10 BACT limit established for an acid regeneration system. This limit is based on vendor-provided information.

The Air Pollution Control Technology Fact Sheet cited by commenter is specific to impingement-plate/tray scrubbers and is not applicable to this scrubber. The Fact Sheet for Venturi scrubbers provides that control efficiencies range from 70-99%, but does not provide any information specific to acid regeneration facilities to support commenter’s assertion that 99% control efficiency could be achieved in this particular application.

SDI’s originally-proposed PM/PM10 limit of 0.01 gr/dscf was based on an acid regeneration facility using a roaster technology. Therefore, once SDI informed IDEM, OAQ that the acid regeneration system would be based on fluidized bed technology, BACT had to be subsequently re-evaluated.

The commenter suggests that SDI should conduct a BACT Determination and then present vendors with the results in order to design a system that can meet the BACT emission levels. If that approach was followed in this case, the acid regeneration facility proposed by SDI would not be designed to meet the stringent limits contained in this permit. The only other PM/PM10 BACT limit established for an acid regeneration system is 0.04 gr/dscf. Proper BACT evaluation resulted in a limit more stringent than what was previously established as BACT.

The commenter asserted that a BACT analysis should always require the evaluation of add-on controls. That is incorrect. The definition of BACT specifies that it is “an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under the CAA… taking into account energy, environmental, and economic impacts and other costs….” The NSR Manual lists the five “top-down” steps, which do not specify that the control options to be considered need be add-on controls.

Regarding the commenter's assertion that another scrubber could be added to the acid regeneration facility, nothing in the RBLC or other technical documents indicates that this is currently being done at other acid regeneration facilities. In addition, a BACT review does not require the evaluation of layered controls.

No changes were made to the permit as a result of these comments.

Comment 18:

The 1990 Amendments to the Clean Air Act establish a statutory list of 189 substances that are formally designated as hazardous air pollutants ("HAPs"). Section 112(a) defines a "major source" of HAPs as "any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutants or 25 tons per year or more of any combination of hazardous air pollutants." Indiana regulation 326 IAC-2-1-3.4 requires that maximum achievable control technology ("MACT") be applied to major new sources of HAP emissions. To determine if MACT applies, HAP emissions are estimated and compared to the thresholds established by the 1990 Amendments and promulgated at 40 CFR 63.41.

The Pickle Line Acid Regeneration Facility will emit hydrogen chloride ("HCl"), a hazardous air pollutant ("HAP"). The new baghouse will emit heavy metals and other HAPS. The HAP emissions from the acid regeneration facility plus the new baghouse are sufficient to cause HAP emissions from the SDI Butler facility to exceed 25 ton/yr, requiring NESHAP Subpart CCC for the acid regeneration plant (326 IAC 20 and 40 CFR Part 63, Subpart CCC) and Subpart EEEE for the entire SDI Butler facility (326 IAC 20 and 40 CFR Part 63, Subpart EEEEE).

The applicant's calculations indicate that total HAP emissions from the modified facility would be 24.08 ton/yr after the acid regeneration facility is operational. 9/5/06 E-mail Smith to Sidner. The permit engineer's calculations also suggest HAPs from known sources are very close to the 25 ton/yr threshold and suggest certain other unknown sources may push HAPs emissions over 25 ton/yr. 8/31/06 E-mail Sidner to Smith. This is only about a ton shy of the major source threshold of 25 ton/yr for total HAPs.

The permit engineer requested support for the applicant's HAP emission estimate of 24.08 ton/yr, but the file that was produced by IDEM contains no response. 8/21/06 E-mail Sidner to Smith; 7/2/07 E-mail Sidner to Hatchett. The permit engineer's calculations in August 2006 and March 2007 indicated that the source was a major source for HAPS. 8/31/06 E-mail from Sidner to Smith; 3/8/07 E-mail Sidner to Baugues (note that the attached file, 23028appA.xls, containing the HAP calculations, was not produced by IDEM and is key to these comments.) As late as March 7, 2007, IDEM directed the permit engineer "to proceed based on the assumption that the source will be a major source of HAPs and include any now-applicable NESHAPs in the permit." 3/7/07 Phone-Log from Stuckey to Sidner Re: Status. In July 2007, IDEM advised SDI that they were uncomfortable with their HAP emission summary. 7/11/07 Phone-Log from Smith to Hatchett. The record is silent thereafter.

However, the TSD issued a few weeks later reports HAP emissions lower than disclosed by SDI. The TSD is silent as to this dispute and claims the reverse, namely that the SDI Butler facility is not a major source for HAPS. What happened in the intervening few weeks to change IDEM's conclusion? The file produced by IDEM does not explain the reversal and is inadequate to support the claim that the SDI facility is not a major source of HAPS. We believe, as set out below, that the TSD's calculations in Appendix A underestimate HAP emissions from the Project and that the SDI Butler facility is a major source for HAPS.

The TSD estimated total HAP emissions from the facility to be 20.6 ton/yr, comprising 14.6 ton/yr from the exiting paint line, 0.37 ton/yr from existing IDI RHF modifications, 1.0 ton/yr from other existing sources, 1.4 ton/yr from the existing pickle line, and 3.24 ton/yr from the proposed acid regeneration facility. TSD, Appx. A, p. 2. This estimate is wrong for several reasons.

First, it is based on the applicant's calculations as presented in the applicant's response to NOD #2. However, the TSD omitted one of the sources of HAPS disclosed by the applicant, 4.5 ton/yr from existing sources in 033-8091-00043. 9/5/06 E-mail from Smith to Sidner. When these emissions are added, the TSD's HAP estimate increases from 20.6 ton/yr to 24.08 ton/yr, less than 1 ton/yr shy of the major source threshold of 25 ton/yr.

Second, the TSD excluded the increase in heavy metals and other HAP emissions from adding the new baghouse. The processes serviced by the new baghouse (presumably an additional 1.1 MMcfm of airflow to draw more internal dust to the roof capture system) would increase both filterable and total PM/PM10 emissions. TSD, p. 5. Heavy metals are present in this dust, including lead, chromium, manganese and nickel, which are HAPS. We estimated in Comment I.B.1 that lead emissions alone would increase by 1.03 to 3.82 ton/yr. These lead emissions plus HAP emissions from existing sources and HCl from the new acid regeneration plant exceed the major source threshold for total HAPS of 25 ton/yr.

Third, the TSD omitted HAP emissions from the EAF dust silo. This silo would emit 0.45 ton/yr of PM/PM10. Assuming the same ratio of lead to total PM/PM10 as calculated in Comment I.B.1, this silo would emit 0.0024 to 0.0089 ton/yr of lead. In addition, this silo would emit other HAPS, including other heavy metals.

Fourth, the TSD acknowledge that chlorine will be emitted (TSD, Appx. B, p. 3), but omitted chlorine emissions from the acid regeneration plant. Chlorine (Cl2) is a HAP and is one of the byproducts of regenerating spent pickle liquor. The TSD and the file produced by IDEM are silent as to chlorine emissions from the acid regeneration plant.

Fifth, the TSD omitted HAP emissions from combusting 21.2 MMBtu/hr of natural gas in the circulating fluidized bed, claiming that "organic HAP emissions from natural gas combustion are expected to be negligible." TSD, Appx. A, p. 3, note (c). However, the same section of AP-42 that the TSD relied on to calculate criteria pollutant emissions from the "boiler" indicates that HAP emissions are not negligible. The emission of hexane, a HAP, is 0.2 ton/yr. Total HAP emissions from natural gas combustion in the "boiler" should be estimated and added to the HAP totals in Appendix A. See also TSD, Appx. C, p. 9. While not individually significant, a large number of small sources, when combined, exceed the 25 ton/yr major source significance threshold.

Sixth, Appendix C of the TSD, Air Quality Analysis, confirms the above. The applicant's permitting consultant, Keramida, prepared a HAP emission inventory to perform a risk assessment for the facility. TSD, Appx. C, pp. 7-9. This inventory found 4 ton/yr of HAPS, of which 3.2 ton/yr were HCl. The additional 0.8 ton/yr, plus the applicant's estimate of 24.08 ton/yr from the existing facility, yields total HAP emissions of 24.88 ton/yr. This rounds up to 25 ton/yr, making the SDI Butler facility major for HAPS based solely on the applicant's calculations. This inventory identifies other HAPS that would be emitted in higher amounts than lead, including nickel and manganese. Id., p. 9. This HAP emission inventory is not in the file produced by IDEM and thus cannot be reviewed, but also appears to underestimate total HAPS. This HAP inventory should be included in the revised TSD, together with supporting calculations.

Response to Comment 18:

On July 11, 2007, SDI submitted to the permit writer a written explanation addressing IDEM, OAQ's specific concerns regarding HAPs emissions. On July 12, 2007, the permit writer responded to SDI's submittal, stating that the information provided was sufficient to satisfy IDEM, OAQ's concerns. IDEM required additional information from the Permittee in order to process the permit. IDEM does not believe the file is at all inconsistent with the TSD.

IDEM, OAQ estimated the source's potential to emit HAPs. This includes all HAPs, even those emitted in minute quantities from some natural gas fired combustion sources. The total HAPs potential to emit, as provided in Appendix A, is 20.6 tons per year.

The 4.5 tons per year figure from other existing sources in CP 033-8091-00043 was adjusted and not omitted. This value was originally attributed to HAPs generated only from natural gas combustion sources in that permit. However, IDEM, OAQ has determined that this is an over-estimate of HAPs emissions from natural gas combustion from these sources. After correction, potential to emit HAPs from 'Other Existing Sources' is approximately 1.0 ton per year, as provided in Appendix A.

As explained in Response to Comments 2 and 8, the proposed baghouse is not an emission unit and the commenter miscalculated the lead potential to emit. As stated in Response to Comment 9, the potential to emit HAPs of the new EAF dust silo is approximately 0.00126 ton per year. As stated in Appendix A, the source-wide potential to emit a single HAP or any combination of HAPs is less than 10 tons per year and 25 tons per year, respectively.

As explained in Response to Comment 11, the description of an on-site acid regeneration is in general terms only, and describes what typically occurs in the process. The description states that “while the acid regeneration process has a potential of emitting significant quantities of HCl and CL_2, it is capable of recovering a high percentage of the HCL acid and allows for the collection of iron oxide.” There is no information to support commenter’s argument that the acid regeneration facility to be installed by SDI will generate chlorine emissions or that any chlorine emissions are significant.

IDEM, OAQ did not use AP-42 factors for calculating emissions for natural gas combustion, due to the unreliability of those values. For example, the hexane value given in Table 1.4-2 of AP-42 has an E rating, the lowest possible rating for an emission factor. As a result, IDEM, OAQ reviewed the U.S. EPA’s SPECIATE 4.0 database for HAPs associated with natural gas combustion. This database showed that only isohexane and cyclohexane are associated with natural gas combustion, neither of which are HAPs.

The air quality analysis in Appendix C does not support the commenter's arguments regarding HAPs. The 24.08 tpy estimate is commenter's, not the applicant’s, and has already been shown to be incorrect. Note however, that the HAP calculations of Appendix A are seemingly different than what was provided in Appendix C. Appendix C conservatively provides a 4.0 tons per year HAP emission increase of the modification while Appendix A estimates this figure to be 3.24 tons per year. IDEM, OAQ believes that this conservative estimate for modeling is reasonable and does not warrant any changes.

No changes were made to the permit as a result of these comments.

Comment 19:

The January 2007 application contains a BACT analysis to determine an SO2 limit for the LMF Baghouse. This analysis is erroneous. It rejected the lowest limit because SDI could not confirm that it had been verified. A permit limit alone is sufficient to qualify as BACT. The analysis only considered charge substitution and flue gas desulfurization. The latter was improperly eliminated due to the high air volume, low sulfur concentrations and high particulate concentrations. The analysis fails to quantify the flow volume, sulfur, and particulate concentrations and thus its conclusion is not supportable. Many scrubbers can successfully treat such gas streams. Finally the TSD does not contain a BACT analysis for this source.

Response to Comment 19:

SDI withdrew its request regarding the LMS Baghouse SO2 limit. Therefore IDEM, OAQ did not change the existing SO2 limitations applicable to the LMS and the matter is not addressed by the TSD or permit.

No changes were made to the permit as a result of this comment.

Comment 20:

We requested that IDEM produce the SDI facility emission inventory and calculations in Excel spreadsheet format. This is the standard method for both the applicant and the reviewing agency to calculate and review the facility emissions. We have reviewed many major source applications, and the usual mode for responding to the emission calculation data request is to provide unlocked Excel spreadsheets showing the equations and assumptions as they were actually applied. The documents provided by IDEM, however, include only a few emission calculations and emission reporting tables. And these were produced in hardcopy format.

In this hardcopy form, it is impossible to verify the calculations needed for the complete SDI facility emission inventory. The majority of SDI's existing PSD increment-consuming sources are not addressed in any form in the Application, other than to list the emissions in summary form. Ap., Table 4-2.

Apparently, IDEM does not have any electronic form of the emission calculations, only the hardcopy files provided. The actual emission calculations applied in the permit Application were not provided by IDEM, and have not been made available to the reviewing public. One would hope that the equations shown on the hardcopy listings are the same as those actually used in the final calculations, but there is no way to know for sure unless the equations are checked by hand, or by viewing the calculations in the program used to perform the inventory (i.e., Excel spreadsheets).

By not having the native spreadsheets, IDEM could not itself have reviewed the facility emission calculations in a complete fashion. At best, they could only spot-check. And since the highest second-high 24-hour PM_{10} modeled air concentration is over 81% of the allowable PSD increments (without the necessary corrections to the modeling methods discussed below), any emission calculation errors could adversely impact permit issuance. Draft Permit, Appendix C, p. 5. This concern also applies to the Class I modeling impacts such as visibility impairments.

The USEPA concurs that meaningful public review requires full transparency by the applicant of its emissions and modeling work. For example, the EPA does not accept analyses prepared unless a transparent view of the actual applied dispersion modeling equations is provided. The USEPA Guideline on Air Quality Models states clearly: "The developer must be willing to make the model available to users at reasonable cost or make it available for public access through the Internet or National Technical Information Service: the model cannot be proprietary." And further: "However, as specified by Guideline paragraph 3.1.1(c)(vi), air quality models used in U.S. regulatory programs must be in the public domain at reasonable cost. This is because the source code needs to be open for public access and scrutiny to enable meaningful opportunity for public comment on new source permits, PSD increment consumption and SIPs."

Similarly, without the actual electronic spreadsheets used to perform the SDI emission calculations, "meaningful opportunity for public comment on new source permits, PSD increment consumption and SIPs" is not possible.

Response to Comment 20:

IDEM, OAQ fully responded to the information request by providing a large number of files and emails. However, due to graphic file incompatibility and fax problems, IDEM, OAQ was unable to initially provide all the modeling information to the commenter. During a phone call in late August, the commenter indicated that additional information was not needed - that is why some modeling information was not provided.

The modeling files that were presented to IDEM contain all the relevant information that a plot plan has. Often, the consultant takes modeling information from multiple diagrams. Often, electronic information is superior to paper. Emission limits are a beginning point for modeling exercises and modelers typically do not receive emission calculations.

No changes were made to the permit as a result of these comments.

Comment 21:

In response to our document request, we received a copy of the PSD permit Application dated April 2006. Subsequent inquiries with IDEM staff, however, revealed that there is at least one more recent version of this document, dated January 2007. It was only by accident that we discovered there was an updated version.

Our review of the SDI facility draft permit has been seriously hampered by IDEM providing us with only the outdated Application. For example, the dispersion model described in the April 2006 Application is ISCST3, while we received AERMOD input and output files. The April 2006 Application says Fort Wayne meteorological data from 1990 to 1994 was used; however, we received years 1986 through 1990 in response to our data request. Ap., p. 7. The Application does not mention many of the SDI emission sources included in the PSD modeling analyses, despite the inclusion of a table described as the "Emission Inventory of the Butler Facility." Ap., Table 4-2.

Even basic information, such as the location of the Melt Shop Baghouse Building (the main subject of the significant source modification!) was listed as unknown in the April 2006 Application we received from IDEM. Ap., p. 13. And since IDEM never provided the most recent version of the Application, it is impossible to prepare a complete review the SDI facility. Furthermore, we spent an inordinate amount of time trying to reconcile the modeling files and emissions with the information described in the outdated Application IDEM actually provided.

Response to Comment 21:

After it became clear that emission rates would be slightly changed, the portions relevant to modeling were revised and sent to IDEM. Merely the location of the Melt Shop Baghouse was unknown, and originally two scenarios were modeled for both of the possible locations.

In 2006, EPA transitioned away from using the ISCST3 model to using AERMOD. The initial review of this permit was one of the last times which IDEM used ISCST3 before it was phased out entirely. When the proposed emission rates had changed, the modeling had to be redone with AERMOD. A different meteorological processor is used for AERMOD, and so when the model was changed, the meteorology changed as well.

No changes were made to the permit as a result of these comments.

Comment 22:

Since they are released near ground-level, road dust emissions are among the most important sources for verifying compliance with the 24-hour PM_{10} PSD increment of 30 $\mu g/m^3$. SDI's modeling of road dust, however, uses incorrect modeling methods and emission rates. SDI's errors lead to an under-prediction of modeled 24-hour PM_{10} impacts.

SDI modeled particulate emissions from various fugitive dust sources, including 15 paved road volume sources. The emissions from road sources must be scrutinized because air impacts tend to be quite high from these ground-level releases. SDI, however, provided no information on how the road dust emissions were calculated. In addition, SDI provides no information on whether vehicle travel (and therefore particulate emissions) will increase due to the proposed major source modification. IDEM must verify whether significant quantities of additional road dust emissions, due to both the existing and proposed project, have been neglected.

The PM_{10} emissions from the 15 modeled paved road sources total about 0.42 tons per year. Ap., Table 4-2. These emissions represent less than 0.04% of the total facility PM_{10} emission inventory. Based on our experience reviewing and assessing fugitive dust emissions for similar projects, these values are extremely low. IDEM should provide the emission factors used

to generate the paved road emissions, as well as all the input parameters required for these calculations. Without this information, it is impossible for a reviewer to identify whether the calculations have been performed correctly.

The most sensitive Class II air quality significance level for the proposed SDI project is the 24-hour PM_{10} PSD increment of 30 $\mu g/m^3$. Air dispersion modeling performed by SDI reports that the 2nd high 24-hr PM_{10} concentration is 24.5 $\mu g/m^3$, which occurs near the facility fence line. Draft Permit, Appendix C, p. 5. While this level is already over 81% of the allowable PSD increment, the figure itself is based on faulty air dispersion modeling and unrealistically low emission rates. Correcting the SDI Class II modeling mistakes will increase this value significantly, likely exceeding the 24-hour PM_{10} PSD increment of 30 $\mu g/m^3$.

In addition to the inappropriate use of Fort Wayne, Indiana meteorological data (see following comment) and concerns about the relatively low paved road dust emissions, SDI applied incorrect modeling methods for the facility area source emissions. Low-level, non-buoyant sources, such as haul roads, ponds, storage piles, and landfills are handled as area sources in dispersion models such as AERMOD, ISCST3, and CALPUFF. SDI, however, chose the unorthodox approach of modeling their roads as volume sources.

Modeling the roads as volume sources is only the first mistake. SDI modeled the roads as 15 connected square volume sources, ranging in size from 150 to about 280 meters across. Ap., Table 4-2. These volume sources do not depict the road geography and travel patterns in any meaningful way, thus leading to incorrect modeled air concentrations from these sources. The correct approach is to model these roads as a series of connected area sources that cover the precise locations of the travel paths. This can be done using AREAPOLY sources in AERMOD.

To confuse matters further, the permit Application incorrectly reports the modeled road source parameters. Ap., Table 4-2. The Application shows modeled values of the road dust volume source initial dispersion dimensions, σ_{y0} and σ_{z0}, as completely reversed from what was actually included in the modeling. In other words, the Application shows paved road σ_{y0} values that were modeled as σ_{z0} by SDI.

Lastly, SDI assumed a release height of 5.0 meters (16.4 feet) for the fugitive dust emissions from haul roads. In reality, the emissions will occur at a much lower level, on the order of 1.0 meter. The excessively high release height modeled by SDI leads to under-predicted downwind air concentrations.

The SDI modeling for paved roads must be corrected to use AERAPOLY sources (with 1.0 meter release height) that cover the true road locations. The IDEM Draft Permit is based on these incorrect modeling results for paved roads, thus the Permit is flawed.

Response to Comment 22:

The road dust emissions are pre-existing sources and are not increased due to this permit. AERMOD guidance says on page 1-5 "Line sources may also be modeled as a string of volume sources or as elongated area sources". Also, the AERMOD implementation guide says "In order to avoid overestimates for area sources, during light wind conditions, it is recommended that, where possible, a volume source approximation be used to model area sources. This approach can be applied with confidence for situation in which the receptors are displaced from the source." The sigma-y and sigma-z parameters used in the model were correct, the figures were merely mislabeled on the application.

However, the figure of 5 meters for the release height is too high. Generally, fugitive dust is entrained to the height of the truck, so the center of the truck would be half of that height. The correct figure for release height would be near 2 meters. Modeling was rerun with the 2 meter release height for these sources.

No changes were made to the permit as a result of these comments.

Comment 23:

SDI's NAAQS and PSD increment analyses use antiquated, low quality meteorological data as input to the state-of-the art AERMOD dispersion model. This mismatch of data needs and actual input compromises the entire permit analysis. The modeling basis for IDEM to issue the draft permit is severely flawed.

The Application assesses compliance with the NAAQS and Class II PSD increments using five years of meteorological data (1986 through 1990) from the Fort Wayne, Indiana, Airport. The airport data, collected at a location roughly 35 miles from SDI, is neither site-specific nor is the quality of the data acceptable for air dispersion modeling. The SDI Application, which relies on these data for air modeling, is therefore flawed.

For air dispersion modeling purposes, airport data are among the least desirable. Problems with location and the general quality of data are the primary concerns. The USEPA, in their Meteorological Monitoring Guidance for Regulatory Modeling Applications, summarizes these concerns about using airport data:

> For practical purposes, because airport data were readily available, most regulatory modeling was initially performed using these data; however, one should be aware that airport data, in general do not meet this guidance.

With this single statement, USEPA has described the entire problem. Clearly, SDI and IDEM are using the Fort Wayne Airport data simply because it is readily available. They are ignoring the quality, age, and applicability of the data for no other purpose than to expedite the permit for SDI. IDEM has neglected to verify whether the data even come close to meeting the requirements of the USEPA Meteorological Monitoring Guidance for Regulatory Modeling Applications. Even a simple review would show that the Fort Wayne Airport data do not meet these requirements.

First, the Fort Wayne Airport data are not site-specific to the SDI facility. The distance involved (about 35 miles) makes the airport data clearly not site-specific, with numerous land use classifications existing between SDI and the airport. Equally important, however, are the difference in land uses at SDI and the airport, respectively. The Fort Wayne Airport is comprised of concrete runways, parking lots, passenger terminals, and other structures associated with air travel activities. These surface and building characteristics in turn affect the boundary layer meteorology present at the airport. In addition, landings, takeoffs, and idling of airplanes affect the site-specific conditions at the airport such that the meteorological conditions are not representative of the area surrounding the SDI facility.

The major issue, however, is the quality of the meteorological data collected at the Fort Wayne Airport. It is important to remember that the airport data are not collected with the thought of air dispersion modeling in mind. For example, airport meteorological parameters are reported once per hour, based on a single observation (or in the case of ASOS data, a two-minute average) taken in the last ten minutes of each hour. The USEPA recommends that sampling rates of 60 to 360 per hour, at a minimum, be used to calculate hourly-averaged meteorological data. Air dispersion modeling requires hourly-averaged data, which represents the entire hour being modeled, and not only a snapshot taken in one moment during the hour.

In addition, data collected at the Fort Wayne Airport are not subject to the system accuracies required for meteorological data collected for air dispersion modeling. The USEPA recommends that meteorological monitoring for dispersion modeling use equipment that are sensitive enough to measure all conditions necessary for verifying compliance with the NAAQS and PSD increments. For example, low wind speeds (down to 1.0 meter per second) are usually associated with peak air quality impacts – this is because modeled impacts are *inversely*

proportional to wind speed. Following USEPA guidance, wind speed measuring devices (anemometers) should have a starting threshold of 0.5 meter per second or less. And the wind speed measurements should be accurate to within plus or minus 0.2 meter per second, with a measurement resolution of 0.1 meter per second.

The Fort Wayne Airport data used by SDI, rather than being measured in 0.1 meter per second increments, is based on wind speed observations that are reported in whole knots. This is evidenced by examining the meteorological data files used in the PSD Application modeling analysis. Every modeled hourly wind speed is a factor of approximately 0.5 or 0.6 meter per second (the units required for input to the air dispersion model), which exists because one knot equals 0.51479 meter per second. The once-per-hour observations at the Fort Wayne Airport (in whole knots, no fractions or decimals) were converted to meters per second and can therefore be back-converted to the whole knot measurements originally reported by the airport. This is readily apparent when examining the raw SAMSON meteorological data from which the SDI modeling inputs were obtained.

To further exemplify the problem of using the airport data, the lowest wind speed included in the meteorological data files used in the SDI Application (with only 51 exceptions) is 1.5 meters per second (three knots). Out of a possible 43,824 hours in the five-year modeling data set, there are 51 hours with reported wind speeds equal to 1.0 meters per second (two knots). All other wind speeds lower than three knots are reported as calms, and are thus excluded from the Class II modeling analyses. There are 2,251 such calm hours in the meteorological data files used in the SDI modeling. Typically, when properly measured with modern anemometers, there are only a few calm hours in a meteorological data base per year. In no uncertain terms, the conditions most crucial for verifying compliance with the NAAQS and PSD increments (low wind speeds) are being excluded from the SDI analysis because of the choice to use the distant airport data.

Sensitive and accurate measurements of wind speeds are necessary for measuring winds down to 0.5 meter per second (about one knot), which can then be used as 1.0 meter per second in the air dispersion modeling analyses. There would be no need to label such low wind speed hours as calm, which will greatly increase the number of hours included in the modeling analyses. Again, it is these low wind speed hours which must be included in the modeling data set to verify compliance with the NAAQS or PSD increments. The meteorological data used in the Application includes only 51 hours out of five years with a wind speed below 1.5 meters per second, and to compound the problem, lists all other wind speeds less than three knots as calms, which are then excluded from the model calculations.

Excluding calm winds from the data base is inappropriate and will significantly decrease modeled concentrations. This is very important for verifying compliance with applicable standards and increments, particularly when the applicant-modeled concentrations are already close to the threshold values.

Using distant airport meteorological data for modeling major emitters of air pollutants, such as SDI, must not be allowed. Excluding the calm hours from modeled concentrations reduces the predicted impacts – a benefit to SDI and a detriment to the surrounding air quality. This is very convenient for the applicant, and helps to explain why major sources of air pollutants still insist on using distant and poor-quality airport meteorological data.

Furthermore, the modeled meteorological data are antiquated (1986 through 1990). These data are from 17 to 21 years old, and do not represent in any way the complex parameters required to run current guideline air models such as AERMOD.

SDI should have collected at least one-year of pre-construction meteorological data consistent with USEPA Meteorological Monitoring Guidance for Regulatory Modeling Applications. Because of this failure, the current SDI permit Application modeling is unacceptable for NAAQS and PSD increment consumption analyses.

IDEM should have required SDI to collect pre-construction meteorological data for use in their permit Application modeling. SDI, which is a major emission source of PM_{10} (and hazardous air pollutants), should not be assessed for PSD increment compliance using non site-specific meteorological data collected with none of the quality assurances necessary for air modeling data.

Clearly, the requirement for meteorological data monitoring has been established. IDEM finds that modeled PM_{10} impacts exceed the pre-construction monitoring thresholds. Draft Permit, Appendix C, p. 4. This would be the perfect opportunity for IDEM to replace the outmoded and crude meteorological data from the distant Fort Wayne airport with current site-specific data. Since the meteorological data that SDI used in the Application modeling is of such poor quality, not requiring pre-construction meteorological monitoring results in a flawed and inadequate permit analysis.

Pre-construction meteorological data for projects that trigger PSD review is already being required for major sources of PM_{10} emissions. For example, two recent projects in Nevada, Granite Fox Power (near Gerlach) and Newmont Nevada (Boulder Valley), have collected at least one year of pre-construction meteorological data. The data requirements, tailored for input to air dispersion modeling for NAAQS and PSD increment analyses, are specified by the State of Nevada. The State of Nevada Guidelines state: "Current on-site meteorological data are required for input to dispersion models used for analyzing the potential impacts from the air pollution sources at the facility."

Even smaller air regulatory agencies have been requiring pre-construction meteorological data for many years. As part of their PSD program, the Santa Barbara County (California) Air Pollution Control District requires at least one-year of pre-construction air quality and meteorological monitoring. The meteorological monitoring requirements are specified in a detailed protocol that implements their PSD Rule. PSD sources in Santa Barbara County must collect site-specific hourly-averaged values for the following meteorological parameters:

- Horizontal wind speed and wind direction (both arithmetic and resultant)
- Horizontal wind direction standard deviation (sigma theta)
- Standard deviation of wind speed normal to resultant wind direction (sigma v)
- Vertical wind speed
- Vertical wind speed standard deviation (sigma w)
- Standard deviation of the vertical wind direction (sigma phi)
- Ambient air temperature
- Shelter temperature

SDI's PM_{10} emissions are enormous (over 1,100 tons/year) and are released in a complex arrangement of point, area, and volume sources. Using an antiquated, low-quality, and non site-specific meteorological data set, for no other reason than to expedite the permitting process for the applicant, invalidates the entire air quality impact analysis. The permit Application should be denied because of this poor modeling practice, and not resumed until SDI has collected at least one year of site-specific meteorological data consistent with US EPA's <u>Meteorological Monitoring Guidance for Regulatory Modeling Applications.</u>

The SDI permit Application does not include any frequency distributions or wind roses for the Fort Wayne, Indiana data. There is no discussion of how the data were preprocessed, how missing data and calm winds were handled, or what types of measurement instruments were used at the airport. There is no elaboration on the sensitivities of the wind instruments and where they are located with respect to buildings. There is no discussion of the distance from the SDI site to the Fort Wayne Airport.

The meteorological data used in the permit Application Class II modeling comprises both surface and upper air data, the latter being stored in the AERMOD profile data file. Examining the profile data it is clear that the "upper air observations" that SDI used are not upper air at all,

but are instead the surface winds measured at 6.1 meters elevation. SDI's AERMOD profile data contains only one "upper air" profile, and it is the same as the surface data collected at the airport. In other words, the SDI PSD and NAAQS modeling uses surface data instead of upper air data, thus completely invalidating the upper air transport and dispersion needed to characterize the emissions from SDI's tall stacks and volume sources.

Response to Comment 23:

The meteorological data selected for the air quality analysis for the Steel Dynamics Inc. (SDI) facility in Butler, Indiana was Fort Wayne, Indiana surface meteorological data with Dayton, Ohio upper air data. No upper air station is available in the state of Indiana and Dayton, Ohio provides the nearest station for representative upper air data in combination with the Fort Wayne surface data. Both sets of meteorological data, upper air data and surface data, are required in preprocessing the meteorological data file which is used to run the American Meteorological Society Environmental Protection Agency Regulatory Model (AERMOD). The upper air and surface data are inputs to the meteorological preprocessor program AERMET which preprocessed an input data set used by AERMOD. AERMET develops a surface (.SFC) and profile (.PFL) file from the hourly surface and upper air meteorological data files. The .SFC and .PFL files are then used by AERMOD. AERMOD is the air quality model which computes pollutant concentrations from source emissions. The Fort Wayne meteorological data provided the closest available surface meteorological data for preprocessing with AERMET. No other more representative source of surface meteorological data is available for this air quality analysis.

This data was the latest that was available. NWS data is currently used in the large majority of AERMOD runs through EPA Region 5 due to the problems associated with the collection and processing of on-site data. The reason for multiple years is so that a wide variety of weather conditions will be simulated. Any 43,000 hours of consecutive meteorological data will climatologically speaking, be much like any other set of 43,000 hours of meteorological data. The Ft Wayne airport is very similar in characteristics to SDI Butler. They are both in very flat terrain with wide open fields. The areas are surrounded by a fair amount of concrete, which includes a cluster of buildings. The meteorology is not unacceptable as the commenter claims, but actually a good representation of the site.

The meteorology was processed using AERMET version 06341. The number of calms in Ft Wayne data are not out of the ordinary for Indiana, averaging 1 or 2 calm hours a day. Ft Wayne meteorology only seems out of the ordinary when the commenter compares it to on-site data near Elko, Nevada which has an elevation of 5,000 feet. The higher altitude greatly minimizes the number of calms.

The frequency of calm winds will normally be higher for National Weather Service (NWS) data bases due to the higher threshold for flagging wind speeds as calm. EPA recommends that wind speeds less than 1 m/s be reset to 1 m/s if that hour of meteorology is to be used for computing concentrations. The NWS does not report wind speed less than 3 MPH, which is less than 1.5 m/s. 2 MPH would be less than 1 m/s, so the NWS calm threshold is consistent with EPA's. Unrealistically high concentrations may occur at low wind speeds (speeds below the values used in validating air quality models about 1 m/s) (Meteorological Monitoring Guidance for Regulatory Modeling Applications, February 2000 EPA-454/R-99-005). Additionally, AERMOD uses a calm processing routine as part of the regulatory default option in the model. The regulatory default option is the required modeling method by EPA.

The number of calm hours measured from the Fort Wayne NWS was 2251 total hours or approximately five percent (5.14%) of the total hours (43,824) for five years of meteorological data. This percent of calm hours still meets the 90 percent EPA criteria for missing or non-computed (calm) hours required for meteorological data sets. On-site meteorological data sets do not guarantee more accurate or better wind speed and direction data since they can often have a larger number of missing hours than most NWS data sets where nearby suitable data may need to be substituted to meet the 90 percent data threshold required by EPA.

The statement mentioned in the SDI comments which is taken from the Meteorological Monitoring Guidance for Regulatory Modeling Applications, "airport data, in general do not meet this guidance." It should be noted that EPA document goes on to state that "Although data meeting this guidance are preferred, airport data continue to be acceptable for use in modeling."

The profile met data file, as well as the surface file both show the height of the surface measurement; the upper air file is not in error.

No changes were made to the permit as a result of these comments.

Comment 24:

In our review of the SDI modeling files provided by IDEM, we discovered several apparent errors or concerns. IDEM should address these issues before proceeding further with the SDI permit.

Source A32 is modeled with UTM coordinates 673795, 4562659. This is a volume source, modeled 20 kilometers south of the SDI facility, and outside the modeled receptor grid. Since this source is not described in the Application or Draft Permit, it is impossible to know what this source is or where it should be located. The AERMOD input files, however, include emissions from other similar volume sources (A5 through A68), but with coordinates inside the modeled receptor grid. IDEM should investigate whether source A32 has been modeled incorrectly, and if an error is found, remodel the SDI PSD PM_{10} increment analysis.

The PSD PM_{10} increment analysis includes 193 emissions sources from SDI and eight additional non-SDI sources. These eight sources are not modeled with building downwash parameters, contrary to how most of the SDI point emissions are assessed. By not modeling these non-SDI emissions with building downwash, the PSD PM_{10} increment analysis is flawed, most likely leading to under-estimated air impacts.

Furthermore, the inclusion of only eight non-SDI sources (from two facilities) for the PSD PM_{10} increment analysis is suspect. IDEM should verify whether the complete inventory of PSD increment consuming sources has been included in the Application modeling.

The dispersion modeling for the NAAQS and PSD PM_{10} increment analyses was performed using flat terrain. This assumption has not been justified by IDEM or SDI, and can lead to erroneous modeled results for sources and receptors in rolling or complex terrain. This is a particular concern for the complete NAAQS and PSD PM_{10} analyses, where distant increment and NAAQS-consuming sources may have different ground-level elevations than the SDI facility. IDEM should remodel the NAAQS and PSD PM_{10} increment analyses using terrain elevations obtained from USGS digital elevation models.

Response to Comment 24:

Source A32 has been corrected.

EPA allows for the screening of sources. This is to reduce the demand on computer resources such as memory and run-time. Sources which were modeled to have less than a significant impact were not modeled initially. A tremendous number of large DEM files would have been necessary to screen sources with terrain in AERMOD.

Building parameters for other sources would be irrelevant for their impact around SDI. Building downwash occurs within 5L of the building, where L is the lesser of the height and projected width. A building would roughly have to be a mile wide and a mile high before building downwash would effect concentrations 5 miles downwind.

The AERMOD implementation guide states on page 3 and 4, "In order to avoid this situation, (underestimated concentrations) it may be reasonable, in the case of gently down-sloping terrain,

to assume flat, level terrain, especially for low-level sources. The radius of significant impact is less than 2 kilometers. The terrain within the area of significant impact is within 10 meters of the source elevation, yet the stacks are 30 and 38 meters. Most of the area is within 10 feet elevation of the site. More than half of the area within three kilometers is at or below the project elevation of 853 feet.

As a result of these comments, the entire increment inventory was remodeled with an exception to AWK Industrial, which has closed. The largest increment impacting source, Auburn Foundry also closed in 2005, but the emissions from that source were included. NAAQS modeling was also redone, including sources having a screened impact of 1 ug/m3 for 24-hour, and 0.1 ug/m3 were included in the latest modeling.

IDEM prefers that the TSD and accompanying Appendices reflect the document that was on public notice. However, below are the revised tables that summarize the results of the modeling analyses that were re-completed based on the aforementioned changes.

TABLE 2
Significant Impact Analysis

Pollutant	Time-Averaging Period	Maximum Modeled Impacts (ug/m^3)	Significant Impact Level (ug/m^3)	Monitoring Threshold	Monitoring De Minimis Exceeded	Refined AQ Analysis Required
PM_{10}	24-Hour	10.9	5	10	Yes	Yes
PM_{10}	Annual	1.1	1	-	-	Yes

24-hour results changed from 11.1 to 10.9 ug/m^3.

TABLE 3
Preconstruction Monitoring Analysis

Pollutant	Time-Averaging Period	Maximum Modeled Impacts (ug/m^3)	De Minimis Level (ug/m3)	Above De Minimis Level?
PM_{10}	24-Hour	10.9	10	Yes

TABLE 5
NAAQS Analysis

Pollutant	Year	Time-Averaging Period	Maximum Concentration ug/m3	Background Concentration ug/m3	Total ug/m3	NAAQS Limit ug/m3	NAAQS Violation
PM_{10}	1989	24 hour (H2H)	23.8	51.7	75.5	150	NO
PM_{10}	1988	Annual	4.8	29	33.8	50	NO

Maximum Concentration results changed from 24.5 ug/m^3 to 23.8 ug/m^3.

TABLE 6
Increment Analysis

Pollutant	Year	Time-Averaging Period	Maximum Concentration ug/m3	PSD Increment ug/m3	Total Impact on the PSD Increment	Increment Violation
PM_{10}	1989	24 Hour (H2H)	24.8	30	82.6%	---
PM_{10}	1988	Annual	4.6	18	25.5	NO

Maximum Concentration results changed from 24.5 ug/m^3 and 4.5 ug/m^3 to 24.8 ug/m^3 and 4.6 ug/m^3.

TABLE 7
Additional PM10 Increment Analysis

Year	Date MM/DD	UTM-E	UTM-N	2nd 24 Hour High After-Mod (ug/m3)	2nd 24 Hour High Before-Mod (ug/m3)	Increment Available	Increment Consumed by Permit (ug/m3)	% Consumed of Available Increment
1989	3/10	673.800	4583.425	24.89	24.54	5.11	0.35	6.8
1989	3/10	673.700	4583.425	24.41	24.07	5.59	0.34	6.0
1989	3/10	673.800	4583.500	24.23	23.89	5.77	0.34	5.8
1989	3/10	673.700	4583.500	24.13	23.81	5.87	0.32	5.4

As the tables indicate, the revised results indicate that the impact of the modification is still within National Ambient Air Quality Standards, maintains increment levels and protects the public health.

No changes were made to the permit as a result of these comments.

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Prevention of Significant Deterioration (PSD) Part 70 Significant Source Modification and Significant Permit Modification

Source Description and Location

Source Name:	Steel Dynamics, Inc.
Source Location:	4500 County Road 59, Butler, Indiana 46721
County:	Dekalb
SIC Code:	3312
Operation Permit No.:	T033-8068-00043
Operation Permit Issuance Date:	October 4, 2006
Significant Source Modification No.:	033-23028-00043
Significant Permit Modification No.:	033-24411-00043
Permit Reviewer:	ERG/BS

The Office of Air Quality (OAQ) has reviewed a significant source and significant permit application from Steel Dynamics, Inc. relating to the operation of a steel manufacturing plant.

Source Definition

Pursuant to T033-12614-00076, issued October 4, 2006:

This steel and iron manufacturing source consists of:

(a) Steel Dynamics, Inc. ("SDI"), the primary operation, located at 4500 County Road 59, Butler, Indiana 46721; and

(b) Steel Dynamics, Inc - Iron Dynamics ("IDI"), the supporting operation, located at 4500 County Road 59, Butler, Indiana 46721.

IDEM has determined that SDI (033-00043) and IDI (033-00076) are under common control. These two plants are considered one source for Part 70 applicability.

Separate Part 70 permits have been issued to SDI (033-8068-00043) and IDI (033-12614-00076), solely for administrative purposes. For this permit, the Permittee is SDI, the primary operation.

Existing Approvals

SDI was issued a Part 70 Operating Permit (T033-8068-00043) on October 4, 2006.

IDI was issued a Part 70 Operating Permit (T033-12614-00076) on October 5, 2006.

On October 13, 2006, Iron Dynamics, Inc. was issued a significant source modification (033-22673-00076) to allow the construction and operation of a SAF Building Dust Control System. The significant permit modification (033-23084-00076) that corresponds to that source

modification was issued on February 9, 2007.

The source has not received any other air approvals since October 4, 2006.

County Attainment Status

The source is located in Dekalb County.

Pollutant	Status
PM_{10}	Attainment
$PM_{2.5}$	Attainment
SO_2	Attainment
NO_2	Attainment
8-hour Ozone	Attainment
CO	Attainment
Lead	Attainment

(a) Volatile organic compounds (VOC) and nitrogen oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to the ozone standards. Dekalb County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) Dekalb County has been classified as attainment for $PM_{2.5}$. U.S. EPA has not yet established the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 for $PM_{2.5}$ emissions. Therefore, until the U.S. EPA adopts specific provisions for PSD review for $PM_{2.5}$ emissions, it has directed states to regulate PM_{10} emissions as a surrogate for $PM_{2.5}$ emissions.

(c) Dekalb County has been classified as attainment for all other criteria pollutants and lead. Therefore, these emissions were reviewed pursuant to the requirements for PSD, 326 IAC 2-2.

(d) Since this source is classified as an iron and steel mill plant, it is considered one of the twenty-eight (28) listed PSD source categories, as specified in 326 IAC 2-2-1(gg)(1).

(e) Fugitive Emissions
Since this type of operation is in one of the twenty-eight (28) listed source categories under 326 IAC 2-2, fugitive emissions are counted toward the determination of PSD applicability.

Source Status

The table below summarizes the potential to emit of the entire source, prior to the proposed modification, after consideration of all enforceable limits established in the effective permits:

Pollutant	Emissions* (tons/year)
PM	Greater than 100
PM10	Greater than 100
SO_2	Greater than 100
VOC	Greater than 100
CO	Greater than 100
NO_x	Greater than 100

* According to the TSD for T033-8068-00043, issued October 4, 2006.

This existing source is a major stationary source under PSD (326 IAC 2-2), because a regulated pollutant is emitted at a rate of 100 tons per year or more, and it is in one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1).

The table below summarizes the potential to emit HAPs for the entire source, prior to the proposed modification, after consideration of all enforceable limits established in the effective permits:

HAPs	Potential To Emit (tons/year)
A single HAP	Less than 10
Total HAPs	Less than 25

* According to the TSD for T033-8068-00043, issued on October 4, 2006.

See Appendix A for a summary of the existing and proposed HAP emissions from this source. This existing source is not a major source of HAPs, as defined in 40 CFR 63.41, because HAPs emissions are less than ten (10) tons per year for any single HAP and less than twenty-five (25) tons per year of a combination of HAPs. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA).

Actual Emissions

The following table shows the actual emissions from the source. This information reflects the 2003 OAQ emission data.

Pollutant	Actual Emissions (tons/year)
PM	133
PM10	133
SO_2	160
VOC	103
CO	518
NO_x	564
HAPs	Less than 10 for a single HAP and less than 25 tons for total HAPs

Description of Proposed Modification

The Office of Air Quality (OAQ) reviewed a Part 70 modification application from SDI (submitted on April 27, 2006, amended February 7, 2007 and March 26, 2007) regarding:

(a) The construction and operation of:

One (1) Pickle Line Acid Regeneration Facility; identified as ARF-1; approved for construction in 2007; exhausting to stack 93; consisting of:

(A) One (1) 21.2 MMBtu/hr natural-gas fired boiler; and

(B) One (1) water treatment system.

SDI owns and operates a HCl pickling line and currently transports the waste pickling liquor (WPL) offsite for treatment. With the addition of the pickle line regeneration facility (ARF-1), SDI will be able to treat the WPL onsite and recover a considerable portion of the HCl used by the pickling line.

(b) Re-routing the exhaust of the Electric Arc Furnace (EAF) #2 North from EAF Baghouse 1 to a new baghouse, EAF Baghouse 2. EAF Baghouse 2 will exhaust to stack 92. The existing BACT limit covers the combined emissions from EAF #2 North and EAF #1 South. The addition of the new baghouse will increase the amount of particulates captured and consequently reduce of the amount of dust that settles in the LMF/Caster building. As a result, the addition of EAF Baghouse 2 will result in an increase in potential PM/PM10 emissions. There is no change in the emissions of other criteria

pollutants.

(c) The construction and operation of:

One (1) EAF dust silo with emissions controlled by bin vent filter 5c. The silo will store collected dust from the new EAF Baghouse 2.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
92	EAF #2 North	125	19	1,100,000	125
93	Acid Regeneration	100	3	16,338	187

Enforcement Issues

There are no pending enforcement actions.

Emission Calculations

See Appendix A (pages 1- 3) of this document for detailed emission calculations.

Emissions of HAPs from the source are primarily from the paint line, the existing pickle line and the proposed pickle line regeneration facility. Quantification of the HAP emissions from those facilities in presented on page 3 of Appendix A.

The Rotary Hearth Furnace (RHF) is a small contributor to the source's HAP potential to emit. While that facility is limited to 0.37 tons of lead per year, all metallic particulates, including lead, are expected to be captured by the RHF baghouse. Organic HAP emission figures are not available for the RHF as it is a unique manufacturing process. However, the RHF process temperature is well above the destruction temperature for every organic HAP so organic HAP emissions are not expected from the RHF.

Organic HAP emissions from natural gas combustion are a possible contributor to the source's HAP potential to emit. Chapter 1.4 of EPA's Clearinghouse for Air Emission Factors, referred to as AP-42, includes an 'E' rating emission factor for n-hexane. N-hexane is the highest organic HAP, by several orders of magnitude, listed as present in the emissions from natural gas combustion. N-hexane has an auto-ignition temperature of 437oF, which is greatly exceeded in the combustion chambers of the source's primary natural gas combustion units. As a result, emissions of n-hexane are not expected and HAP emissions from natural gas combustion are reasonably at negligible levels.

Permit Level Determination – Part 70

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emission unit 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, IDEM, or the appropriate local air pollution control agency.”

The following table is used to determine the appropriate permit level under 326 IAC 2-7-10.5. This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	Greater than 25
PM10	Greater than 15
PM2.5	Greater than 15
SO_2	Less than 25
VOC	Less than 25
CO	Less than 100
NO_x	Less than 25

Pursuant to 326 IAC 2-7-10.5(f)(1), this modification is being performed through a Part 70 Significant Source Modification because this is a modification subject to 326 IAC 2-2 (PSD); see the *Permit Level Determination – PSD* section of this document for more information. Pursuant to 326 IAC 2-7-12(d), the permit modification is being performed through a Part 70 Significant Permit Modification because this modification is required to be processed as a significant modification.

Permit Level Determination – PSD

The table below summarizes the potential to emit, reflecting all limits, of the emission units associated with this modification. Any control equipment is considered federally enforceable only after issuance of this Part 70 Source modification, and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

	Potential to Emit (tons/year) [(a)]						
Process/Emission Unit	**PM**	**PM_{10}/ $PM_{2.5}$**	**SO_2**	**VOC**	**CO**	**NO_X**	**HCl**
Re-routing emissions from EAF #2 North [(a)]	67.1	193.8	0	0	0	0	0
New Pickle Line Acid Regeneration Facility [(b)]	10.9	10.9	0.06	0.51	7.8	4.64	3.24
New EAF Dust Silo 5c	0.45	0.45	0	0	0	0	0
Total	78.5	205.2	0.06	0.51	7.8	4.64	3.24
PSD Significant Level	25	15	40	40	100	40	3.24

(a) The PM/PM10 emission figures presented are the potential emission increases associated with EAF Baghouse #2. An increase in actual emissions is not expected.
(b) The PTE of the new pickle line acid regeneration facility.

This modification to an existing major stationary source is major because the emissions increases of PM and PM_{10} are greater than the respective PSD significant thresholds. Therefore, pursuant to 326 IAC 2-2-2, the modification is subject to the requirements of PSD.

Federal Rule Applicability Determination

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

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 20; and 40 CFR Parts 61 and 63) included for this modification.

In order to render the requirements of 40 CFR Part 63, Subparts CCC and EEEE not applicable, the following condition has been added to the Part 70 permit:

The HCl emissions from the Pickle Line Acid Regeneration Facility shall not exceed 0.74 pounds per hour. Compliance with this limit in conjunction with the other HAP

limitations on SDI's EAFs, IDI's RHF, and SDI's coating line limits the source-wide potential to emit HCl to less than 10 tons per year and the potential to emit any combination of HAPs to less than 25 tons per year. Compliance with this limit will render the requirements of 40 CFR Part 63, Subparts CCC and EEEE not applicable.

Note that pursuant to SSM 033-15836-00043, issued December 31, 2002, the HAP emissions from the coil coating line are limited to less than 10 tons per year of a single HAP and less than 25 tons per year of a combination of HAPs. In order to maintain the source's minor source status for HAPs, that limit has been revised to the following:

The input of a single HAP to the coil coating line shall be less than 1000 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month. This HAP usage limitation, in conjunction with the operation of thermal oxidizer at 99% overall control efficiency, limits single HAP emissions from the coil coating line to less than 10 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month.

The total input of HAPs to the coil coating line shall be less than 1460 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month. This HAP usage limitation, in conjunction with the operation of thermal oxidizer at 99% overall control efficiency, limits HAP emissions from the coil coating line to less than 14.6 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month.

See Appendix A for a summary of the source's limited HAP emissions.

(c) As shown in Appendix A, this existing source (an iron and steel mill) is a minor source for HAPs. Therefore, pursuant to 40 CFR 63.7681, the requirements of the National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries (326 IAC 20 and 40 CFR Part 63, Subpart EEEEE) are not included in this modification.

(d) As shown in Appendix A, this existing source is a minor source for HAPs. Therefore, pursuant to 40 CFR 63.1155, the requirements of the National Emission Standards for Hazardous Air Pollutants for Steel Pickling - HCl Process Facilities and Hydrochloric Acid Regeneration Plants, (326 IAC 20 and 40 CFR Part 63, Subpart CCC) are not included in this modification.

(e) This source is subject to the provisions of 40 CFR Part 64, Compliance Assurance Monitoring (CAM). In order for this rule to apply, a pollutant-specific-emissions-unit at a source that requires a Part 70 or Part 71 permit must meet three criteria for a given pollutant: 1) the unit has potential emissions (before controls), of the applicable regulated air pollutant, equal or greater than 100 percent of the amount required for a source to be classified as a major source, 2) the unit is subject to an applicable emission limitation or standard for the applicable regulated air pollutant, and 3) the unit uses a control device to achieve compliance with the applicable emission limitation or standard.

EAF #2 North and EAF #1 South each have potential post-control emissions greater than 100 tons of PM_{10} per year, are subject to 326 IAC 2-2, and require the use of a baghouse to achieve compliance with 326 IAC 2-2. Therefore, EAF #2 North and EAF #1 South are classified as “large” units with respect to CAM and are subject to the requirements of 40 CFR Part 64. Pursuant to 40 CFR 64.5(a)(3), the Permittee is required to submit the information required under 40 CFR 64.4 regarding these units as part of the Part 70 renewal application because the Part 70 application was submitted prior to April 20, 1998.

The Pickle Line Acid Regeneration Facility (ARF-1) has potential pre-control (but not post-control) emissions greater than 100 tons of PM/PM_{10} per year and requires the use

of a scrubber to achieve compliance with 326 IAC 2-2. Therefore, ARF-1 is classified as an "other" unit with respect to CAM and is subject to the requirements of 40 CFR Part 64. Pursuant to 40 CFR 64.5(b), the Permittee is required to submit the information required under 40 CFR 64.4 regarding ARF-1 as part of the Part 70 renewal application.

State Rule Applicability Determination

326 IAC 2-2 (Prevention of Significant Deterioration)

This source is located in DeKalb County which is designated as attainment for all criteria pollutants. Based upon emission calculations (see Appendix A) completed by the source and reviewed by the IDEM, OAQ, the emissions increase of the modification exceeds the PSD significant threshold levels in 326 IAC 2-2-1 for particulate matter (PM) and particulate matter of 10 microns or less (PM_{10}). Therefore, the emissions of these pollutants have been reviewed pursuant to 326 IAC 2-2 for EAF #2 North, EAF #1 South, the Pickle Line Acid Regeneration Facility and EAF dust silo 5c.

Pursuant to PSD CP 033-8091-00043, issued June 25, 1997, EAF #2 North and EAF #1 South are subject to BACT requirements for PM/PM10, NOx, SO2, CO, VOC, Mercury and Lead. The existing PM/PM10, NOx, CO, VOC, Mercury and Lead limits are structured such that they apply to both EAFs by limiting emissions from the shared baghouse (EAF Baghouse 1). Following this modification, the EAFs will exhaust to separate baghouses - EAF #2 North will exhaust to EAF Baghouse 2 and EAF #1 South with exhaust to EAF Baghouse 1. As a result, the existing, BACT requirements must be revised accordingly. See the *Proposed Changes* section of this document for the revisions.

The PSD provisions require that this major PSD modification be reviewed to ensure compliance with the National Ambient Air Quality Standards and apply the requirements of Best Available Control Technology (BACT). Specifically, 326 IAC 2-2-3 requires a BACT review, 326 IAC 2-2-4 and 326 IAC 2-2-5 require the evaluation of the modification's impact on air quality, 326 IAC 2-2-6 requires an assessment of increment consumption and 326 IAC 2-2-7 requires an evaluation of additional impacts. A review of these rules is included below:

326 IAC 2-2-3 (PSD: Best Available Control Technology)

Pursuant to 326 IAC 2-2-3, a detailed BACT analysis was completed by the IDEM, OAQ and is included in Appendix B.

326 IAC 2-2-4 (PSD: Air Quality Analysis)

Pursuant to 326 IAC 2-2-4, an air quality analysis of the new source or the major modification is needed to determine if pre-construction monitoring is required. In most cases, post-construction monitoring can satisfy this requirement if the pre-construction monitoring threshold has been exceeded.

As described in Appendix C, the modeled PM_{10} emissions increase of the modification was determined to cause a significant impact on air quality. Specifically, the modeled post-modification ambient air concentration of PM_{10} was greater than the relevant monitoring de minimis concentrations of 10 ug/m^3 (24-hr average). Therefore, pursuant to 326 IAC 2-2-4, this modification is subject to the pre-construction air quality monitoring requirements of 326 IAC 2-2-4.

SDI satisfies the pre-construction monitoring requirement for PM_{10} since there is older and more-conservative air quality monitoring data representative of the area.

326 IAC 2-2-5 (PSD: Air Quality Impact)

Pursuant to 326 IAC 2-2-5, an air dispersion modeling study was performed using the U.S. EPA's AERMOD model (www.epa.gov/scram001/dispersion_prefrec.htm#aermod). This study was conducted in order to estimate the maximum ambient concentrations of PM_{10} that result from the additional emissions associated with the modification. A detailed review of this study is included in Appendix C.

In summary, the estimated maximum ambient PM_{10} impacts combined with the background PM_{10} concentrations did not exceed the PM_{10} NAAQS (for both 24-hr and annual averages).

326 IAC 2-2-6 (PSD: Increment Consumption)

Pursuant to 326 IAC 2-2-6(a), any modeling completed under 326 IAC 2-2-5 shall demonstrate that the increase in ambient pollutant concentration (resulting from the modification) does not exceed eighty percent (80%) of the available Maximum Allowable Increment (MAI) over the baseline concentration for that pollutant. See Appendix C for a review and demonstration of increment consumption.

In summary, an initial analysis of the estimated impact of the modification indicated that it consumes greater than 80% of the available PSD PM_{10} increment. As a result, the OAQ conducted a more detailed analysis of increment consumption at several receptors which indicated that modification impact consumes less than 80% of the available increment.

326 IAC 2-2-7 (PSD: Additional Analyses)

Pursuant to 326 IAC 2-2-7(a), an analysis of the impairment to visibility, soils and vegetation was completed along with an assessment of the air quality impacts related to residential and commercial growth due to the modification. A detailed review of this study is included in Appendix C.

In summary, the results of the additional impact analysis conclude the operation of the facility will not have a significant impact on economic growth, soils, vegetation or visibility in the immediate vicinity or on any Class I area.

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

The particulate emissions from the EAF #2 North and Pickle Line Acid Regeneration Facility are subject to BACT PM/PM10 emission limitations pursuant to 326 IAC 2-2. Therefore, pursuant to 326 IAC 6-3-1(c)(1), these facilities are not subject to the requirements of 326 IAC 6-3-2.

Testing Requirements

Within 180 days after initial start up, the Permittee shall perform PM/PM10 and opacity testing on the stack emissions from the Pickle Line Acid Regeneration Facility (ARF-1) in order to demonstrate compliance with the PM/PM10 and opacity limits established by 326 IAC 2-2. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. PM_{10} includes filterable and condensable PM10. Testing shall be completed using methods approved by the Commissioner and conducted in accordance with Section C - Performance Testing.

Within 180 days after initial start up, the Permittee shall perform HCl testing on the stack emissions from the Pickle Line Acid Regeneration Facility. This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be completed using methods approved by the Commissioner and conducted in accordance with Section C - Performance Testing.

Within 180 days after initial startup of EAF Baghouse #2, the Permittee shall perform PM/PM10 and opacity testing on the stack emissions from EAF #2 North and EAF #1 South in order to demonstrate compliance with the PM/PM10 and opacity limits established by 326 IAC 2-2. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. PM_{10} includes filterable and condensable PM10. Testing shall be completed using methods approved by the Commissioner and conducted in accordance with Section C - Performance Testing.

Within 180 days after initial startup of EAF Baghouse #2, the Permittee shall perform lead and mercury testing on Stack 92 utilizing methods as approved by the Commissioner in accordance with Section C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

The existing Part 70 permit requires extensive testing for the EAFs located at the source. See the *Proposed Changes* section of this document for the other testing requirements.

Compliance Determination and Monitoring Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with all applicable state and federal rules on a continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, Compliance Determination Requirements are included in the permit. The Compliance Determination Requirements in Section D of the permit are those conditions that are found directly within state and federal rules and the violation of which serves as grounds for enforcement action.

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

The compliance monitoring requirements applicable to this modification and included in the permit are summarized in the following table:

Unit	Monitoring Requirement 1	Permit Condition	Monitoring Requirement 2	Permit Condition
ARF-1	Scrubber Discharge Pressure	D.13.6	Scrubbant Flow Rate	D.13.6
EAF #1 and EAF #2*	Continuous Opacity Monitoring	D.1.17	Baghouse Pressure Drop	D.1.19
EAF dust silo 5c	Visible Emission Monitoring	D.1.18	-	-

* Additional monitoring is required pursuant to 40 CFR 60.274a - See Condition D.1.20 of the permit.

Proposed Changes

The changes listed below have been made to Part 70 Operating Permit No. 033-8068-00043 due to this proposed modification and the changes initiated by IDEM. Deleted language appears as ~~strikethroughs~~ and new language appears in **bold**:

A.3 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c) (3)][326 IAC 2-7-5(15)]

Steel Dynamics, Inc. consists of the following emission units and pollution control devices:

Melt Shop Operations

(a) Electric Arc Furnaces (EAF)

Two (2) twin shell electric arc furnaces (EAF #1 South, constructed in 1995 and EAF #2 North, constructed in 1998), each with a nominal capacity of 200 tons per hour, using a direct shell evacuation (DSE) ~~control~~ system ("fourth hole" duct), an overhead roof exhaust system consisting of canopy hoods, DSE air gap for carbon monoxide (CO) emissions control, **and** low-NO_x/oxyfuel burners (combustion control) for nitrogen oxide (NO_x) emissions control~~, and a baghouse (EAF baghouse) for particulate (PM/PM-10)~~

~~emissions control, exhausting through EAF Stack 01 equipped with a continuous opacity monitor (COM)~~. **Particulate emissions from EAF #2 North are controlled by EAF Baghouse 2. All emissions from EAF #2 North exhaust to Stack 92 (equipped with a COM). Particulate emissions from EAF #1 South are controlled by EAF Baghouse 1. All emissions from EAF #1 South exhaust to Stack 01 (equipped with a COM).**

…

(d) Storage Silos and Bins

(1) ~~Ten (10)~~ **Eleven (11)** storage silos including the following:

(A) ~~Two (2)~~ **Three (3)** EAF dust silos consisting of:

(i) Bin vent 5a for particulate matter control**,** constructed in 1995, ~~and~~

(ii) Bin vent 5b for particulate matter control**,** constructed in 1998~~.~~**; and**

(iii) Bin vent 5c for particulate matter control, approved for construction in 2007.

(B) Six (6) Lime/carbon silos with bin vents 22 through 27 for particulate matter control, and

(C) Two (2) alloy silos with bin vents 28 and 29 for particulate matter control.

...

Acid Regeneration

One (1) Pickle Line Acid Regeneration Facility; identified as ARF-1; approved for construction in 2007; exhausting to stack 93; consisting of:

(1) One (1) 21.2 MMBtu/hr natural-gas fired boiler;

(2) One (1) water treatment system; and

(3) Emissions controlled by a scrubber.

SECTION D.1 FACILITY OPERATION CONDITIONS (MELT SHOP)

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

Melt Shop Operations

(a) Electric Arc Furnaces (EAF)

Two (2) twin shell electric arc furnaces (EAF #1 South, constructed in 1995 and EAF #2 North, constructed in 1998), each with a nominal capacity of 200 tons per hour, using a direct shell evacuation (DSE) ~~control~~ system ("fourth hole" duct), an overhead roof exhaust system consisting of a canopy hoods, DSE air gap for carbon monoxide (CO) emissions control, **and** low-NO_x/oxyfuel burners (combustion control) for nitrogen oxide (NO_x) emissions control~~, and a baghouse (EAF baghouse) for particulate (PM/PM-10) emissions control, exhausting through EAF Stack 01 equipped with a continuous opacity monitor (COM).~~ **Particulate emissions from EAF #2 North are controlled by EAF Baghouse 2. All emissions from EAF #2 North exhaust to Stack 92 (equipped with a COM). Particulate emissions from EAF #1 South are controlled by EAF Baghouse 1. All emissions from EAF #1 South exhaust to Stack 01 (equipped with a COM).**

...

(d) Storage Silos and Bins

(1) ~~Ten (10)~~ **Eleven (11)** storage silos including the following:
- (A) ~~Two (2)~~ **Three (3)** EAF dust silos consisting of:
  - (i) Bin vent 5a for particulate matter control**,** constructed in 1995, ~~and~~
  - (ii) Bin vent 5b for particulate matter control**,** constructed in 1998~~.~~**;**
  - **(iii) Bin vent 5c for particulate matter control, approved for construction in 2007.**
- (B) Six (6) Lime/carbon silos with bin vents 22 through 27 for particulate matter control, and
- (C) Two (2) alloy silos with bin vents 28 and 29 for particulate matter control.

...

(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)]

D.1.2 Particulate (PM/PM-10) Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to **PSD** CP 033-8091-00043, issued June 25, 1997**, PSD SSM 033-23028-00043** and 326 IAC 2-2 (PSD - Control Technology Review; Requirements)~~,~~**:**

(1) **The PM/PM10 emissions from** ~~the~~ EAF~~s~~ #1 **South** ~~and 2~~, ~~PM/PM-10 emissions~~ shall be controlled by a direct shell evacuation **(DSE)** system and canopy hood with 100 percent overall capture exhausted to ~~a~~ **EAF** ~~b~~**B**aghouse **1** with **a minimum** 99.85 control efficiency, ~~at an air flow rate of 1.3 million dscfm,~~ discharging through ~~a~~ Stack 01 at a height of 125 feet above the ground. A slight negative pressure shall be maintained to draw particulate matter through the DSE duct.

(2) **The PM/PM10 emissions from EAF #2 North shall be controlled by a direct shall evacuation (DSE) system and canopy hood with 100 percent overall capture and shall exhaust to EAF Baghouse 2 with a minimum 99.85 control efficiency which discharges through Stack 92 at a height of 125 feet above the ground. A slight negative pressure shall be maintained to draw particulate matter through the DSE duct.**

~~(b) Pursuant to CP 033-8091-00043, issued March 24, 1998 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), PM/PM-10 emissions from the EAF baghouse Stack 01 shall not exceed 0.0032 grains per dry standard cubic feet at an air flow rate of 1.3 million dscfm (1.62 million acfm) and a maximum PM/PM-10 emissions of 35.7 pounds per hour.~~

(3) The PM/PM10 emissions from EAF #2 North and EAF #1 South shall not exceed the limits in the following table:

Unit (Control)	**Filterable PM/PM10 Limits**		**Filterable and Condensable PM10 Limits**	
	(gr/dscf)	**(lb/hr)**	**(gr/dscf)**	**(lb/hr)**
EAF #1 South (EAF Baghouse 1)	**0.0018**	**20.1**	**0.0052**	**57.9**
EAF #2 North (EAF Baghouse 2)	**0.0018**	**15.3**	**0.0052**	**44.3**

(~~c~~ **b**) Pursuant to CP 033-9187-00043, March 24, 1998 and 326 IAC 2-2 (PSD - Control Technology Review~~;~~ Requirements), PM**/**PM**-**10 emissions from the continuous casters shall be controlled by canopy hoods and exhausted to ~~the~~ EAF baghouse **1 and then** to Stack 01.

(~~d~~ **c**) Pursuant to CP 033-3692-00043, issued October 7, 1994 and 326 IAC 2-2 (PSD Control Technology Review~~;~~ Requirements), the Permittee shall do the following as needed:

(1) Mechanically reduce skulls, coils and steel scrap in size.

(2) Transport any skulls, coils and steel scrap not mechanically reduced in size to the steel works building and oxygen lance/cut under a furnace canopy using the baghouse to control emissions.

(d) Pursuant to PSD SSM 033-23028-00076 and 326 IAC 2-2-3 (BACT), the filterable PM/PM10 emissions from EAF dust silo 5c shall not exceed 0.01 grains per dry standard cubic foot (gr/dscf).

…

D.1.4 Sulfur Dioxide (SO_2) Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to CP 033-9187-00043, issued March 24, 1998 and 326 IAC 2-2 (PSD - Control Technology Review~~;~~ Requirements), the **combined** SO_2 emissions from the LMF **(**Stack 61**),** ~~and the existing EAFs~~ **EAF #1 South (**Stack 01**)** ~~(permitted in CP 033-8091-00043)~~ **and EAF #2 North (Stack 92)**, ~~combined~~ shall not exceed 0.20 pounds per ton of steel produced and 80 pounds of SO_2 per hour.

...

D.1.6 Volatile Organic Compounds (VOC) Limitations - Best Available Control Technology [326 IAC 2-2]

...

(b) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review~~;~~ Requirements), the VOC emissions from the EAFs shall be limited

to 0.13 pounds of VOC emissions per ton of steel produced. The total VOC emissions from ~~the EAFs baghouse Stack 01~~ **EAF Baghouse 1 and EAF Baghouse 2** shall not exceed 52.0 pounds per hour.

...

D.1.8 Lead Limitations - Best Available Control Technology (BACT) [326 IAC 2-2]

Pursuant to CP 033-8091-00043**, issued June 25, 1997** and 326 IAC 2-2 **(**PSD ~~Best Available~~ Control Technology **Review Requirements** ~~(BACT~~) the **total** lead emissions from ~~the EAF baghouse~~ **EAF Baghouse 1 and EAF Baghouse 2** shall not exceed 0.19 pounds per hour.

D.1.9 Mercury Limitations [326 IAC 2-2]

Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD Control Technology Review Requirements), ~~T~~the **total** mercury emissions from ~~the EAF baghouse~~ **EAF Baghouse 1 and EAF Baghouse 2** shall not exceed 0.022 pounds per hour. Compliance with this limit will render 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable.

D.1.10 Visible Emission Limitations - Best Available Control Technology [326 IAC 2-2]

(a) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review~~;~~ Requirements), visible emissions from ~~the melt shop Stack 01~~ **the EAF Baghouse 1 and EAF Baghouse 2 stack exhausts** shall not exceed three percent (3%) opacity**,** based on a six (6) minute average (24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9). This condition will satisfy the NSPS 40 CFR Part 60 Subpart AAa, 40 CFR 60.272a.

…

(f) Pursuant to PSD SSM 033-23028-00076 and 326 IAC 2-2-3 (BACT), visible emissions of the exhaust from EAF dust silo 5c shall not exceed three percent (3%) opacity, based on a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).

...

D.1.12 Visible Emissions Limitations (NSPS) [40 CFR Part 60.272(a)]

(a) Pursuant to 40 CFR 60.272(a)(2), the visible emissions from ~~the EAF baghouse common Stack 0~~1 **the EAF Baghouse 1 and EAF Baghouse 2 stack exhausts** shall not exceed three percent (3%) opacity, based on a six-minute average **(24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9)**.

(b) Pursuant to 40 CFR 60.272(a)(3), the visible emissions from the melt shop due solely to the operations of the electric arc furnace shall not exceed six percent (6%) opacity, based on a six-minute average **(24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9)**.

(c) Pursuant to 40 CFR 60.272(b), the visible emissions from the EAF dust handling system shall not exceed ten percent (10%) opacity, based on a six-minute average **(24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9)**.

D.1.13 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B.10 - Preventive Maintenance Plan, of this permit is required for the EAFs, continuous casters (#1 and #2), **EAF dust silo 5c** and associated control devices.

Compliance Determination Requirements

D.1.14 Testing Requirements [326 IAC 2-7-6(1),(6)][326 IAC 2-1.1-11]

(a) ~~Within 30 months from the date of the latest compliance demonstration stack test~~

Within 180 days after initial startup of EAF Baghouse #2 and in order to demonstrate compliance with Condition~~s~~ D.1.2(~~b~~ **a**), the Permittee shall perform PM/PM10 testing on ~~the EAF~~ **EAF #1 South and EAF #2 North (**Stack 01 **and Stack 92)** utilizing methods as approved by the Commissioner **and** in accordance with Section C.9 - Performance Testing. **PM10 includes filterable and condensable PM10.** This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(b) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.1.3(a), the Permittee shall perform NOx testing on ~~the EAF Stack 01~~ **EAF #1 South and EAF #2 North (Stack 01 and Stack 92)**, utilizing methods as approved by the Commissioner in accordance with Section C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(c) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Condition D.1.4(a) and (b), the Permittee shall perform simultaneous, SO2 testing on ~~the EAF Stack 01~~ **EAF #1 South, EAF #2 North and the LMF (Stack 01, Stack 92** and LMF Stack 61**)**, utilizing methods as approved by the Commissioner in accordance with Section C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(d) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.1.5, the Permittee shall perform CO testing on ~~the EAF Stack 01~~ **EAF #1 South and EAF #2 North (Stack 01 and Stack 92)** utilizing methods as approved by the Commissioner in accordance with Section C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(e) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.1.6(b), the Permittee shall perform VOC testing on ~~the EAF Stack 01~~ **EAF #1 South and EAF #2 North (Stack 01 and Stack 92)** utilizing methods as approved by the Commissioner in accordance with Section C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(f) Within 180 days after issuance of this Part 70 permit, and in order to demonstrate compliance with Conditions D.1.8 and D.1.9, the Permittee shall perform lead and mercury testing on ~~the EAF Stack 01~~ **EAF #1 South (Stack 01)** utilizing methods as approved by the Commissioner in accordance with Section C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

(g) Within 180 days after initial startup of EAF Baghouse #2 and in order to demonstrate compliance with Conditions D.1.8 and D.1.9, the Permittee shall perform lead and mercury testing on EAF #2 North (Stack 92) utilizing methods as approved by the Commissioner in accordance with Section C.9 - Performance Testing. This test shall be repeated at least once every two and one-half (2.5) years from the date of this valid compliance demonstration.

D.1.15 Particulate Control – (BACT) [326 IAC 2-2]

(a) ~~The EAF baghouse~~ **EAF Baghouse 1** shall be operated at all times when ~~the EAFs~~ **EAF #1 South** and **the** continuous casters are in operation.

(b) EAF Baghouse 2 shall be operated at all times when EAF #2 North is in operation.

(c) Bin vent filter 5c shall control emissions from EAF dust silo 5c at all times dust is transferred to or from the silo.

...

D.1.18 Visible Emission Notations

(a) Pursuant to CP 033-8091-00043, issued June 25, 1997, **and PSD SSM 033-23028-00043,** visible emission notations of the melt shop building openings, dust handling system, ~~and~~ melt shop roof monitors **and bin vent filter 5c** shall be performed once per day during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

(b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(d) 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.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C.16- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C.16 - Response to Excursions or Exceedances shall be considered a deviation from this permit.

D.1.19 Parametric Monitoring

The Permittee shall record the pressure drop across the baghouse**s** used in conjunction with the EAFs at least once per day when the **respective** EAFs are in operation~~,~~**.** ~~w~~**W**hen for any one reading, the pressure drop across the baghouse is outside the normal range of 4.0 to 10.0 inches of water or a range established during the latest Stack test, the Permittee shall take reasonable response steps in accordance with Section C.16 - Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C.16 - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

…

D.1.20 Monitoring of Operations [40 CFR 60.274a] [40 CFR 60.273a]

Pursuant to CP 033-8091-00043 and 40 CFR 60.274a, the Permittee shall comply with the following monitoring requirements for the EAF**s**:

D.1.21 Record Keeping Requirements [40 CFR 60.276a]

...

(b) To document compliance with operation ~~c~~**C**ondition D.1.17, the Permittee shall maintain records:

(1) required under 326 IAC 3-5-6 at the source in a manner so that they may be inspected by the IDEM, OAQ, or the U.S. EPA~~.~~, if so requested or required.

(2) of visible emission readings at the melt shop ~~Stack~~ **stacks** and make available upon request to IDEM, OAQ, and the U.S. EPA.

(c) To document compliance with Condition D.1.18, the Permittee shall maintain records of visible emission notations ~~of the melt shop building openings, dust handling system and melt shop roof monitors once per day.~~ **required by that condition. The Permittee**

shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(d) To document compliance with Condition D.1.19, the Permittee shall maintain records ~~once per day~~ of the pressure drop ~~during normal operation.~~ **readings required by that condition. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of a pressure drop reading (e.g. the process did not operate that day).**

SECTION D.10 FACILITY OPERATION CONDITIONS (PAINT LINE)

...

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

D.10.1 Volatile Organic Compound**s (VOC) and Hazardous Air Pollutants (HAP)** [326 IAC 2-2] [40 CFR Subpart SSSS]

Pursuant to SSM033-15836-00043, issued December 31, 2002 and 326 IAC 2-2 (Prevention of Significant Deterioration) to maintain the minor status for this modification, the VOC emissions shall be limited as follows:

...

(d) ~~Item (a) in this condition also limits the HAP emissions from the 2-side, 2-coat coil coating line modification to less than ten (10) tons of a single HAP or twenty-five (25) tons of a combination of HAPs per 12 consecutive months period. This limit makes this modification minor pursuant to 40 CFR Part 63, Subpart SSSS.~~ **Pursuant to PSD SSM 033-23028-00043:**

(1) The single HAP emissions from the coil coating line shall be limited to less than 10 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month.

(2) The combined HAP emissions from the coil coating line shall be limited to less than 14.6 tons per twelve (12) consecutive month period, with compliance demonstrated at the end of each month.

(3) The thermal oxidizer for the coil coating line shall be in operation whenever the coating line is in operation and shall maintain a minimum overall HAP control efficiency of 99%. This is necessary in order to limit the potential to emit (after control) of a single HAP and any combination of HAPs to less than 10 tons and 14.6 tons per year, respectively.

Compliance with these limits and requirements, in conjunction with HAP limits on the rotary hearth furnace, pickle line and acid regeneration facility, limits the source-wide PTE of a single HAP and a combination of HAPs to less than ten (10) and twenty-five (25) tons per twelve (12) consecutive month period, respectively, and renders the requirements of 40 CFR Part 63, Subpart SSSS not applicable.

…

Compliance Determination Requirements

D.10.6 Permanent Total Enclosure [326 IAC 2-2]

Pursuant to SSM 033-15836-00043, issued December 21, 2002**, PSD SSM 033-23028-00043** and 326 IAC 2-2 (Prevention of Significant Deterioration) to maintain the minor status for the 2-side, 2 coat, coil coating line, the Permittee shall use a permanent total enclosure:

…

D.10.9 Testing Requirements [326 IAC 3-6] [326 IAC 2-7-6(1), (6)]

(a) Within 30 months from the date of the latest compliance demonstration stack test and in order to demonstrate compliance with Conditions D.10.1 and D.10.2, the Permittee shall perform VOC emissions and thermal oxidizer control efficiency testing utilizing methods as approved by the Commissioner. This testing shall be repeated once every five (5) years from the date of the most recent valid compliance demonstration.

(b) The Permittee shall determine the hourly average temperature, minimum operating temperature and duct pressure or fan amperage for the thermal oxidizer from the most recent valid Stack test that demonstrates compliance with the limits in conditions D.10.1 and D.10.2 as approved by IDEM.

(c) In order to demonstrate compliance with Condition D.10.1(d), within 180 days of the issuance of PSD SSM 033-23028-00043, the Permittee shall perform inlet and outlet HAP testing on the thermal oxidizer controlling emissions from the coil coating line. Testing shall be done utilizing Method 18 or other methods approved by the Commissioner, for the HAP used at the source that has the lowest destruction efficiency, as estimated by the manufacturer and approved by IDEM. This test shall be repeated at least once every 2.5 years from the date of valid compliance demonstration.

(~~c~~ **d**) Testing shall be conducted in accordance with Section C.9 - Performance Testing.

D.10.10 Volatile Organic Compounds (VOC) **and Hazardous Air Pollutants (HAP)**

Pursuant to SSM 033-15836-00043, issued December 1, 2002, **and PSD SSM 033-23028-00043:**

(a) **C**ompliance with Condition D.10.1 shall be demonstrated at the end of each month. This shall be based on the total volatile organic compound emitted for the previous month, and adding it to previous 11 months total VOC emitted so as to arrive at VOC emission **rate** for 12 consecutive months period. The VOC emissions for a month can be arrived at using the following equation for VOC usage:

VOC emitted = [(VOC input) x (1.0 - **Overall** ~~%~~ control efficiency of thermal oxidizer)] + [uncontrolled VOC]

Where VOC input is based on the formulation data supplied by the coating manufacturer. IDEM, OAQ reserves the authority to determine compliance using Method 24 in conjunction with the analytical procedures specified in 326 IAC 8-1-4.

(b) In order to demonstrate compliance with Condition D.10.1(d), the Permittee shall determine the single and combination HAP emissions for each month using the following methodology:

HAP emitted = [(HAP usage) x (1.0 - (DE x CE))] + [uncontrolled HAP]

Where:

DE = Destruction efficiency of the oxidizer determined by the latest stack test using Method 18

CE = Capture efficiency determined by the latest stack test

Until the initial Method 18 stack test is performed, an overall control efficiency of 99% shall be used in place of the (DE x CE) quantity in the equation above.

D.10.13 Record Keeping Requirements

(a) To document compliance with Condition D.10.1, the Permittee shall maintain records in accordance with (1) through (5) below. Records maintained for (1) through (5) shall be taken monthly and shall be complete and sufficient to establish compliance with the VOC usage limits and/or the VOC emission limits established in Condition D.10.1.

(1) The VOC content of each coating material and solvent used less water.

(2) The amount of coating material and solvent used on a monthly basis.

Records shall include purchase orders, invoices, and material safety data sheets (MSDS) or any other information necessary to verify the type and amount used.

(3) The total VOC usage for each month.

(4) The continuous temperature records (on a three hour average basis) for the thermal oxidizer and the average temperature used to demonstrate compliance during the most recent compliant Stack test.

(5) Daily records of the duct pressure or fan amperage. **The Permittee shall include in its daily record when a pressure or amperage reading is not taken and the reason for the lack of pressure or amperage reading (e.g. the process did not operate that day).**

(b) To document compliance with the single and combined HAP limits in Condition D.10.1(d), the Permittee shall maintain records in accordance with (1) through (4) below. Records maintained for (1) through (4) shall be taken monthly and shall be complete and sufficient to establish compliance with the HAP emission limits established in Condition D.10.1(d).

(1) The amount and HAP content of each coating material and solvent used. records shall include inventory records and Material Safety Data Sheets (MSDS) necessary to verify the type and amount used.

(2) A log of the dates of use.

(3) The single and combined HAP usage for each month.

(4) The weight of the single and combined HAPs emitted for each compliance period.

(c) To document compliance with Condition D.10.11, the Permittee shall maintain a log of the thermal oxidizer temperature.

(~~b~~ **d**) All records shall be maintained in accordance with Section C.19 - General Record Keeping Requirements, of this permit.

SECTION D.13 FACILITY OPERATION CONDITIONS

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

One (1) Pickle Line Acid Regeneration Facility; identified as ARF-1; approved for construction in 2007; exhausting to stack 93; consisting of:

(1) One (1) 21.2 MMBtu/hr natural-gas fired boiler;

(2) One (1) water treatment system; and

(3) Emissions controlled by a scrubber.

(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)]

D.13.1 PM/PM10 Limitations - Best Available Control Technology [326 IAC 2-2-3]

Pursuant to 326 IAC 2-2-3 (PSD - BACT):

(a) A scrubber shall control PM/PM10 emissions from the Pickle Line Acid Regeneration Facility.

(b) PM emissions from the Pickle Line Acid Regeneration Facility shall not exceed 0.022 grains per dry standard cubic foot (gr/dscf) and 2.5 pounds per hour (lb/hr).

(c) PM10 emissions from the Pickle Line Acid Regeneration Facility shall not exceed 0.022 grains per dry standard cubic foot (gr/dscf) and 2.5 pounds per hour (lb/hr).

(d) Visible emissions of the exhaust from the Pickle Line Acid Regeneration Facility shall not exceed five percent (5%) opacity, as determined by a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).

Compliance with these limitations satisfies the requirements of 326 IAC 2-2-3.

D.13.2 HAP Emissions [40 CFR Part 63, Subpart CCC][40 CFR Part 63, Subpart EEEE] [326 IAC 20]

The HCl emissions from the Pickle Line Acid Regeneration Facility shall not exceed 0.74 pounds per hour. Compliance with this limit in conjunction with the other HAP limitations on SDI's EAFs, IDI's RHF, and SDI's coating line will limit the source-wide potential to emit HCl to less than 10 tons per year and the potential to emit any combination of HAPs to less than 25 tons per year, and render the requirements of 40 CFR Part 63, Subparts CCC and EEEE not applicable.

D.13.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and its control device.

Compliance Determination Requirements

D.13.4 Particulate and HCl Control

Except as otherwise provided by statute, rule, or in this permit, and in order to comply with Conditions D.13.1 and D.13.2, the scrubber, used to control PM/PM10 and HCl emissions, shall be in operation at all times the Pickle Line Acid Regeneration Facility is in operation.

D.13.5 Testing Requirements [326 IAC 2-7-6(1),(6)][326 IAC 2-1.1-11]

(a) Within 180 days after initial start up, the Permittee shall perform PM/PM_{10} and opacity testing on the stack emissions from the Pickle Line Acid Regeneration Facility in order to demonstrate compliance with Condition D.13.1. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. PM_{10} includes filterable and condensable PM_{10}. Testing shall be completed using methods approved by the Commissioner and conducted in accordance with Section C - Performance Testing.

(b) Within 180 days after initial start up, the Permittee shall perform HCl testing on the stack emissions from the Pickle Line Acid Regeneration Facility in order to demonstrate compliance with Condition D.13.2. This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be completed using methods approved by the Commissioner and conducted in accordance with Section C - Performance Testing.

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

D.13.6 Scrubber Monitoring

(a) The Permittee shall monitor the recirculation pump discharge pressure and scrubbant flow rate at least once per day when the scrubber is in operation.

(b) When for any one reading, the recirculation pump discharge pressure is outside the normal range as specified by the manufacturer, or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(c) When for any one reading, the scrubbant flow rate is less than a minimum specified by the manufacturer or established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(d) The instrument used for determining the pressure or flow rate shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

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

D.13.7 Record Keeping Requirements

(a) To document compliance with Condition D.13.5, the Permittee shall maintain records of the results from the tests required by that condition.

(b) To document compliance with Condition D.13.6, the Permittee shall maintain records of the required scrubber operating parameters required by that condition. The Permittee shall include in its daily record when a discharge pressure or flow rate reading is not taken and the reason for the lack of a reading (e.g. the process did not operate that day).

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

SECTION D.~~13~~ 14 FACILITY OPERATION CONDITIONS

D.~~13~~ **14**.1 Particulate [326 IAC 6-3-2]

...

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

Part 70 Quarterly Report

Source Name: **Steel Dynamics, Inc.**
Source Address: **4500 County Road 59, Butler, IN 46721**
Mailing Address: **4500 County Road 59, Butler, IN 46721**
Part 70 Permit No.: **T033-8068-00043**
Facility: **2-side, 2-coat, coil coating line (paint line)**
Parameter: **single HAP emissions**
Limits: **10 tons per 12 consecutive month period with compliance demonstrated on a monthly basis**

Quarter _____ YEAR:_____

	Column 1	**Column 2**	**Column 3** **Column 1 + Column 2**
Month	**This Month**	**Previous 11 Months**	**12 Month Total**
Month 1			
Month 2			
Month 3			

☐ **No deviations occurred in this quarter.**
☐ **Deviation/s occurred in this quarter.**

Submitted by: _____
Title/Position: _____
Signature: _____
Date: _____
Phone: _____

Attach a signed certification to complete this report.

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

Part 70 Quarterly Report

Source Name: **Steel Dynamics, Inc.**
Source Address: **4500 County Road 59, Butler, IN 46721**
Mailing Address: **4500 County Road 59, Butler, IN 46721**
Part 70 Permit No.: **T033-8068-00043**

Facility: **2-side, 2-coat, coil coating line (paint line)**
Parameter: **combination of HAP emissions**
Limits: **14.6 tons per 12 consecutive month period with compliance demonstrated on a monthly basis**

Quarter _____ YEAR:_____

	Column 1	Column 2	Column 3 Column 1 + Column 2
Month	**This Month**	**Previous 11 Months**	**12 Month Total**
Month 1			
Month 2			
Month 3			

☐ **No deviations occurred in this quarter.**

☐ **Deviation/s occurred in this quarter.**

Submitted by:_____
Title/Position: _____
Signature: _____
Date: _____
Phone: _____

Attach a signed certification to complete this report.

Upon further review, IDEM, OAQ has decided to make the following changes to the permit:

1. The specific mail codes (MC) for each of the IDEM branches has been added to improve mail delivery, as follows:

   Permits Branch: **MC 61-53 IGCN 1003**
   Compliance Branch: **MC 61-53 IGCN 1003**
   Air Compliance Section: **MC 61-53 IGCN 1003**
   Compliance Data Section: **MC 61-53 IGCN 1003**
   Asbestos Section: **MC 61-52 IGCN 1003**
   Technical Support and Modeling: **MC 61-50 IGCN 1003**

Conclusion and Recommendation

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Significant Source Modification No. 033-23028-00076. The operation of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Significant Permit Modification No. 033-24411-00076. The staff recommends to the Commissioner that this Part 70 Significant Source Modification and Significant Permit Modification be approved.

Appendix A: Emission Calculations
PM/PM10 Emissions
From Electric Arc Furnaces

Company Name: Steel Dynamics, Inc.
Address : 4500 County Road 59, Butler, IN 46721
SSM: 033-23028-00043
Reviewer: ERG/BS
Date: March 8, 2007

Process Description: Electric Arc Furnaces

Electric Arc Furnace #2 North			Electric Arc Furnace #1 South		
Nominal Production Rate:	200	ton metal/hr	Nominal Production Rate:	200	ton metal/hr
PM* Control Equipment:	Baghouse	(Stack 92)	PM* Control Equipment:	Baghouse	(Stack 1)
PM10* Grain Loading:	0.0052	grains/dscf	PM10* Grain Loading:	0.0052	grains/dscf
PM* Grain Loading:	0.0018	grains/dscf	PM* Grain Loading:	0.0018	grains/dscf
Stack Temp:	125	deg F	Stack Temp:	200	deg F
Air Flow Rate:	1,100,000	ascf/min	Air Flow Rate:	1,625,000	ascf/min
Air Flow Rate:	992,821	dscf/min	Air Flow Rate:	1,300,000	dscf/min
Control Efficiency:	99.0%		Control Efficiency:	99.0%	

1. Potential to Emit PM*/PM10* After Control:		**EAF #2 North**	**EAF #1 South**
Hourly PM10* Emissions	= gr/dscf x air flow rate (dscf/min) x 60 (min/hr) x 1/7000 (lb/gr)	**44.3 lbs/hr**	**57.9 lbs/hr**
Annual PM10* emissions	= hourly PM10* emissions x 8760 (hr/yr) x 1/2000 (ton/lb) =	**193.8 tons/yr**	**253.8 tons/yr**
Hourly PM* Emissions	= gr/dscf x air flow rate (dscf/min) x 60 (min/hr) x 1/7000 (lb/gr)	**15.3 lbs/hr**	**20.1 lbs/hr**
Annual PM* emissions	= hourly PM* emissions x 8760 (hr/yr) x 1/2000 (ton/lb) =	**67.1 tons/yr**	**87.9 tons/yr**

2. Potential to Emit PM*/PM10* Before Control:			
PTE of PM10 Before Control	= After control PTE (tons/yr) / (1-99% Control Efficiency) =	**19,382 tons/yr**	**25,379 tons/yr**
PTE of PM Before Control	= After control PTE (tons/yr) / (1-99% Control Efficiency) =	**6,709 tons/yr**	**8,785 tons/yr**

NOTE: PM* = PM and Filterable PM10; PM10* = Filterable and Condensable PM10

Appendix A: Emission Calculations
Pollutant Emissions
From an Acid Regeneration Facility

Company Name: Steel Dynamics, Inc.
Address : 4500 County Road 59, Butler, IN 46721
SSM: 033-23028-00043
Reviewer: ERG/BS
Date: March 8, 2007

Process Description: Pickle Line Acid Regeneration Facility

Heat input capacity of boiler:	21.2	MMBtu/hr
Control type:	Scrubber	(stack 93)
Inlet PM/PM10 concentration:	0.219	gr/dscf (estimated)
Outlet PM/PM10 concentration:	0.022	gr/dscf (vendor)
Stack Temp:	187	deg F
Air Flow Rate:	16,338	ascf/min
Air Flow Rate:	13,333	dscf/min

1. Potential to Emit PM/PM10 After Control:

Assume all PM = PM10.

Hourly PM/PM10 Emissions = outlet concentration (gr/dscf) x airflow (dscf/min) x 60 (min/hr) x 1/7000 (lb/gr) **2.50 lbs/hr**
Annual PM/PM10 emissions = lbs/hr x 8760 (hr/yr) x 1/2000 (ton/lb) = **10.9 tons/yr**

2. Potential to Emit PM/PM10 Before Control:

Assume all PM = PM10.

Hourly PM/PM10 Emissions = inlet concentration (gr/dscf) x airflow (dscf/min) x 60 (min/hr) x 1/7000 (lb/gr) **24.97 lbs/hr**
Annual PM/PM10 emissions = lbs/hr x 8760 (hr/yr) x 1/2000 (ton/lb) = **109.4 tons/yr**

3. Potential to Emit (Other Pollutants):

Emission Factors (lb emtted per MMSCF; per AP-42)

SO2	NOx	VOC	CO
0.6	50	5.5	84.0

after control

HCl (lb/hr)
0.74

x 21.2 (MMBtu/hr) x 1/ 1000 (MMSCF/MMBtu) x 8760 (hr/yr) x 1/2000 (ton/lb) =

or

x 8760 (hr/yr) x 1/2000 (ton/lb) =

Potential to Emit (ton pollutant per year)

SO2	NOx	VOC	CO
0.056	**4.64**	**0.511**	**7.80**

HCl
3.24

Appendix A: Emission Calculations
Source-wide HAP PTE

Company Name: Steel Dynamics, Inc.
Address : 4500 County Road 59, Butler, IN 46721
SSM: 033-23028-00043
Reviewer: ERG/BS
Date: March 8, 2007

Summary of Existing and Proposed HAP emissions

Facilities and Permit	Type of HAP	PTE (ton/yr)
Existing Paint Line permitted via SSM 033-15836-00043 (a)	assorted organics	14.6
Existing IDI RHF modification permitted via SSM 033-15955-00076 (b)	lead	0.37
Other Existing Sources (c)	assorted organics	1.0
Existing Pickle Line permitted via CP 033-5625-00043 (d)	HCl	1.4
Proposed Acid Regeneration Facility	HCl	3.24
	Total	**20.6**

(a) The total HAP emissions are limited to less than 14.6 tons per year.
(b) The lead emissions from the RHF baghouses are limited to 0.37 ton/yr.
(c) Organic HAP emissions from natural gas combustion are expected to be negligible. As a conservative estimate, a HAP PTE of 1.0 tpy is included.
(d) The HCl emissions form the pickle line are limited to 0.32 lb/hr (1.4 ton/yr).

APPENDIX B -
BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DETERMINATION

Source Information and Description of Modification

Source Name:	Steel Dynamics, Inc.
Source Location:	4500 County Road 59, Butler, Indiana 46721
County:	Dekalb
SIC Code:	3312
Operation Permit No.:	T033-8068-00043
Operation Permit Issuance Date:	October 4, 2006
Significant Source Modification No.:	033-23028-00043
Significant Permit Modification No.:	033-24411-00043
Permit Reviewer:	ERG/BS

The Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) has performed the following federal BACT (Best Available Control Technology) review for a major modification relating to a steel manufacturing plant owned and operated by Steel Dynamics, Inc. ("SDI") located in Butler, Indiana. The following emission units will be added or modified, pursuant to 326 IAC 2-2, in order to complete this modification:

Added Emission Units

(a) One (1) Pickle Line Acid Regeneration Facility; identified as ARF-1; approved for construction in 2007; exhausting to stack 93; consisting of:

(1) One (1) 21.2 MMBtu/hr natural-gas fired boiler; and

(2) One (1) water treatment system.

(b) One (1) EAF dust silo with emissions controlled by bin vent filter 5c. The silo will store collected dust from the new EAF Baghouse 2.

Modifications to Existing Emission Units

SDI proposes to re-route the exhaust of the Electric Arc Furnace (EAF) #2 North from EAF Baghouse 1 to a new baghouse, EAF Baghouse 2. EAF Baghouse 2 will exhaust to stack 92. The existing BACT limit covers the combined emissions from EAF #2 North and EAF #1 South. The addition of the new baghouse will increase the amount of particulates captured and consequently reduce of the amount of dust that settles in the LMF/Caster building. As a result, the addition of EAF Baghouse 2 will result in an increase in potential PM/PM10 emissions.

BACT Description

This source is located in Dekalb County which is designated as attainment for all criteria pollutants. Based upon emission calculations completed by the IDEM, OAQ, the emission increase of the modification exceeds the Prevention of Significant Deterioration (PSD) significance threshold levels in 326 IAC 2-2-1 for PM and PM_{10}.

Therefore, PM and PM_{10} emissions have been reviewed pursuant to 326 IAC 2-2-3, which requires a BACT determination.

> BACT is defined as "an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under the CAA emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of 'best available control technology' result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to section 111 or 112 of this Act."

According to the *"Top-Down" Best Available Control Technology Guidance Document* outlined in the 1990 draft USEPA *New Source Review Workshop Manual*, BACT analyses are conducted with a 'top-down' approach which consists of the following steps:

(1) Identify all potentially available control options;

(2) Eliminate technically infeasible control options;

(3) Rank remaining control technologies by control effectiveness;

(4) Evaluate control options; and

(5) Select BACT.

Also in accordance with the *"Top-Down" Best Available Control Technology Guidance Document* outlined in the 1990 draft USEPA *New Source Review Workshop Manual*, BACT analyses (specifically step 4) must take into account the energy, environmental, and economic impacts on the source. These reductions may be determined through the application of available control techniques, process design, and/or operational limitations. Such reductions are necessary to demonstrate that the emissions remaining after application of BACT will not cause or contribute to air pollution, thereby protecting public health and the environment. This BACT determination is based on the following information:

(1) The EPA RACT/BACT/LAER (RBLC) Clearinghouse;

(2) EPA and State air quality permits;

(3) Communications with control device equipment manufacturers;

(4) The EPA New Source Review website;

(5) Technical books and articles; and

(6) Guidance documents from, and communications with, state agencies.

Pickle Line Acid Regeneration Facility

Background and Process Description

During the hot rolling or heat treating of steel, oxygen from the atmosphere reacts with the iron in the surface of the steel to form a crust that is made up of a mixture of iron oxides. The

presence of this metal oxide (also known as scale) on the surface of the steel lends an undesirable characteristic by interfering with the shaping, cold-rolling or coating of steel. Numerous methods have been used to remove iron oxides from metal surfaces. These methods include abrasive blasting, tubling, brushing, acid pickling, salt bath descaling, alkaline descaling, and acid cleaning. The preferred method in steel production is steel pickling – a process by which the scale is removed by dissolution in HCl acid.

The major by-product of the steel pickling process is the spent acid; also known as waste pickle liquor (WPL). Most facilities with pickling processes manage the WPL in one of several ways: (1) hauling it away by a processing company that converts ferrous chloride to ferric chloride and sells the product as a precipitant to wastewater treatment plants; (2) treating it on-site with caustics and hauling the resulting sludge away; (3) regenerating it with an on-site or off-site acid regeneration process and reusing the regenerated acid; (4) recovering the free acid by several commercially available recovery systems; or (5) injecting it by deep well injection.

On-site acid regeneration typically occurs as follows:
Steam is combined with WPL in a fluidized bed. Pyrohydrolysis of the WPL is a hydrometallurgical reaction that occurs according to the following chemical formula:

$$4FeCl_2 + 4H_2O + O_2 = 8HCl + 2Fe_2O_3$$

$$2FeCl_3 + 3H_2O = 6HCl + Fe_2O_3$$

While the acid regeneration process has a potential of emitting significant quantities of HCl and Cl_2, it is capable of recovering a high percentage of the HCl acid and allows for the collection of iron oxide (Fe_2O_3). Iron oxide sales to industrial consumers are an attractive payback to regenerate spent acid.

SDI owns and operates a HCl pickling line and currently transports the WPL offsite. With the addition of the pickle line regeneration facility (ARF-1), SDI will treat the WPL onsite and recover a considerable portion of the HCl used by the pickling line.

Scope of BACT

The following sections include PM and PM10 BACT determinations for ARF-1.

For the purposes of this review, PM and PM10 are evaluated together. As a result, particulate matter emissions are referred to as PM/PM10; this indicates that the PM emissions or limit and the PM10 emissions or limit are the same.

BACT for PM/PM10

Step 1 – Identify Control Options

The OAQ reviewed 3 facilities and 11 processes listed in the EPA's RBLC under the RBLC Code 81.600 (Pickling Processes) and Code 81.900 (Other Ferrous Metal Processes) that implemented BACT to control PM/PM10 emissions from an acid regeneration system. Of those facilities and processes, only one relevant record was identified:

SDI Steel; RBLC Code IN-0108; permit 107-16823-00038, issued November 21, 2003

In that BACT determination, PM/PM10 emissions from an acid regeneration facility were limited to 2.0 pounds per hour (based on a grain loading of 0.04 gr/dscf) and visible emissions were limited to 5% opacity.

SDI has proposed 0.022 gr/dscf and 5% opacity as PM/PM10 BACT limits.

According to information available in the RBLC, EPA's *Compilation of Air Pollutant Emission Factors* and the EPA's *CATC Technical Bulletins and Air Pollution Control Technology Fact Sheets*, PM/PM10 emissions from an exhaust stream can be controlled with a

(a) Fabric filter collector (baghouse),

(b) Electrostatic precipitator (ESP),

(c) High efficiency air filter (HEAF), or

(d) Wet scrubber.

Step 2 – Eliminate Technically Infeasible Control Options

(a) Fabric Filter Collectors:
Commonly known as baghouses, fabric collectors use filtration to separate dust particulates from dry air streams. Dust-laden gases enter the baghouse and pass through fabric bags that act as filters. The bags can be of woven or felted cotton, synthetic, or glass-fiber material in either a tube or envelope shape.

The bags provide a surface on which dust particulates collect and the formation of the dust cake eventually increases the resistance to gas flow so the filter must be periodically cleaned.

The moisture content of the ARF-1 exhaust would greatly interfere with the filter cleaning process. In addition, the HCl entrained in the exhaust would corrode the bags causing bagfilter failure.

As a result, a fabric filter collector is considered a technically infeasible option for controlling particulate emissions from the acid regeneration facility.

(b) Electrostatic Precipitator (ESP):
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.

Moisture in the air stream interferes with the formation of an electrostatic environment needed for an ESP to work. In addition, the entrained HCl in the exhaust would corrode the ESP components.

As a result, an ESP is considered a technically infeasible option for controlling particulate emissions from the acid regeneration facility.

(c) High efficiency air filter (HEAF):
HEAF filters are typically utilized for applications involving chemical, biological, and radioactive PM in the healthcare, low-level nuclear, pharmaceutical and microelectronic industries. For the most part, their use is limited to low capacity air flow applications (less than 2000 scfm) because of cost. However, some commercially available modular systems can accommodate air flow rates in excess of 40,000 scfm.

The moisture content and corrosive nature of the ARF-1 exhaust stream would greatly interfere with the HEAF collection efficiency.

As a result, a HEAF is considered a technically infeasible option for controlling particulate emissions from the acid regeneration facility.

(d) Wet Scrubber:
There are several types of wet scrubbers that use a variety of techniques to control PM emissions. The type of scrubber used in a particular application is dependent on the characteristics of the air stream and the pollutant of concern. Regardless, all wet scrubbers use a scrubbing medium - usually a liquid - to remove pollutants from an air stream. Wet scrubbers come in many different designs including packed bed towers and venturi scrubbers. Venturi scrubbers are designed to remove particulate emissions from an air stream using inertia and diffusion. Packed bed tower scrubbers use packing material in the tower to maximize the contact surface area available for the pollutant and scrubbing liquid. The scrubbing liquid enters the top of the tower while the polluted air stream enters the bottom.

Wet scrubbing is considered technically feasible for controlling particulate emissions from the acid regeneration facility.

Step 3 – Rank Remaining Control Options by Control Effectiveness

The technically feasible control options rank as follows:

Control Type	Estimated PM/PM10 Control Efficiency
Wet Scrubber	90%

The estimated efficiency is based on information provided in the EPA's Air Pollution Control Technology Fact Sheets located at www.epa.gov/ttn/catc/products.html.

Step 4 - Evaluate Control Options

SDI has proposed to use a wet scrubber to control PM/PM10 emissions from the acid regeneration facility. Since this control option provides the highest level of control, further review (including cost effectiveness) is not necessary.

According to the emissions calculations provided in Appendix A to the Technical Support Document, the use of a scrubber with an outlet grain loading of 0.022 gr/dscf will potentially reduce PM/PM10 emissions from ARF-1 by 98.5 tons per year.

Note that:
(16,338 acfm at 187 deg ^{o}F = 13,333 dscf/min)
0.022 gr/dscf x 13,330 dscf/min x 0.00856 lb-min/gr-hr = 2.50 lb PM/PM10 per hour (stack 93)

Step 5 – Select BACT

SDI's proposed PM/PM10 emission limit of 0.022 gr/dscf is more stringent than the only PM/PM10 BACT established for an acid regeneration system. Compliance can be achieved using a wet scrubber.

As a result, IDEM, OAQ has determined that PM/PM10 BACT for SDI's Pickle Line Acid Regeneration Facility is the following:

Pursuant to 326 IAC 2-2-3 (PSD - BACT):

(a) A scrubber shall control PM/PM10 emissions from the Pickle Line Acid Regeneration Facility.

(b) PM emissions from the Pickle Line Acid Regeneration Facility shall not exceed 0.022 grains per dry standard cubic foot (gr/dscf) and 2.5 pounds per hour (lb/hr).

(c) PM10 emissions from the Pickle Line Acid Regeneration Facility shall not exceed 0.022 grains per dry standard cubic foot (gr/dscf) and 2.5 pounds per hour (lb/hr).

(d) Visible emissions of the exhaust from the Pickle Line Acid Regeneration Facility shall not exceed five percent (5%) opacity, as determined by a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).

Compliance with these limitations satisfies the requirements of 326 IAC 2-2-3.

Electric Arc Furnaces

Background and Process Description

The following limitations currently exist as BACT for EAF #2 North and EAF #1 South:

(a) Pursuant to CP 033-8091-00043, issued June 25, 1997 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), for the EAFs 1 and 2, PM/PM-10 emissions shall be controlled by a direct shell evacuation system and canopy hood with 100 percent overall capture exhausted to a baghouse with 99.85 control efficiency, at an air flow rate of 1.3 million dscfm, discharging through a Stack 01 at a height of 125 feet above the ground. A slight negative pressure shall be maintained to draw particulate matter through the DSE duct.

(b) Pursuant to CP 033-8091-00043, issued March 24, 1998 and 326 IAC 2-2 (PSD - Control Technology Review; Requirements), PM/PM-10 emissions from the EAF baghouse Stack 01 shall not exceed 0.0032 grains per dry standard cubic feet at an air flow rate of 1.3 million dscfm (1.62 million acfm) and a maximum PM/PM-10 emissions of 35.7 pounds per hour.

SDI proposes to re-route the exhaust of the Electric Arc Furnace (EAF) #2 North from EAF Baghouse 1 to a new baghouse, EAF Baghouse 2. EAF Baghouse 2 will exhaust to stack 92. The existing BACT limit covers the combined emissions from EAF #2 North and EAF #1 South.

SDI requested that the BACT limits be specific to the filterable and condensable factions of PM10.

Scope of BACT

The following sections include PM and PM10 BACT determinations for EAF #2 North and EAF #1 South.

BACT for PM/PM10

Step 1 – Identify Control Options

The OAQ reviewed 28 facilities and 31 processes listed in the EPA's RBLC under the RBLC Code 81.310 (Ferrous Metals Industry - Electric Arc Furnaces) that implemented BACT to control particulate emissions. Of these facilities and processes, the following five (5) most recent records were identified that address filterable PM/PM10 emissions from electric arc furnaces:

Source	RBLC ID	Date of permit issuance	Add-on Control	PM/PM10 BACT limit (gr/dscf)	% opacity BACT limit
Wheeling Pittsburgh Steel Corp.	OH-0292	1/6/05	Baghouse	0.0032	3%
North Star BHP Steel	OH-0285	8/5/03	Baghouse	0.0018	6%
Charter Steel, Inc.	OH-0276	4/14/03	Baghouse	0.0024	6%
J & L Specialty Steel	PA-0214	4/2/03	none	0.0018	none
Timken Company	OH-0246	2/20/03	Baghouse	0.0032	none
SDI - Proposed	*NA*	*NA*	*Baghouse*	*0.0018*	*3%*

Note that the OAQ established 0.0018 gr/dscf PM and 0.0052 gr/dscf PM10 BACT limits for Nucor Steel in PSD SSM 107-16823-00038, issued November 21, 2003. This determination is not listed in the RBLC.

The OAQ reviewed 28 facilities and 31 processes listed in the EPA's RBLC under the RBLC Code 81.310 (Ferrous Metals Industry - Electric Arc Furnaces) that implemented BACT to control particulate emissions. Of these facilities and processes, the following four (4) most recent records were identified that address filterable plus condensable PM10 emissions from electric arc furnaces:

Source	RBLC ID	Date of permit issuance	Add-on Control	PM/PM10 BACT limit (gr/dscf)	% opacity BACT limit
Nucor Steel	TX-0417	1/15/03	Baghouse	0.0052	none
Hoegannaes Corp.	TN-0122	2/11/00	Baghouse	0.0052 [(a)]	none
Steel Dynamics	IN-0080	7/7/99	Baghouse	0.0052	3%
Arkansas Steel Assoc.	AR-0030	9/24/98	Baghouse	0.0052	none
SDI - Proposed	*NA*	*NA*	*Baghouse*	*0.0052*	*3%*

Note that the OAQ established 0.0018 gr/dscf PM and 0.0052 gr/dscf PM10 BACT limits for Nucor Steel in PSD SSM 107-16823-00038, issued November 21, 2003. This determination is not listed in the RBLC.

(a) This limit was not established as BACT. It is listed in the RBLC as a "Case-by-Case" limit.

According to information available in the EPA's *Compilation of Air Pollutant Emission Factors, AP-42 Ch. 12.5 (Iron and Steel Production)* and the EPA's *CATC Technical Bulletins and Air Pollution Control Technology Fact Sheets*, PM/PM10 emissions from an electric arc furnace could be controlled with:

(a) Fabric filter collector (baghouse),

(b) Electrostatic precipitator (ESP),

(c) Wet scrubber, or

(d) High efficiency air filter (HEAF).

Step 2 – Eliminate Technically Infeasible Control Options

Electrostatic Precipitator (ESP):
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 the 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. This operational problem drastically lowers the efficiency of the ESP.

Therefore, ESP is considered technically infeasible for controlling particulate emissions from an EAF.

Step 3 – Rank Remaining Control Options by Control Effectiveness

The technically feasible control options rank as follows:

Control Type	Estimated PM10 Control Efficiency
Fabric Filter Collector (i.e. Baghouse)	Greater than 99%
Wet Scrubber	Greater than 90%
High Efficiency Cyclone	Less than 90%

These estimated efficiencies are based on information provided in the EPA's Air Pollution Control Technology Fact Sheets located at www.epa.gov/ttn/catc/products.html.

Step 4 - Evaluate Control Options

(a) Fabric Filer Collector (i.e. Baghouse):
A review of the EPA's technical bulletins and technology fact sheets located at:

www.epa.gov/ttn/catc/products.html; and

http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/index.html

state that fabric filter collectors (i.e. baghouses) demonstrate excellent effectiveness and reliability when properly designed and operated to collect dry particulates. A collector will

generally have an extremely high particulate matter collection efficiency for relatively minimal cost.

The existing BACTs for EAF #2 North, EAF #1 South and the most recent BACT determinations in the RBLC require the use of fabric filter collectors.

(b) Wet scrubbers and Cyclones:
SDI has proposed the use of a fabric filter collector as BACT. While scrubbers and cyclones are capable of controlling PM emissions, they have control efficiencies lower than that of fabric filters. As a result, further review of these control options is not necessary.

Step 5 – Select BACT

SDI has proposed to use a fabric filter baghouse (with a direct shell evacuation system) to control PM/PM10 emissions from EAF #2 North and EAF #1 South. Since this control option provides the highest level of control, further review (including cost effectiveness) is not necessary.

SDI's proposed filterable PM/PM10 BACT limit of 0.0018 gr/dscf (with 3% opacity) is equivalent to the most stringent limitation established in recent BACT determinations for similar operations.

SDI's proposed filterable plus condensable PM10 BACT limit of 0.0052 gr/dscf (with 3% opacity) is as stringent as the most stringent limitations established in recent BACT determinations for similar operations.

The existing PM/PM10 BACT for EAF #2 North and EAF #1 South requires the use of a direct shell evacuation system and canopy hood with 100 percent overall capture. Given that this is the best possible level of capture, and is part of the existing CO BACT requirements, this requirement remains as part of BACT for PM/PM10 for EAF #2 North and EAF #1 South.

The existing PM/PM10 BACT for EAF #2 North and EAF #1 South requires the baghouse to have a control efficiency of at least 99.85%. Given that this is the most stringent level of control, this requirement remains as part of BACT for EAF #2 North and EAF #1 South.

See Appendix A for detailed emissions calculations for the EAFs and derivation of the pound per hour limits.

Based on the considerations mentioned above, the IDEM, OAQ has determined that PM/PM10 BACT for SDI's Electric Arc Furnaces #2 North and #1 South is the following:

Pursuant to PSD CP 033-8091-00043, issued June 25, 1997, PSD SSM 033-23028-00076 and 326 IAC 2-2-3 (PSD - BACT):

(a) The PM/PM10 emissions from EAF #2 North shall be controlled by a direct shall evacuation (DSE) system and canopy hood with 100 percent overall capture and shall exhaust to EAF Baghouse 2 with a minimum 99.85% control efficiency which discharges to Stack 92 at a height of 125 feet above the ground. A slight negative pressure shall be maintained to draw particulate matter through the DSE duct.

(b) The PM/PM10 emissions from EAF #1 South shall be controlled by a direct shall evacuation (DSE) system and canopy hood with 100 percent overall capture and shall exhaust to EAF Baghouse 1 with a minimum 99.85% control efficiency which discharges to Stack 01 at a height of 125 feet above the ground. A slight

negative pressure shall be maintained to draw particulate matter through the DSE duct.

(c) The PM/PM10 emissions from EAF #2 North and EAF #1 South shall not exceed the limits in the following table:

Unit (Control)	Filterable PM/PM10 Limits		Filterable and Condensable PM10 Limits	
	(gr/dscf)	(lb/hr)	(gr/dscf)	(lb/hr)
EAF #1 South (EAF Baghouse 1)	0.0018	20.1	0.0052	57.9
EAF #2 North (EAF Baghouse 2)	0.0018	15.3	0.0052	44.3

(d) Visible emissions of the EAF Baghouse 1 and EAF Baghouse 2 stack exhausts shall not exceed three percent (3%) opacity, based on a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).

Compliance with these limitations satisfies the requirements of 326 IAC 2-2-3.

EAF Dust Silo

Background and Process Description

Dust collected from EAF Baghouse 2 will be stored in EAF dust silo 5c until it is transferred to truck or railcar.

Scope of BACT

The following sections include PM and PM10 BACT determinations for EAF dust silo 5c.

BACT for PM/PM10

Step 1 – Identify Control Options

The OAQ reviewed 15 facilities and 98 processes listed in the EPA's RBLC under the RBLC Code 81(Ferrous Metals Industry) that implemented BACT to control particulate emissions. Of these facilities and processes, the following five (5) most recent records were identified that address PM/PM10 emissions from and dust storage silos:

Source	RBLC ID	Date of permit issuance	Add-on Control	PM/PM10 BACT limit (gr/dscf)	% opacity BACT limit
Auburn (Indiana) Nugget [(a)]	IN-0119	5/31/05	Bin vent filter	0.01	3%
Structural Metals	TX-0445	1/28/04	Bin vent filter	none	none
Charter Manufacturing	OH-0276	4/14/03	Bin vent filter	0.01	10%
Nucor Steel [(a)]	IN-0108	11/21/03	Bin vent filter	none	10%
Nucor Steel [(a)]	IN-0090	1/19/01	Bin vent filter	0.01	3%
SDI - Proposed	*NA*	*NA*	*Bin vent filter*	*none*	*3%*

(a) These BACT determinations are specific to EAF and LMF dust silos and dust handling systems.

According to information available in the EPA's *Compilation of Air Pollutant Emission Factors, AP-42 Ch. 12.5 (Iron and Steel Production)* and the EPA's *CATC Technical Bulletins and Air Pollution Control Technology Fact Sheets*, PM/PM10 emissions from an EAF dust silo could be controlled with:

(a) Bin vent filter,

(b) Electrostatic precipitator (ESP), or

(c) Wet scrubber, or

Step 2 – Eliminate Technically Infeasible Control Options

Electrostatic Precipitator (ESP):
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 the 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. This operational problem drastically lowers the efficiency of the ESP.

Therefore, ESP is considered technically infeasible for controlling particulate emissions from an EAF dust silo.

Step 3 – Rank Remaining Control Options by Control Effectiveness

The technically feasible control options rank as follows:

Control Type	Estimated PM/PM10 Control Efficiency
Bin Vent Filter	Greater than 99%
Wet Scrubber	Less than 90%

These estimated efficiencies are based on information provided in the EPA's Air Pollution Control Technology Fact Sheets located at www.epa.gov/ttn/catc/products.html.

Step 4 - Evaluate Control Options

A review of the EPA's technical bulletins and technology fact sheets located at:

www.epa.gov/ttn/catc/products.html;

http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/index.html; and

the results from the RBLC search indicate that bin vent filters are the most reliable and cost-effective control devices used to control particulate emissions from silos. In addition, no other technically-feasible particulate control devices can obtain that level of control.

SDI has proposed to use a bin vent filter to control PM/PM10 emissions from EAF dust silo 5c. Since this control option provides the highest level of control, further review (including cost effectiveness) is not necessary.

SDI's proposed PM/PM10 BACT limit 3% opacity is as stringent as the most stringent limitations established in recent BACT determinations for similar operations.

Based on a review of the RBLC, the most stringent PM/PM10 BACT limit for an EAF dust silo is 0.01 gr/dscf. SDI has indicated that the RBLC records are not directly comparable because the density, particle size distribution, moisture content and abrasiveness of EAF dust are very different than the other dusts covered by the RBLC results. SDI also indicated that the configuration of a bin vent prevents the practical measurement of particulate emissions from silo bin vents. For these reasons, SDI believes that a gr/dscf emission limitation is not appropriate. The OAQ does not agree because the most recent and relevant record is for an EAF dust silo.

The following emission calculations estimate the PM/PM10 PTE of EAF dust silo 5c:

0.01 gr/dscf x 1,200 dscf/min x 0.03754 ton-min/gr-yr = 0.45 ton PM/PM10/yr

Step 5 – Select BACT

Based on the considerations mentioned above, the IDEM, OAQ has determined that BACT for SDI's EAF dust silo 5c is the use of a bin vent filter. As a result, the Permittee shall comply with the following requirements determined to be PM/PM10 BACT for EAF dust silo 5c:

Pursuant to PSD SSM 033-23028-00076 and 326 IAC 2-2-3 (BACT):

(a) The filterable PM/PM10 emissions from EAF dust silo 5c shall not exceed 0.01 grains per dry standard cubic foot (gr/dscf).

(b) Visible emissions of the exhaust from EAF dust silo 5c shall not exceed three percent (3%) opacity, based on a six (6) minute average (24 readings taken in accordance with EPA Method 9, Appendix A).

Air Quality Analysis

Steel Dynamics, Incorporated (SDI)

Butler, Indiana (DeKalb County)

Tracking and Plant ID: 033-23028-00043

Proposed Project

Steel Dynamics, Inc. (SDI) has submitted a request for a significant source modification of their facility with an increase in the Particulate Matter less than 10 microns (PM_{10}) emissions. SDI is proposing a new melt shop baghouse and pickle line acid regeneration at their Butler location.

Keramida Environmental prepared the permit application for SDI. The Modeling Section in the Office of Air Quality (QAQ) received the final permit application in March 2007. This technical support document provides the air quality analysis review of the permit application.

Analysis Summary

Based on the potential emissions after controls, a PSD air quality analysis was triggered for PM_{10}. The significant impact analysis determined that modeling concentrations for PM_{10} exceeded the significant impact levels. A refined analysis was required and showed no violation of the NAAQS or the PSD increment. A Hazardous Air Pollutant (HAP) analysis was performed. Based on the HAPs modeling results, the source will not pose a health concern. An additional impact analysis was conducted and showed no significant impact. Based on the modeling results, the proposed modification will not have a significant impact upon federal air quality standards.

Air Quality Impact Objectives

The purpose of the air quality impact analysis in the permit application is to accomplish the following objectives. Each objective is individually addressed in this document in each section outlined below.

A. Establish which pollutants require an air quality analysis based on PSD significant emission rates.

B. Provide analyses of actual stack heights with respect to Good Engineering Practice (GEP), the meteorological data used, a description of the model used in the analysis, and the receptor grid utilized for the analyses.

C. Determine the significant impact level, the area impacted by the source's emissions and 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 PSD increment if the applicant exceeds significant impact levels.

E. 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.

F. Perform a Hazardous Air Pollutant (HAP) screening for informational purposes.

G. Summarize the Air Quality Analysis.

Section A - Pollutants Analyzed for Air Quality Impact

Applicability

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 and in the Code of Federal Regulations (CFR) 52.21(b) (23) (i).

Proposed Project Emissions

Particulate Matter less than 10 microns (PM_{10}) is the pollutant that will be emitted from the revision of SDI's emission limits. An air quality analysis is required for this pollutant because potential emissions after controls exceed the significant emission rate as shown in Table 1:

TABLE 1
Significant Emission Rates for PSD

POLLUTANT	POTENTIAL EMISSION RATE (Source Totals)	SIGNIFICANT EMISSION RATE	PRELIMINARY AQ ANALYSIS REQUIRED
	(tons/year)	(tons/year)	
CO	7.8	100	No
VOC	0.5	40	No
NOx	4.6	40	No
SO2	0.06	40	No
PM_{10}	202.8	15	Yes

Section B – Good Engineering Practice (GEP), Met Data, Model Used, Receptor Grid

Stack Height Compliance with Good Engineering Practice (GEP)

Applicability

Stacks should comply with GEP requirements established in 326 IAC 1-7-4. If stacks are lower than GEP, excessive ambient concentrations due to aerodynamic downwash may occur. Dispersion modeling credit for stacks taller than 65 meters (213 feet) is limited to GEP for the purpose of establishing

emission limitations. The GEP stack height takes into account the distance and dimensions of nearby structures, which would 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)

Existing Stack

Since the existing stack height of the unit for which the modification is proposed is below GEP stack height, the effect of aerodynamic downwash will be accounted for in the air quality analysis for the project.

Meteorological Data

The meteorological data used in the AERMOD model consisted of 1986 through 1990 surface data from the Fort Wayne Airport Weather Service station merged with the mixing heights from Dayton, Ohio Airport National Weather Service station. The meteorological data was obtained through the National Oceanic and Atmospheric Administration (NOAA) and National Climatic Data Center (NCDC) and preprocessed into AERMOD ready format using U.S.EPA's AERMET.

Model Description

Keramida Environmental Inc. used AERMOD. OAQ used a later model version of AERMOD (Version 07026) to determine maximum off-property concentrations or impacts for each pollutant. All regulatory default options were utilized in the U.S. EPA approved model, as listed in the 40 Code of Federal Regulations Part 51, Appendix W "Guideline on Air Quality Models".

The Auer Land Use Classification Scheme was used to determine the land use in the area. The area is considered primarily rural; therefore, a rural classification was used.

Receptor Grid

The receptor grid extended approximately 7 kilometers from the plant. Fence line receptors were closely spaced (100 meters) near the plant boundary to identify the influence of aerodynamic building downwash.

Treatment of Terrain

Receptor terrain elevation inputs were interpolated from DEM (Digital Elevation Model) data obtained from the USGS. DEM terrain data was preprocessed using AERMAP.

Section C - Significant Impact Level/Area (SIA) and Background Air Quality Levels

A significant impact analysis was conducted 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. More modeling for PM_{10} was required because the results did exceed

significant impact levels. Significant impact levels are defined by the following time periods in Table 2 below with all maximum-modeled concentrations from the worst case operating scenarios.

TABLE 2
Significant Impact Analysis

POLLUTANT	TIME AVERAGING PERIOD	MAXIMUM MODELED IMPACTS (ug/m^3)	SIGNIFICANT IMPACT LEVEL (ug/m^3)	MONITORING THRESHOLD (ug/m^3)	MONITORING DE MINIMUS EXCEEDED	REFINED AQ ANALYSIS REQUIRED
PM_{10}	24-Hour	11.1	5	10	Yes	Yes
PM_{10}	Annual	1.1	1	-	-	Yes

Pre-construction and Post-construction Monitoring Analysis

Applicability

The PSD requirements, 326 IAC 2-2-4, require an air quality analysis of the new source or the major modification to determine if the pre-construction monitoring threshold is triggered.

Modeling Results

The preliminary modeling results were compared to the PSD preconstruction monitoring thresholds. The results are shown in the table below.

TABLE 3
Preconstruction Monitoring Analysis

POLLUTANT	TIME AVERAGING PERIOD	MAXIMUM MODELED IMPACTS (ug/m^3)	DE MINIMIS LEVEL (ug/m3)	ABOVE DE MINIMIS LEVEL
PM_{10}	24-Hour	11.1	10	Yes

The preconstruction monitoring requirement was triggered for PM_{10}. The nearest current PM10 monitor is 34 kilometers away in Fort Wayne. The pre-construction requirement can be fulfilled by SDI's older yet more conservative on-site monitoring data. The monitoring threshold level was exceeded, so post-construction monitoring may be required.

Background Concentrations

Applicability

EPA's "Ambient Monitoring Guidelines for Prevention of Significant Deterioration" (EPA-450/4-87-007) Section 2.4.1 is cited for approval of the monitoring sites for this area.

Background Monitors

For 24-hour background concentrations, the average second highest monitoring values were used. Annual background concentrations were taken from the maximum annual values.

TABLE 4
Monitoring Data Used For Background Concentrations *

POLLUTANT	Monitoring Site	TIME AVERAGING PERIOD	Concentration (ug/m^3)
PM_{10}	Dekalb County County Road 59	Annual	51.7
PM_{10}	Dekalb County County Road 59	24-Hour	29

*OAQ used the nearest site for the air quality analysis.

Section D - NAAQS and PSD Increment

NAAQS Compliance Analysis and Results

IDEM supplied emission inventories of all sources within a 50-kilometer radius of SDI. Inventories were taken from the IDEM's air quality web site. The NAAQS inventories are generated from I-STEPS (State Emission Processing System) in accordance with 326 IAC 2-6. The PSD increment inventories include sources that affect the increment based on the major and minor source baseline dates and are compiled from permits issued by IDEM.

NAAQs modeling for the appropriate time-averaging periods for PM_{10} was conducted and compared to the respective NAAQs limit. OAQ modeling results are shown in Table 5. All maximum-modeled concentrations were compared to the respective NAAQS limit. All maximum-modeled concentrations during the five years were below the NAAQS limits and further modeling was not required.

TABLE 5
NAAQS Analysis

Pollutant	Year	Time-Averaging Period	Maximum Concentration ug/m3	Background Concentration ug/m3	Total ug/m3	NAAQS Limit ug/m3	NAAQS Violation
PM_{10}	1989	24 hour (H2H)	24.5	51.7	76.2	150	NO
PM_{10}	1988	Annual	4.8	29	33.8	50	NO

Analysis and Results of Source Impact on the PSD Increment

Applicability

Maximum allowable increases (PSD increments) are established by 326 IAC 2-2 for PM_{10}. This rule also limits a source to no more than 80 percent of the available PSD increment to allow for future growth.

Source Impact

Since the impact for PM_{10} from SDI modeled above significant impact levels, a PSD increment analysis for the existing major sources and its surrounding counties was required. Results of the increment modeling are summarized in Table 6 below.

TABLE 6
PM10 Increment Analysis

Pollutant	**Year**	**Time-Averaging Period**	**Maximum Concentration ug/m3**	**PSD Increment ug/m3**	**Total Impact on the PSD Increment**	Increment Violation
PM_{10}	1989	24 Hour (H2H)	24.5	30	81.3%	---
PM_{10}	1988	Annual	4.5	18	22.2%	NO

Since the modeling shows that predicted 24-hour concentrations exceed 80% of total increment additional modeling was conducted at these receptors. Results are shown below.

TABLE 7
Additional PM10 Increment Analysis

Year	Date MM/DD	UTM-E	UTM-N	2nd 24 Hour High After-Mod (ug/m3)	2nd 24 Hour High Before-Mod (ug/m3)	Increment Available	Increment Consumed by Permit	% of Available Increment
1989	3/10	673.700	4583.425	24.49	23.85	6.15	0.64	10.4
1989	3/10	673.700	4583.500	24.23	23.62	6.38	0.61	9.6
1989	9/5	673.800	4583.425	24.08	22.19	7.81	1.89	24.2

There were three receptors where the total increment consumed was above 80% of 30 ug/m3. For the first receptor, the other sources have already consumed 23.85 ug/m3 at that day and point. So 6.15 ug/m3 remains from the original increment of 30 ug/m3. The impact of the source was compared to the remaining available increment for each receptor. The results of the increment analysis indicate the highest second high 24 hour concentration for PM_{10} was not above 80% of the **available** increment. No further analysis is required.

Part E – Qualitative Analysis

Additional Impact Analysis

All PSD permit applicants must prepare additional impacts analysis for each pollutant subject to regulation under the Act. This analysis assesses the impacts on soils and vegetation, caused by any increase in emissions of any regulated pollutant from the source. The SDI PSD permit application provided an additional impact analysis performed by Keramida Environmental.

Economic Growth

Since there is no construction involved in revising the emission limit, there will be no growth associated with this change.

Soils and Vegetation Analysis

A list of soil types present in the general area was determined. Soil types include the following: Loamy Glacial Till, Moderate Thick Loess Over Loamy Glacial Till, and Thin Loess Over Loamy Glacial Till.

Due to the agricultural nature of the land, crops in the Dekalb County area consist mainly of corn, wheat, and soybeans (2002 Agricultural Census for Dekalb County). The maximum modeled

concentrations for SDI are well below the threshold limits necessary to have adverse impacts on the surrounding vegetation such as autumn bent, nimblewill, barnyard grass, bishopscap and horsetail, and milkweed (Flora of Indiana – Charles Deam). Livestock in Dekalb County consist mainly of hogs, beef and milk cows (2002 Agricultural Census for Dekalb 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 Endangered Species Analysis

Federally endangered or threatened species are listed by the U.S. Fish and Wildlife Service, Division of Endangered Species for Indiana, and include 12 species of mussels, 4 species of birds, 2 species of bat and butterflies and 1 specie of snake. The mussels and birds listed are commonly found along major rivers and lakes while the bats are found near caves. The facility is not expected to have any additional adverse effects on the habitats of the species than what has already occurred from the industrial and residential activities in the area.

Federally endangered or threatened plants as listed by 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 in industrialized and residential areas. The facility is not expected to impact that area.

Visibility Analysis

The VISCREEN model is designed as a screening model to determine the visual impact parameters from a single source plume. It is used to determine whether or not a plume is visible as an object itself.

The PM_{10} emissions limits were used to run a local visibility Level 2 analysis. VISCREEN Version 1.01 was used to determine if the color difference parameter (Delta-E) or the plume (green) contrast limits were exceeded. The Delta-E was developed to specify the perceived magnitude of color and brightness changes and is used as the primary basis for determining the perceptibility of plume visual impacts. The plume constant can be defined at any wavelength as the relative difference in the intensity (called spectral radiance) between the viewed object and its background. This is used to determine how the human eye responds differently to different wavelengths of light. The Delta-E of 2.0 and the plume contrast of 0.05 were not exceeded at the nearest interstate and airport locations.

Additional Analysis Conclusions

The results of the additional impact analysis conclude the operation of the facility will have no significant impact on economic growth, soils, vegetation or visibility in the immediate vicinity or on any Class I area.

Part F – HAPs Analysis

OAQ currently requests data concerning the emission of 189 HAPs listed in the 1990 Clean Air Act Amendments (CAAA) that 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 GSD-08.

Potential emissions of aggregate HAPs from SDI are estimated to be 4 tons per year. 3.2 tons is hydrochloric acid.

Keramida completed a full HAP analysis comparing the maximum estimated concentrations of each pollutant with the Unit Risk Factor (URF) or Inhalation Unit Risk and the Reference Concentration (RfC). This analysis offers a refined, up to date site specific analysis that takes into account the different potencies and health effects that each pollutant presents to the public.

The Unit risk factor (URF) is the upper-bound excess lifetime cancer risk estimated to result from continuous inhalation exposure to a pollutant over a 70 year lifetime. Multiplying the estimated concentration by the URF will produce a cancer risk estimate. The cancer risk estimate is the conservative probability of developing cancer from exposure to a pollutant or a mixture of pollutants over a 70 year lifetime, usually expressed as the number of additional cancer cases in a given number of people, e.g., one in a million. For screening purposes, the cancer estimates for each pollutant are considered to be additive when deriving the cumulative maximum individual cancer risk.

Non-cancer health effects are determined using the Reference Concentration (RfC). The RfC is an estimate of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. Dividing the estimated pollutant concentration by the RfC will determine the pollutant's Hazard Quotient (HQ). All of the HAPs' Hazard Quotients were added together to determine the Hazard Index (HI).

This HAP screening analysis uses health protective assumptions that overestimate the actual risk associated with emissions from SDI. Estimates 1) assume a 70 year exposure time, 2) assume that all carcinogens cause the same type of cancer, 3) assume that all non-carcinogens have additive health effects, 4) assume maximum permit allowable emissions from the facility, and 5) use conservatively derived dose-response information. The risk analysis cannot accurately predict whether there will be observed health problems around SDI; rather it identifies possible avenues of risk.

The results of the HAP modeling are in Table 8.

TABLE 8
Hazardous Air Pollutant Modeling Results

Compound	Annual Concentration (ug/m3)	Cancer Risk	Hazard Quotient
2-Methylnaphthalene	1.46E-7	---	0.000
3-Methylcholanthrene	1.09E-8	6.87E-11	---
7,12-Dimethylbenz(a) anthrecene	9.74E-8	6.92E-09	---
Acenaphthene	1.09E-8	---	0.000
Acenaphthylene	1.09E-8	---	0.000
Anthracene	1.46E-8	---	0.000
Arsenic	1.22E-6	5.25E-09	0.000
Benzene	1.28E-05	9.98E-11	0.000
Benzo[a]anthracene	1.09E-08	1.20E-12	---
Benzo[a]pyrene	7.30E-09	8.03E-12	---
Benzo[b]fluoranthene	1.09E-08	1.20E-12	---
Benzo[g,h,i]perylene	7.30E-09	6.50E-11	---

Benzo[k]fluoranthene	1.09E-08	1.20E-12		---	
Beryllium compounds	7.30E-08	1.75E-10		0.000	
Cadmium compounds	6.69E-06	1.20E-08		0.000	
Chromium (VI) compounds	8.51E-06	1.02E-07		0.000	
Chrysene	1.09E-08	9.70E-12		---	
Cobalt	5.11E-07	---		0.000	
Dibenz(ab) anthracene	7.30E-09	8.76E-12		---	
Fluoranthene	1.80E-08	---		0.000	
Fluorene	1.70E-09	---		0.000	
Formaldehyde	4.56E-04	5.93E-09		0.000	
Hydrochloric Acid	1.27E-01	---		0.006	
Indeno[1,2,3-cd]pyrene	1.09E-08	1.20E-12		---	
Lead compounds	1.82E-06	---		0.000	
Manganese compounds	2.31E-06	---		0.000	
Mercury, elemental	1.58E-06	---		0.000	
Naphthalene	3.71E-06	1.26E-10		0.000	
n-Hexane	1.09E-02	---		0.000	
Nickel compounds	1.28E-05	3.07E-09		0.000	
Phenanthrene	1.03E-07	---		0.000	
Pyrene	3.05E-08	---		0.000	
Selenium compounds	1.46E-07	---		0.000	
Toluene	2.07E-05	---		0.000	
Lead compounds	1.82E-06	---		0.000	
		Total Cancer Risk	1.36E-07	Total Hazard Index (HI)	0.0007

* Further information on URFs and RfCs can be found at the following EPA website: http://www.epa.gov/ttn/atw/toxsource/chronicsources.html

The Hazard Index for the project does not exceed 1. Pollutants with a Hazard Quotient (HQ) greater than 1 are considered to be at concentrations that could represent a health concern. Hazard Quotients above 1 do not represent areas where adverse health effects will be observed but indicate that the potential exists.

The additive cancer risk estimate from all HAPs is 1.36 additional cancer cases in ten million people. This means if an individual was exposed to these HAPs continuously for 70 years, the risk of getting cancer from this exposure would be 1.36 in ten million. The US EPA considers one in ten thousand (1.0E-04) excess cancer risks to be the upper range of acceptability with an ample margin of safety. The probability for the general public to be exposed to these HAPs for 24 hours a day, seven days a week, 52 weeks a year for 70 years is minimal.

Part F - Summary of Air Quality Analysis

SDI has applied for a modification of their facility with an increase of their PM_{10} emissions.

Keramida Environmental Incorporated of Indianapolis, Indiana prepared the PSD application. Dekalb County is designated as attainment for all criteria. PM_{10} emission rates associated with the proposed facility exceeded the respective significant emission rates. Modeling results taken from the latest version of the AERMOD model showed PM_{10} impacts were predicted to be greater than the significant impact levels. SDI did trigger preconstruction monitoring for PM_{10} but can satisfy the preconstruction monitoring requirement since there is existing air quality monitoring data representative of the area. The NAAQS and increment modeling for PM_{10} showed no violations of the standards. Increment analysis showed that less than 80% of available increment was consumed. A Hazardous Air Pollutant (HAP) analysis was performed and showed no likely adverse impact. The nearest Class I area is Mammoth Cave National Park in Kentucky over 100 kilometers away from the source. Additional impact analysis was required but the operation of the proposed facility will have no significant impact.