INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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100 North Senate Avenue
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Indianapolis, Indiana 46204-2251
(317) 232-8603
(800) 451-6027
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NOTICE OF 30-DAY PERIOD FOR PUBLIC COMMENT

Preliminary Findings Regarding a
Prevention of Significant Deterioration (PSD) Part 70
Significant Source Modification and a Significant Permit Modification

for **Steel Dynamics, Inc.** located in **Dekalb County**

Significant Source Modification No.: 033-23028-00043
Significant Permit Modification No.: 033-24411-00043

The Indiana Department of Environmental Management (IDEM) has received an application from Steel Dynamics, Inc., located at 4500 County Road 59, Butler, Indiana 46721, for a PSD Significant Source Modification and Significant Permit Modification.

If approved by IDEM's Office of Air Quality (OAQ), this proposed modification would allow Steel Dynamics, Inc. to make certain changes at their existing source; specifically, Steel Dynamics, Inc. would be able to construct a pickle line acid regeneration facility, re-route emissions from one of its electric arc furnaces to a new baghouse and stack and construct a new dust silo. IDEM has reviewed this application, and has developed preliminary findings, consisting of a draft permit and several supporting documents, that would allow the applicant to make this change.

The Significant Source Modification is being proposed under the provisions of the Prevention of Significant Deterioration (PSD) Program (326 IAC 2-2). The regulated pollutants subject to review are particulate matter (PM) and particulate matter of 10 microns or less (PM10). Pursuant to 326 IAC 2-2-3, a BACT (Best Available Control Technology) analysis was performed. Pursuant to 326 IAC 2-2-5, a modeling analysis of these pollutants was performed to ensure that the proposed modification does not violate the National Ambient Air Quality Standards (NAAQS). Pursuant to 326 IAC 2-2-6(a), demonstration of increment consumption was also completed.

A copy of the permit application and IDEM's preliminary findings are available at:

Butler Public Library
340 S. Broadway
Butler, Indiana 46721

A copy of the preliminary findings is available on the Internet at: www.in.gov/idem/permits/air/pending.html.

How can you participate in this process?

The day after this announcement is published in a newspaper marks the beginning of a 30-day public comment period. During that 30-day period, you may comment on this draft permit. If the 30th day of the comment period falls on a day when IDEM offices are closed for business, all comments must be postmarked or delivered in person on the next business day that IDEM is open.

You may request that IDEM hold a public hearing about this draft permit. If adverse comments concerning the **air pollution impact** of this draft permit are received, with a request for a public hearing, IDEM may hold a public hearing. If a public hearing is held, IDEM will make a separate announcement of the date, time, and location of that hearing. At a hearing, you would have an opportunity to submit written comments, make verbal comments, ask questions, and discuss any air pollution concerns with IDEM staff.

Comments and supporting documentation, or a request for a public hearing should be sent in writing to IDEM. If you do not want to comment at this time, but would like to be added to IDEM's mailing list to receive notice of future action related to this permit application, please contact IDEM. Please refer to Significant Source Modification No.: 033-22673-00076 in all correspondence.

Contact IDEM at:
IDEM, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
(800) 451-6027

Pursuant to Contract No. A305-5-65, IDEM, OAQ has assigned the processing of this permit application to Eastern Research Group, Inc., (ERG). Therefore, questions should be directed to Mr. Bob Sidner of ERG.

To contact the Permit Reviewer:
Bob Sidner
ERG
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
Dial directly: (703) 633-1701
E-mail: bob.sidner@erg.com

All comments will be considered by IDEM when we make a decision to issue or deny the permit. Comments that are most likely to affect final permit decisions are those based on the rules and laws governing this permitting process (326 IAC 2), air quality issues, and technical issues. IDEM does not have legal authority to regulate zoning, odor or noise. For such issues, please contact your local officials.

What will happen after IDEM makes a decision?

Following the end of the public comment period, IDEM will issue a Notice of Decision stating whether the permit has been issued or denied. If the permit is issued, it may be different than the draft permit because of comments that were received during the public comment period. If comments are received during the public notice period, the final decision will include a document that summarizes the comments and IDEM's response to those comments. If you have submitted comments or have asked to be added to the mailing list, you will receive a Notice of the Decision. The notice will provide details on how you may appeal IDEM's decision, if you disagree with that decision. The final decision will also be available on the Internet at the address indicated above, at the local library indicated above, and the IDEM public file room on the 12th floor of the Indiana Government Center North, 100 N. Senate, Indianapolis.

If you have any questions please contact Bob Sidner at the above address.

Nisha Sizemore, Chief
Permits Branch
Office of Air Quality

For additional information about air permits and how you can participate, please see IDEM's **Guide for Citizen Participation** and **Permit Guide** on the Internet at: www.in.gov/idem/permits/guide/.

ERG/BS

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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,

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: Nisha Sizemore, Branch Chief Office of Air Quality	Issuance Date: 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

matter (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) ladles preheat stations (LPS), with a nominal heat input of 10 MMBtu per hour each.

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

(4) Two (2) tundish 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 Facility (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 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):
   (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]

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 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 heat input of 10 MMBtu per hour.
(2) Four (4) ladle preheat stations (LPS), with a heat input of 10 MMBtu per hour each.
(3) Three (3) tundish dryers with heat input capacity of 1.5 MMBtu per hour each,
(4) Two (2) tundish ladle preheaters with a 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 baghouse 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, 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 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 shall not exceed 2.0 pounds per ton of hot steel produced. The total emissions shall not exceed 800 pounds per hour. A slight negative pressure shall be maintained at the gap to ensure further combustion of the CO.

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 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 and EAF Baghouse 2 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 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), 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 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 stacks exhausting emissions from 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 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 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 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 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 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 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) 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) EAF Baghouse 1 shall be operated at all times when 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.1.16 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) The Permittee shall calibrate, maintain, and operate all necessary continuous opacity monitoring systems (COMS) and related equipment.

(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) 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) 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 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

(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 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.

Record Keeping and Reporting Requirements

D.1.21 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 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) 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) All records shall be maintained in accordance with Section C.19 - General Record Keeping Requirements, of this permit.

D.1.22 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) The reports submitted by the Permittee do require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

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.

(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.

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:

$$\sum_{i=1}^{I} C_{bi} Q_{bi}$$

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

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)
$\sum L_{dj} D_{dj}$ = 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°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 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.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:
   - (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]

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

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 shell 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.