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

Thomas W. Easterly
Commissioner

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

TO: Interested Parties / Applicant

DATE: January 22, 2008

RE: Nucor Steel / 107-24699-00038

FROM: Matthew Stuckey, Deputy Branch Chief
Permits Branch
Office of Air Quality

Notice of Decision: Approval – Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-17-3-4 and 326 IAC 2, this permit modification is effective immediately, unless a petition for stay of effectiveness is filed and granted, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3-7 and IC 13-15-7-3 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office Environmental Adjudication, 100 North Senate Avenue, Government Center North, Suite N 501E, Indianapolis, IN 46204, **within eighteen (18) days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:
(1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
(2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
(3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:
(1) the name and address of the person making the request;
(2) the interest of the person making the request;
(3) identification of any persons represented by the person making the request;
(4) the reasons, with particularity, for the request;
(5) the issues, with particularity, proposed for considerations at any hearing; and
(6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

Pursuant to 326 IAC 2-7-18(d), any person may petition the U.S. EPA to object to the issuance of a Title V operating permit or modification within sixty (60) days of the end of the forty-five (45) day EPA review period. Such an objection must be based only on issues that were raised with reasonable specificity during the public comment period, unless the petitioner demonstrates that it was impractible to raise such issues, or if the grounds for such objection arose after the comment period.

To petition the U.S. EPA to object to the issuance of a Title V operating permit, contact:

U.S. Environmental Protection Agency
401 M Street
Washington, D.C. 20406

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

Enclosures

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Mr. David Sulc
Nucor Steel
4357 South Nucor Road
Crawfordsville, Indiana 47933

January 23, 2008

Re: 107-24699-00038
Significant Permit Modification to:
Part 70 permit No. 107-7172-00038

Dear Mr. Sulc:

Nucor Steel was issued Part 70 operating permit T107-7172-00038 on December 29, 2006 for a steel mini-mill. An application to modify the source was received on February 24, 2007. Pursuant to 326 IAC 2-7-12, a significant permit modification to this permit is hereby approved as described in the attached Technical Support Document.

The modification consists of incorporating the new PSD BACT limits and other applicable requirements for the following modification permitted in PSD/Significant Source Modification No. 107-24348-00038.

(a) Meltshop - Electric Arc Furnaces (EAFs), Argon Oxygen Decarburization (AOD) modification, which involves the following:

(1) Installation of one (1) co-jet oxyfuel burner/lance for each EAF, with a rated capacity of 10 megawatt, using oxygen, natural gas and propane as backup fuels.

(2) Install three (3) new large charge buckets that will allow single furnace charges on both EAFs.

(3) Two (2) additional small charge buckets for the existing EAFs.

(4) Four (4) additional ladles for the EAFs.

(5) Replace EAF furnace bottoms with ones that are deeper on both furnaces.

(6) Installation of one (1) rebricking station and one (1) additional AOD vessel, identified as AOD vessel #2 with a rated capacity of 160 tons with one (1) top lance for both AODs, rated at 300,000 cubic feet/hour of oxygen. The additional AOD vessel will be used as a spare when one AOD is being rebricked.

(7) Modify existing EAF charge handling with the addition of two (2) new scrap cranes with magnetics, enhancement of existing cranes and/or magnetics, use of rail and/or truck dump and loader operations and the use of mobile cranes to load charge buckets in the scrap yard.

(8) Modify the existing flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the EAFs, including the addition of bulk loading of material to the system in a three-sided building.

(b) Meltshop - Ladle Metallurgical Furnaces (LMFs) modification, which involves the following:

(1) Installation of 15 belt conveyors, and 20 weight hoppers with a maximum throughput of 200 tons per hour. The proposed belt conveyors will replace existing screw conveyors. These conveyors will supply lime, carbon and alloys to the LMF process.

(2) Installation of one (1) additional LMF and associated auxiliary equipment to be controlled by the existing Meltshop EAF baghouse, exhausting to stack. The steel production will remain at 502 tons per hour and 4,397,520 tons per year.

(3) Modify the existing flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the LMFs, including the addition of bulk loading of material to the system in a three-sided building.

(c) Cold Mill:

(1) Installation of one (1) new natural gas-fired Cold Mill boiler (CMB#2) (propane as back up), with a maximum heat input capacity of 40 Million British thermal units per hour (MMBtu/hr).

The steel production capability of the source will remain the same at 502 tons per hour and 4,397,520 tons per year. Currently, on occasion, the molten steel in the ladle cools down while waiting for the LMF station to open up. The third ladle metallurgy furnace (LMF) is being proposed to minimize these cases.

(d) Request to modify the BACT limits from the following natural gas combustion units to reflect the new U.S. EPA AP-42 emission factors (AP-42, July 1998). None of these natural gas-fired combustion units is being physically modified:

Emission Units/ID	Heat Input Rate (MMBtu/hr)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each
1 Acid Regeneration	5.6
2 Tundish Dryout Station (TD1 and TD2)	9.0 each
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each
5 Tundish Preheaters (TP1 - TP5)	6.0 each
1 Ladle Dryer	5.0

All other conditions of the permit shall remain unchanged and in effect. Please find a copy of the revised Part 70 permit.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Aida De Guzman OAQ, 100 North Senate Avenue, Indianapolis, Indiana, 46204-2251, or call at (800) 451-6027, and ask for Aida De Guzman or extension (3-4972), or dial (317) 233-4972.

Sincerely,
Original signed by
Matthew Stuckey, Deputy Branch Chief
Permits Branch
Office of Air Quality

Attachments
APD

cc: Montgomery County
Montgomery County County Health Department
Air Compliance Section Inspector
Compliance Data Section
Administrative and Development

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PART 70 OPERATING PERMIT
OFFICE OF AIR QUALITY

Nucor Steel
4537 South Nucor Road
Crawfordsville, Indiana 47933

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

Operation Permit No. 107-24699-00038	
Issued by: Nisha Sizemore, Chief Permits Branch Office of Air Quality	Issuance Date: December 29, 2006 Expiration Date: December 29, 2011

First Administrative Amendment No. 107-24009-00038, issued on January 26, 2007,
First Significant Permit Modification No. 107-24022-00038, issued on April 20, 2007, and
Second Significant Permit Modification No. 107-24284-00038, August 8, 2007.

Third Significant Permit Modification No. 107-24699-00038	
Issued by: *Original signed by* Matt Stuckey, Deputy Branch Chief Permits Branch Office of Air Quality	Issuance Date: January 22, 2008 Expiration Date: December 29, 2011

DRAFT

TABLE OF CONTENTS

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 through 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 mini-mill.

Source Address:	4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address:	4537 South Nucor Road, Crawfordsville, Indiana 47933
General Source Phone Number:	(765) 364-1323
SIC Code:	3312
County Location:	Montgomery
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD Rules Major Source, Section 112 of the Clean Air Act 1 of 28 Source Categories

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

This steel mini-mill consists of a source with on-site contractors:

(a) Nucor Steel, the primary operation, is located at 4537 South Nucor Road, Crawfordsville, Indiana, 47933;

(b) Whitesville Mill Processing, the supporting operation, is located at 4537 South Nucor Road, Crawfordsville, Indiana, 47933; and

(c) BOC Gases, the supporting operation, is located at 4537 South Nucor Road, Crawfordsville, Indiana, 47933.

(d) Heritage Environmental Services, the supporting operation, is located at 4537 South Nucor Road, Crawfordsville, Indiana, 47933.

One combined Part 70 permit will be issued to Nucor Steel, Whitesville Mill Processing, BOC Gases, and Heritage Environmental Services. The new plant ID for the combined source is 107-00038.

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

This stationary source consists of the following emission units and pollution control devices:

D.1 – CASTRIP – VACUUM DEGASSER AND FLARE

(a) One (1) vacuum degasser with process gas lances, identified as V #1, constructed in 2004, to be modified in 2006, a maximum capacity of 270 tons of steel/hour, emissions controlled by a closed flare, and exhausting to Stack 500. This vacuum degasser removes entrained gases from the steel. Desulfurization and/or decarburization may also occur during the degassing process. The enclosed flare burner has a maximum heat input capacity of 2 MMBtu/hour, uses natural gas as its primary fuel with propane as back up fuel, and operates with a minimum temperature of 1,400 ^{o}F. The flare only operates when the vacuum degasser is in the degassing mode (i.e., when CO must be controlled).

D.2 – CASTRIP – LOW NOx BOILER

(b) One (1) natural gas fueled low-NO_x boiler, identified as Boiler ID No. 501, constructed in 2004, a heat input capacity of 71.04 MMBtu/hour, utilizing low-NOx burners, and exhausting to Stack 501. This boiler provides steam to the vacuum degasser. Propane will be used as back up fuel.

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

D.3 – CASTRIP – PREHEATERS, DRYERS, AND ALLOY UNLOADING

(c) One (1) natural gas fueled ladle preheater, identified as LP-3, constructed in 2004, to be modified in 2006, a heat input capacity of 12 MMBtu/hour utilizing low NOx burners, emissions uncontrolled, and exhausting to a roof monitor (S-21, also identified as 105,106). Some emissions of this ladle preheater may also exhaust through the Castrip LMS Baghouse stack S-20. Propane will be used as back up fuel.

(d) Two (2) natural gas-fired ladle preheaters, identified as LP-1 and LP-2, and one (1) natural gas-fired ladle dryer identified as LD-1, each constructed in 2002, to be modified in 2007, a heat input capacity of 12 MMBtu/hour each, utilizing low-NOx burners, and the capability to utilize propane as a backup fuel. The preheaters exhaust to roof monitor S-21. The ladle dryer exhausts to baghouse stack S-20.

(e) Two (2) natural gas-fired tundish preheaters, identified as TP-1 and TP-2, constructed in 2002, to be modified in 2006, a heat input capacity of 10 MMBtu per hour each, utilizing oxy-fuel burners, and have the capability to utilize propane as a backup fuel. Emissions exhaust to LMS baghouse stack S-20.

(f) Two (2) natural gas-fired tundish nozzle preheaters identified as TNP-1 and TNP-2, to be modified in 2006. Each tundish nozzle preheater shall be equipped with low-NOx burners, shall not exceed a maximum heat input rate of 2 MMBtu per hour, and has the capability to utilize propane as a backup fuel. Combustion emissions exhaust to the LMS baghouse stack identified as S-20.

(g) Three (3) natural gas-fired tundish dryers, identified as TD-1, TD-2, and TD-3, constructed in 2002, to be modified in 2006, with a maximum heat input capacity of 4 MMBtu per hour, 3 MMBtu per hour, and 1 MMBtu per hour, respectively, utilizing low-NOx burners, and having the capability to utilize propane as a backup fuel. Emissions exhaust to roof monitor S-21.

(h) Two (2) natural gas-fired transition piece preheaters, identified as TPP-3 and TPP-4, and two (2) natural gas-fired transition piece dryers, identified as TPD-1 and TPD-2, constructed in 2002, to be modified in 2006. The two (2) transition piece preheaters have a heat input capacity of 2 MMBtu per hour each for a combined total capacity of 4.0 MMBtu per hour, the two (2) transition piece dryers have heat input capacity of 0.15 MMBtu per hour each, utilizing low-NOx burners. The preheaters exhaust to baghouse stack S-20. The dryers exhaust to roof monitor S-21. The preheaters are used in the tundish operation located on the caster deck. The transition piece preheaters and transition piece dryers utilize propane as a backup fuel.

(i) Associated VTD alloy unloading, storage and feed systems, identified as AU-2, constructed in 2005, and consisting of:

(1) One (1) alloy truck dump station.

(2) Truck unloading/conveyors.

(3) Storage hoppers, all exhausting to a common bin vent, rated at 0.01 grains per dry standard cubic foot, into the building.

Alloy unloading is performed in a 3-sided building along the side of the existing Castrip building. Emissions exhaust to the atmosphere.

(j) Dumping, storage, and transfer operations of alloy raw materials for the strip caster plant, identified as AU-1 and constructed in 2002.

D.4 - CASTRIP – LMS, TUNDISH, AND CONTINUOUS STRIP CASTER

(k) A strip caster line rated at a maximum steel production rate of 270 tons per hour consisting of:

(1) One (1) ladle metallurgy station, identified as LMS-2, constructed in 2002, to be modified in 2006, and maximum production capacity of 270 tons of steel per hour, and emissions captured by a side draft hood that has a PM capture efficiency of 99 percent and controlled by the LMS-2 baghouse, and exhausting to the LMS-2 baghouse stack identified as S-20. The remaining uncontrolled emissions shall be exhausted through the LMS-2 roof monitor identified as S-21. The LMS-2 baghouse has an enclosed dust handling system or equivalent for material recovery and particulate matter control.

(2) Tundishes, identified as T-1, constructed in 2002, to be modified in 2006, with a maximum production capacity of 270 tons of steel per hour. The two (2) natural gas-fired tundish preheaters, identified as TP-1 and TP-2 and the three (3) natural gas-fired tundish dryers, identified as TD-1, TD-2 and TD-3, supply heat to the tundish. Only one (1) tundish may be operated at a given time. The tundish in operation feeds the molten metal from the LMS-2 ladle to one (1) continuous strip caster identified as CS-1.

(3) One (1) continuous strip caster, identified as CS-1, constructed in 2002, to be modified in 2006, a maximum capacity of 270 tons of steel per hour, and emissions captured by a canopy hood that has a PM capture efficiency of 98 percent. The captured PM in the gas stream shall be controlled by the LMS-2 baghouse and the gas stream shall be exhausted though the LMS-2 baghouse stack identified as S-20. The remaining uncontrolled emissions shall be exhausted through the LMS-2 roof monitor identified as S-21.

D.5 – **INSIGNIFICANT ACTIVITIES – MISCELLANEOUS SILOS** (See Condition A.4)

D.6 – INSIGNIFICANT ACTIVITIES – CASTRIP – COILERS, COIL CUTTING, AND HOT ROLLING STAND (See Condition A.4)

D.7 – **WASTEWATER TREATMENT PLANT**

(l) One wastewater treatment plant, identified as WWTP, constructed in September 2002, consisting of two water recovery systems i.e. oil/alkali wastes and acid rinse water, and surge vessels for the regenerated acid, acid rinse water and spent pickle liquor. The WWTP consists of following:

(1) Oily waste tanks:

(A) Two (2) batch treatment tanks, identified as T-853 and T-854, with a maximum capacity of 12,000 gallons each, with emissions uncontrolled, and exhausting inside the building.

(B) One (1) decant oil tank, identified as T-856, with maximum capacity of 9,000 gallons with emissions uncontrolled, and exhausting inside the building.

(C) One (1) oily waste evaporator feed tank, identified as T-858, with maximum capacity of 20,000 gallons with emissions uncontrolled.

(D) One (1) oily waste evaporator concentrate tank, identified as T-857, with maximum capacity of 20,000 gallons with emissions uncontrolled, and exhausting inside the building.

(2) Acid tanks:

(A) Three (3) acid rinse water surge tanks, identified as T-850, T-851 and T-852, with a maximum capacity of 33,000 gallons each, with emissions controlled by the pickle line scrubber #1, and exhausting to stack S-17.

(B) One (1) lime neutralization tank, identified as T-875, with maximum capacity of 10,000 gallons, with emissions controlled by a wet particulate scrubber, and exhausting to stack S-60.

(C) One (1) acidic rinse evaporator feed tank, identified as T-877, with maximum capacity of 20,000 gallons with emissions uncontrolled and exhausting to stack S-17.

(D) One (1) acidic rinse evaporator concentrator tank, identified as T-878, with maximum capacity of 20,000 gallons with emissions uncontrolled and exhausting to stack S-17.

(3) Two (2) closed chamber type evaporators, identified as EV-1 and EV-2, each with a maximum capacity of 1,800 gallons per hour. This is a closed loop system with no emissions.

(m) Three (3) regenerated acid tanks, identified as T-867, T-868 and T-869, constructed in September 2002, with a maximum capacity of 33,000 gallons each, with emissions controlled by the pickle line scrubber, and exhausting to S-17.

Under 40 CFR Part 63, Subpart CCC, these units are considered new hydrochloric acid storage vessels.

(n) Four (4) spent pickle liquor tanks, identified as T-863, T-864, T-865 and T-866, constructed in September 2002, each with a maximum capacity of 33,000 gallons each, with emissions controlled by the pickle line scrubber, and exhausting to S-17.

(o) Lime silo system, constructed in 1989 and relocated in September 2002, including the following equipment:

(1) One (1) lime silo, identified as TFS-1, with a maximum capacity of 60,000 pounds.

(2) One (1) live bin bottom.

(3) One (1) screw conveyor.

(4) One (1) wet particulate scrubber.

D.8 – **SLAG PROCESSING**

(p) Slag processing, identified as EU-10, constructed in 1989, is performed by Whitesville Mill Service Company, an on-site contractor. Slag and other steel mill related materials are transported by slag pots or other mobile equipment, processed, and stockpiled with a maximum throughput of 305 tons/hr. This emission unit consists of storage piles (unprocessed and processed materials), grizzly feeding, slag processing (screening, conveying, and crushing), slag pot dumping, product loading for transport, and unpaved roads. The fugitive emissions from slag processing are controlled by water sprays and exhaust to the atmosphere.

(q) One (1) mill scale screen and conveyor system, identified as MSS-1, constructed in 2001, with a maximum throughput rate of 350 tons of mill scale per hour, with emissions uncontrolled, and exhausting to the atmosphere.

D.9 – BOC GASES PLANT

(r) The BOC Gases Plant is operated by BOC Gases, an on-site contractor. It provides gases (oxygen, nitrogen, hydrogen, argon, and liquid air) consisting of:

(1) One (1) natural gas-fired boiler identified as ID No. 1, constructed in 1989, with a heat input capacity of 9 MMBtu per hour, with emissions uncontrolled, and exhausting to stack S-36. This boiler uses propane as a backup fuel.

(2) One (1) natural gas-fired boiler, identified as ID No. 2, constructed in 1994, with a heat input capacity of 15.0 MMBtu per hour, with emissions uncontrolled, and exhausting to stack S-37. This boiler uses propane as a backup fuel.

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

(3) One (1) natural gas-fired boiler, identified as the hydrogen plant boiler, constructed in 1996, with a heat input capacity of 9.98 MMBtu per hour, with emissions uncontrolled, and exhausting to stack S-30. This boiler uses propane as a backup fuel.

D.10 – INSIGNIFICANT ACTIVITIES – PAVED AND UNPAVED ROADS (See Condition A.4)

D.11 – PETROLEUM PRODUCT STORAGE

(s) One (1) 500 gallon aboveground gasoline storage tank, identified as GST #1, installed in 1988, using submerged filling technology to control VOC emissions, which exhausts to the atmosphere.

(t) Three (3) 500 gallon aboveground diesel storage tanks, identified as DST #1, DST #2, and DST #3, all installed in 1988, using submerged filling technology to control VOC emissions, which exhausts to the atmosphere.

(u) One (1) 5,000 gallon aboveground diesel storage tank, identified as DST #4, installed in 1988, using submerged filling technology to control VOC emissions, which exhausts to the atmosphere.

D.12 – COOLING TOWERS

(v) The contact and noncontact cooling towers are equipped with drift eliminators. Each cooling tower exhausts to the atmosphere.

Cooling Towers	**No. of Cells**	**Design Capacity (gal/min)**	**Cooling Towers**	**No. of Cells**	**Average Capacity (gal/min)**
Meltshop Non Contact	9	60,000	Galvanizing/Annealing Non Contact	2	6,500
Meltshop Caster Contact	4 **2**	5,000	Annealing Non Contact	2	5,000
Meltshop Caster Contact (expansion)	2	5,000	Castrip Contact	4	12,000

Cooling Towers	No. of Cells	Design Capacity (gal/min)	Cooling Towers	No. of Cells	Average Capacity (gal/min)
Hot Mill Contact	4	16,383	Castrip Non Contact	7	14,400
Hot Mill Contact (expansion)	1	4,000	Castrip Compressor Non Contact	3	2,400
Hot Mill Non Contact	4	25,319	BOC Non Contact (CT-91A)	1	750
Laminar Contact	3	11,600	BOC Non Contact (CT-91B)	2	3,200
Cold Mill Non Contact	2	10,000	Main Compressor Non Contact	4	3,200
Cold Mill Non Contact (expansion)	1	5,000			
Vacuum Degasser Contact	1	8,000	Vacuum Degasser Non Contact	1	8,000

D.13 – INSIGNIFICANT ACTIVITIES – SCRAP HANDLING AND PROCESSING

(See Condition A.4)

D.14 – EMERGENCY GENERATORS

(w) Diesel fired generators and air compressors for power outages and emergencies.

(1) Cold Mill generator, identified as GEN #3, constructed in 1997, with a capacity of 280 HP, with emissions uncontrolled.

(2) Hot Mill NC Cooling Tower generator, identified as GEN #1, constructed in 1989, with a capacity of 2,100 HP, with emissions uncontrolled.

(3) Galv Line Pot generator, identified as GEN #4, constructed in 1992, with a capacity of 890 HP, with emissions uncontrolled.

(4) MS Cooling Tower Cold Well generator, identified as GEN #2, constructed in 1996, with a capacity of 2,520 HP, with emissions uncontrolled.

D.15 – INSIGNIFICANT ACTIVITIES – GASOLINE DISPENSING FACILITIES
(See Condition A.4)

D.16 – COLD MILL – PICKLE LINES 1 AND 2

(x) Both Pickle Lines use enhanced HCl pickling solution and rinse water and are equipped with process tanks.

(1) Pickle Line 1, identified as PL1, constructed in 1988, with a maximum capacity of 250 tons/hr, controlled by a counter flow-packed scrubber and mist eliminators, and exhausting to stack S-17. The Pickle Line 1 scrubber has a design flow rate of 12,000 acf/min and a loading of 0.01 gr/dscf. Each pickle line has an electric static oiler.

Under 40 CFR Part 63, Subpart CCC, Pickle Line 1 is considered an existing continuous pickle line.

(2) Pickle Line 2, consisting of the following units:

(A) One (1) Pickle Line, identified as PL2, constructed in 1997, with a maximum capacity of 250 tons/hr, controlled by a tray scrubber and mist eliminators, and exhausting to stack S-18. The Pickle Line 2 scrubber has a design flow rate of 9,000 acf/min and a loading of 0.01 gr/dscf. Each pickle line has an electric static oiler.

Under 40 CFR Part 63, Subpart CCC, Pickle Line 2 is considered a continuous pickle line.

(B) One (1) acidless metal cleaning line, identified as AMC, approved for construction in 2007, located on Pickle Line 2, with a maximum throughput capacity of 250 tons of steel per hour, using continuous abrasive blasting to remove scale from steel coil, with a maximum blast rate of 272,160 pounds of steel grit/shot per hour, with particulate emissions controlled by a baghouse, and exhausting to stack S-AMC.

(3) The tank farm treats the rinse water from Pickle Line 1 and Pickle Line 2. These tanks also store spent acid, raw acid, regenerated acid, oily wastewater treated waters for reuse, treatment process wastewater, and other process and treated waters.

Under 40 CFR Part 63, Subpart CCC, the tanks that store virgin or regenerated hydrochloric acid are considered new hydrochloric acid storage vessels.

D.17 – COLD MILL – COLD REVERSING MILL 1 AND COLD MILL BOILER (CMB #1)

(y) Cold Reversing Mill 1, identified as EU-09, constructed in 1988, with a maximum capacity of 250 tons/hour. Emulsion oil is sprayed on the strip, controlled by hoods mounted on both sides of the mill stand and exhausting, through collision mist eliminators at a design flow rate of 84,000 acf/min and 0.01 gr/dscf, to stack S-32.

(z) One (1) natural gas fueled Cold Mill Boiler, identified as CMB#1, constructed in 1988, with a heat input capacity of 34 MMBtu per hour, with emissions uncontrolled and exhausting to stack S-19. The boiler uses propane as a backup fuel.

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

D.18 – COLD MILL – COLD MILL BOILER (CMB#2)

(aa) One (1) natural gas fueled Cold Mill Boiler (CMB #2), identified as EU-19, with a heat input capacity of 40 MMBtu per hour, with emissions exhausting to stack S-23. Propane is used as a back-up fuel. The Cold Mill Boiler (CMB #2) is approved for construction in 2007.

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

D.19 – COLD MILL – REVERSING AND TEMPERING (R/T) MILL

(bb) Reversing and Tempering (R/T) Mill, (previously known as Temper Mill), identified as EU-14, constructed in 1995, with a maximum capacity of 250 tons of steel per hour, with emulsion oil sprayed on the strip, and controlled by hoods mounted on both sides of the mill stand and a fabric filter, exhausting through a panel-type collision mist eliminators to stack S-22. The panel-type collision mist eliminator has a design flow rate of 84,000 acf/min and an outlet grain loading of 0.01 gr/dscf. Note: This mill can reverse and temper. The mist eliminators operate as controls only when the mill is operating as a cold reversing mill.

D.20 – COLD MILL – ALKALINE CLEANING STATION

(cc) Alkali Cleaning at the Galvanizing line with mist eliminator as control. Emissions are exhausted to stack #510. The Alkaline Cleaning Station has a capacity of 140 tons of steel per hour.

D.21 – COLD MILL – ANNEALING FURNACES

(dd1) Eighteen (18) natural gas-fueled batch Annealing Furnaces, identified as EU-03, constructed in 2001. Each has a heat input capacity of 4.8 MMBtu per hour and a maximum throughput capacity of 200 tons of steel per hour. Emissions are uncontrolled and exhaust to roof vent (S-26).

(dd2) One (1) natural gas-fired annealing furnace, identified as AN-19, approved for construction in 2007, with a heat input capacity of 4.8 MMBtu per hour and a maximum throughput capacity of 200 tons of steel per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to roof vent (S-26).

D.22 – INSIGNIFICANT ACTIVITIES – COLD MILL – QUALITY CONTROL/REWIND INSPECTION LINE (See Condition A.4)

D.23 – COLD MILL – ACID REGENERATION

(ee) Acid Regeneration system, identified as EU-04, constructed in 1989, consisting of two natural gas fueled tangentially fired burners with a maximum rating of 5.6 MMBtu per hour, and an absorber and cyclone with emissions controlled by its own counter flow packed scrubber (identified as AR scrubber) with mist eliminator exhausting to stack S-31. The counter flow-packed scrubber has a design flow rate of 4,269 acf/min and loading of 0.04 gr/dscf. Propane is used as back up fuel.

Under 40 CFR Part 63, Subpart CCC, this unit is considered an existing acid regeneration plant.

D.24 – COLD MILL – GALVANIZING LINE

(ff) Thirty six (36) Main Burners, identified as PHB #1 – PHB #36, constructed in 1992, and modified in 2002, input capacity of 1.622 MMBtu per hour each, and three (3) Auxiliary Burners, each with a heat input capacity of 0.1 MMBtu per hour in the preheat furnace section of the galvanizing line using natural gas rated at maximum total capacity of 58.7 MMBtu per hour. The main burners exhaust to stack S-27. The three (3) Auxiliary Burners exhaust to the atmosphere. The NOx emissions are controlled by a Selective Catalytic Reduction/Selective Non-Catalytic Reduction (SCR/SNCR) Systems. Exhausts to roof ventilation. The galvanizing line has an electric static oiler. A continuous emissions monitor (CEM) is used to monitor NOx emissions.

(gg) Additional burners as follows:

(1) Forty four (44) Burners, identified as RB#1 – RB#44, constructed in 2002, each with a heat input capacity of 0.323 MMBtu per hour in radiant tube section with a maximum total capacity of 14.2 MMBtu per hour and option to replace non-conforming burners. The NOx emissions are controlled by SCR System. Exhausts to stack S-27. The SCR/SNCR and SCR systems shall be referred to collectively as the SCR/SNCR system.

(2) One (1) auxiliary burner with a maximum heat input of 3.2 MMBtu/hr in the Alkaline Cleaning Section. The burner is natural gas fired and use propane as backup.

(3) Two (2) auxiliary burners with a maximum heat input of 1.5 MMBtu/hr each in the Strip Dryer Section. The burners are natural gas fired and use propane as backup.

(4) Four (4) auxiliary burners with a maximum heat input of 0.052 MMBtu/hr each in the Pot Roll Heater. The burners are natural gas fired and use propane as backup.

(5) Two (2) emergency burners with a maximum heat input of 0.58 MMBtu/hr each in the Zinc Pot Section. The burners are natural gas fired and use propane as backup.

(6) Two (2) auxiliary burners with a maximum heat input of 0.013 MMBtu/hr each in the Preheat open end burners section. The burners are natural gas fired and use propane as backup.

The SCR/SNCR and SCR systems shall be referred to collectively as the SCR/SNCR system.

(hh) One (1) Zinc Coating pot, identified as ZP#1, constructed in 1992, with a maximum capacity of 140 tons of steel per hour, uncontrolled and exhausting to the atmosphere.

D.25 – INSIGNIFICANT ACTIVITIES – WELDING (See Condition A.4)

D.26 – INSIGNIFICANT ACTIVITIES – MISCELLANEOUS SHEARS, SIDE TRIMMERS, AND SCRAP CUTTING (See Condition A.4)

D.27 – HOT STRIP MILL & TUNNEL FURNACE SYSTEM

(ii) The Hot Strip Mill, identified as HSM, constructed in 1989, with a maximum capacity of 502 tons/hour consisting of various rolling mill processes: Shearing, Descaling, Finishing, Rollout Table, Coilers, Skin Pass Mill and Roll Grinders. Parts of the Hot Mill Strip are controlled by water roll cooling.

(jj) Tunnel Furnace System, identified as EU-02, constructed in 1989, with a maximum capacity of 502 tons/hour, with a maximum total heat input capacity of 200 MMBtu per hour, emissions uncontrolled, tunnel furnace 1 exhausts to stack S13 and S14, tunnel furnace 2 exhausts to stack S15, and consisting of:

(1) Tunnel Furnace 1 – Natural gas fired with a heat input capacity of 84 MMBtu per hour. Tunnel Furnace 1 was constructed in 1989 as part of the original Tunnel Furnace System.

(2) Tunnel Furnace 2 – Natural gas fired with a heat input capacity of 84 MMBtu per hour. Tunnel Furnace 2 was constructed in 1994.

(3) Shuttle Furnaces 1 and 2 – Natural gas fired with a heat input capacity of 13 MMBtu per hour each using low NOx burners. Shuttle Furnaces 1 and 2 were constructed in 1994.

(4) Snub Furnace – Natural gas fired with a heat input capacity of 6 MMBtu per hour. The snub furnace was constructed in 1989 and modified in 1994.

D.28 – HOT STRIP MILL – ANNEALING FURNACES

(kk) Four (4) natural gas-fired annealing furnaces using propane as a backup fuel, identified as HM #1-HM #4, each with a maximum heat input capacity of 14.505 MMBtu per hour. Emissions are controlled by low NOx burners and exhaust to the atmosphere. HM#1 and HM#2 were installed in 2006. HM#3 and HM#4 were not installed yet.

D.29 – INSIGNIFICANT ACTIVITIES – DEGREASING (See Condition A.4)

D.30 – MELT SHOP – MATERIAL TRANSFER STATION

(ll) Material transfer station #1, located inside the building exhausting to general ventilation, which will service both the EAFs and the LMFs, used to transfer various types and grades of lime, carbon, foamy slag, scrap, scrap substitutes, and other alloys from rail cars. Railcars are unloaded to trucks, silos, or the meltshop alloy handling system. Identified as MT #1, constructed in 2003, and consisting of:

(1) Rail car bottom unloading through a rubber boot to a conveyor with emissions uncontrolled.

(2) One (1) totally enclosed conveyor, identified as MTC, constructed in 2003, with emissions controlled by a bin vent dust collector and exhausting to stack S-45.

(3) One (1) loading spout connected to the load truck with emissions uncontrolled.

(mm) Material transfer station #2, located outside the building and exhausting to the atmosphere, which services the EAFs and the LMFs, used to transfer various types and grades of lime, carbon, foamy slag, scrap, scrap substitutes, and other alloys from rail cars. Railcars are unloaded to trucks, silos, or the meltshop alloy handling system. Identified as MT #2, constructed in 2006, and consisting of:

(1) Ten (10) storage silos, each controlled by individual bin vent filters or the Meltshop EAF baghouses (1 and 2).

(2) One (1) rail unloading operation under a roof.

(3) One (1) truck dumping station enclosed by a three sided building.

(4) One (1) loader dumping station enclosed by a three sided building.

(5) Associated enclosed conveyors.

(6) Storage bins.

(7) Misc. feed equipment and controls.

D.31 – MELTSHOP– ELECTRIC ARC FURNACES, ARGON OXYGEN DECARBURIZATION (AOD) VESSELS, DESULFURIZATION, CONTINUOUS CASTERS, EAF DUST TREATMENT FACILITY

(nn) Two (2) Meltshop Electric Arc Furnaces (EAFs), identified as EAF #1 and EAF #2, constructed in 1989 and approved for modification in 2007 to replace the furnace bottoms. EAF #1 consists of three (3) co-jet oxyfuel burner/lance, each has a rated capacity of 6 megawatt constructed in 1989, and one (1) co-jet oxyfuel burner/lance, with rated capacity of 10 megawatt using oxygen, natural gas and propane as backup fuels, approved for construction in 2007. EAF #2 consists of three (3) co-jet oxyfuel burner/lance, each has a rated capacity of 6 megawatt constructed in 1989, and one (1) co-jet oxyfuel burner/lance, with rated capacity of 10 megawatt using oxygen, natural gas and propane as backup fuels, approved for construction in 2007. EAF #1 consists of three (3) carbon injectors with total maximum rated capacity of 1000 pounds per minute and EAF #2 consists of three (3) carbon injectors with total maximum rated capacity of 1000 pounds per minute constructed in 1989. Together the EAFs and the Argon Oxygen Decarburization (AOD) have a maximum capacity of 502 tons/hour, with emissions controlled by multi compartment reverse air type baghouses (identified as Meltshop EAF Baghouse1 and Meltshop EAF Baghouse2). In addition the EAFs have the following associated equipment:

(1) Seven (7) small charge buckets, five (5) buckets constructed in 1989 and two (2) charge buckets approved for construction in 2007.

(2) Three (3) additional large charge buckets used for single furnace charges on both EAFs, approved for construction in 2007.

(3) Twenty-five (25) EAFs ladles, twenty-one (21) constructed in 1989, four (4) ladles approved for construction in 2007.

(4) EAF charge handling currently utilizing two (2) overhead cranes with magnets and a conveyor to load charge buckets constructed in 1989 and approved for modification in 2007 with the addition of 2 new scrap cranes with magnetics, enhancement of existing cranes and/or magnetics, use of rail and/or truck dump and loader operations and the use of mobile cranes to load charge buckets in the scrap yard.

(5) Flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the EAFs constructed in 1989 and approved for modification in 2007 with the addition of bulk loading of material to the system in a three-sided building.

Under 40 CFR Part 60, Subpart AAa, these units are considered electric arc furnaces.

(1) The EAFs also utilize the following technologies:

    (A) A direct shell evacuation (DSE) control system (“a fourth hole duct”),

    (B) An overhead roof exhaust system consisting of canopy hoods,

    (C) Oxy fuel burners, and

(2) Each or any combination of the Meltshop EAFs and AOD can independently produce the maximum capacity of 502 tons/hour of steel. Each Meltshop EAF can operate concurrently or independently to achieve this maximum capacity.

(3) Both the Meltshop EAF Baghouse1 and Meltshop EAF Baghouse2 capture the emissions from the Meltshop EAFs, AOD vessel, Desulfurization, Meltshop Continuous Casters and other miscellaneous sources. Each Meltshop Baghouse can sufficiently control emissions independently. Each Meltshop EAF Baghouse serves as a back up control to the Meltshop LMFs.

    (A) The Meltshop EAF Baghouse1 is a multi compartment positive pressure baghouse, has a design air flow rate of 1,527,960 actual cubic foot/min (acf/min) and an outlet PM loading of 0.0018 grains/dry standard cubic foot (gr/dscf). This Meltshop EAF Baghouse1 exhausts to a roof vent/monitor identified as vent BH1.

    (B) The Meltshop EAF Baghouse2 is a multi compartment positive pressure baghouse, has a design flow rate of 915,000 dscf/min and 1,200,000 acf/min and an outlet PM loading of 0.0018 gr/dscf. This Meltshop EAF Baghouse2 exhausts to a stack identified as BH2.

(4) The fugitive emissions generated during the furnace operations are captured by the Meltshop Roof Canopies or contained within the Meltshop Building.

(5) The Meltshop roof monitors include exhausts from the ladle preheaters, ladle dryers, tundish preheaters, tundish dryers, ladle lancing station, tundish dumping, fugitive emissions from the LMFs, fugitive emissions from the Meltshop Casters and other Meltshop operations.

(oo) One (1) Argon oxygen decarburization (AOD) vessel, identified as AOD1, constructed in 1995, and approved for modification in 2007 with the addition of one (1) AOD vessel, identified as AOD2 with a capacity of 160 tons/hour, one (1) top lance for both AODs, rated at 300,000 cubic feet/hour of oxygen, and one (1) rebricking station. Together the AODs and the Meltshop EAFs have a total maximum capacity of 502 tons/hour, with emissions controlled by the Meltshop EAF Baghouse1 which exhausts to a roof vent/monitor identified as vent BH1, and Meltshop EAF Baghouse2 which exhausts to stack BH2. Only one (1) AOD vessel can operate at a time.

Under 40 CFR Part 60, Subpart AAa, these units are considered argon-oxygen decarburization vessels.

(pp) Desulfurization (DS) is an additional step in the Meltshop operations that remove sulfur. It has a maximum capacity of 502 tons of metal per hour.

(qq) Two (2) Meltshop Continuous Casters, identified as CC #1 and CC #2, CC #1 was constructed in 1989, CC #2 was constructed in 1994, with total maximum capacity of 502 tons/hour, with emissions controlled by the Meltshop EAF Baghouse1 identified as vent BH1 which exhausts to a roof vent/monitor or Meltshop EAF Baghouse2 which exhausts to stack BH2. The steam from the Meltshop Continuous Casters exhausts through stack S-11.

(rr) An EAF dust treatment facility, identified as DTF, constructed in 2004, with a capacity of 100,000 lb/hour, with emission control by bin vents for the silos, scrubber for dust treatment and baghouse for truck loading. Dust transfer will also occur inside the building.

Under 40 CFR Part 60, Subpart AAa, this unit is considered a dust handling system. Options for the dust transfer are:

(1) from silo to truck through a loading spout,

(2) from silo to railcar through a loading spout,

(3) From silo to truck through a loading spout to transfer to the existing Meltshop EAF Baghouses. Unloading from the truck at the existing Meltshop EAF Baghouses also occurs in the building, transferring the dust through augers and a bucket elevator to the existing silo. In this option, the existing EAF dust treatment will have a maximum capacity of 100,000 lb/hr.

(4) Treating dust at the new silo and transferring to a truck. No loading spout is necessary because the material is no longer dusty, as treated.

The EAF dust treatment facility consists of the following:

(A) One (1) lime storage silo, identified as HRE #1, constructed in 1999, with a maximum capacity of 109 tons, emissions controlled by a bin vent filter, and exhausting to stack HR/E-2. Lime is pneumatically loaded to the silo at a maximum transfer rate of 40,000 pounds per hour.

(B) One (1) pugmill, identified as PM, constructed in 1999, with a maximum capacity of 100,000 pounds per hour, emissions controlled by one (1) cyclone in series with one (1) venturi scrubber, and exhausting to stack HR/E-1. Lime is transferred to the pugmill via a screw conveyor system at a maximum transfer rate of 5,100 pounds per hour and EAF dust is transferred to the pugmill via gravity through an enclosed cone bottom loading spout at a maximum transfer rate of 100,000 pounds per hour.

D.32 – MELTSHOP – LADLE METALLURGY FURNACES, PREHEATERS, AND DRYERS

(ss) Three (3) Meltshop Ladle Metallurgy Furnaces (LMFs)/Stirring Station, two (2) identified as EU-13 (a) and (b), constructed in 1988, and one (1) LMF identified as EU-13(c) approved for construction in 2007 with a maximum capacity of 502 tons/hour each and EU-13 (a) and (b) are controlled by a baghouse, identified as Meltshop LMF Baghouse, exhausting to stack S-13. The Meltshop LMF Baghouse has a design flow rate of 200,000 acf/min. The LMF baghouse was constructed in 1992. The LMF, EU-13(c) will be controlled by the EAFs baghouses which vent to stacks BH1 and BH2. In addition the LMFs have the following associated equipment:

(1a) Ladle Preheaters, identified as LP #1 - #5, uncontrolled and exhausting to stacks 7 and 8, consisting of:

(A) 3 units, identified as LP #1 - #3, constructed in 1989, each rated at 10 MMBtu per hour.

(B) 1 unit, identified as LP #4, constructed in 1994, rated at 7.5 MMBtu per hour.

(C) 1 unit, identified as LP #5, constructed in 1989, rated at 15 MMBtu per hour.

(1b) Ladle Preheaters, identified as LP #1a through LP #7a, consisting of:

(A) Three (3) natural gas-fired ladle preheaters, identified as LP #1a, LP #2a, and LP #3a, approved for construction in 2007, each with a heat input capacity of 10 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(B) One (1) natural gas-fired AOD ladle preheater, identified as LP #4a, approved for construction in 2007, with a heat input capacity of 10 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(C) One (1) natural gas-fired ladle preheater, identified as LP #5a, approved for construction in 2007, with a heat input capacity of 10 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(D) One (1) natural gas-fired ladle preheater, identified as LP #6, approved for construction in 2006, with a heat input capacity of 12 MMBtu/hour, utilizing low-NOx burners, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(E) One (1) natural gas-fired ladle preheater/dryer, identified as LP #7a, approved for construction in 2007, with a heat input capacity of 10 MMBtu/hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(2a) Ladle Dryer, identified as LDS #1, constructed in 1989, consisting of a low NO_x natural gas fired burner, with a heat input capacity of 5 MMBtu per hour. Emissions are uncontrolled and exhausting to stack 12.

(2b) One (1) natural gas-fired Ladle Dryer, identified as LDS #1a, approved for construction in 2007, with a heat input capacity of 5 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-12.

(3) Four (4) Tundish Preheaters, identified as TPH #1 - #4, constructed in 1995, consisting of 4 low NOx natural gas fired heaters, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10. . Five (5) Tundish Preheaters, identified as TP1 - TP5, constructed in 1995, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel.

(4) Two (2) Tundish Dryout Stations, identified as TD #1 and TD #2. TD #1 was constructed in 1989, and TD#2 was constructed in 1990, each with a heat input capacity of 9 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(5) Four (4) Tundish Nozzle Preheaters, identified as TNP #1- #4, constructed in 1995, consisting of a low NOx natural gas fired Preheaters, each with a heat input capacity of 0.8 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(6) One (1) natural gas-fired tundish dryout station, identified as TD #3, approved for construction in 2007, with a maximum heat input capacity of 2.4 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(7) Two (2) natural gas-fired mandrel dryers, identified as MD #1 and MD #2, approved for construction in 2007, each with a heat input capacity of 1.5 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(8) Fifteen (15) belt conveyors and 20 weight hoppers, with a maximum throughput of 200 tons per hour, approved for construction in 2007. These conveyors will supply lime, carbon and alloys to the new LMF.

(9) Flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the LMFs, constructed in 1988 and approved for modification in 2007 with the addition of a three-sided building for bulk loading of material to the system.

(D.33 – INSIGNIFICANT ACTIVITIES – MELTSHOP **(See Condition A.4)**

D.34 – INSIGNIFICANT ACTIVITIES – MISCELLANEOUS SILOS (See Condition A.4)

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

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

D.5 – **INSIGNIFICANT ACTIVITIES – MISCELLANEOUS SILOS**

(a) Raw materials handling/storage, including silos which contain the following materials:

(1) One (1) lime silo TFS-1.

(2) Baghouse #1 lime silo (HRE #1).

(3) One (1) Iron Oxide Silo (IOS #1).

(4) Three (3) Baghouse Dust Silos (BHS#1, BHS#2, BHS#3).

(5) One (1) Soda Ash Silo (SAS #1) (this will become the sand silo).

(6) One (1) Iron Carbide Silo #1 (no longer in service).

(7) One (1) Lime Silo (#1 SEAF).

(8) One (1) Lime Silo (#2 SEAF).

(9) One (1) Lime Silo (#3 NEAF).

(10) One (1) Lime Silo (#4 NEAF).

(11) One (1) Injection Carbon Silo #1.

(12) One (1) Injection Carbon Silo #2.

(13) One (1) Charge Carbon Silo #1.

(14) One (1) Charge Carbon Silo #2.

(15) Three (3) AOD alloy system silos (AOD#1, AOD#2, and AOD#3).

(16) Ten (10) Melt Shop Alloy Feed System silos (MS alloy #1, MS alloy #2, MS alloy #3, MS alloy #4, MS alloy #5, MS alloy #6, MS alloy #7, MS alloy #8, MS alloy #9, MS alloy #10).

D.6 – INSIGNIFICANT ACTIVITIES – CASTRIP – COILERS, COIL CUTTING, AND HOT ROLLING STAND

Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(b) Two (2) coilers, identified as C-1 and C-2, constructed in 2002. Fugitive particulate emissions from this process are controlled by the application of water to the coilers and exhausting to the roof monitor S-21. These coil the steel strip from the continuous strip caster.

(c) Scrap coil cutting in the Castrip area, identified as CC-1, constructed in 2002, occurs on an as needed basis, controlled by the Castrip LMS Baghouse and exhausting to stack S-20.

(d) Two (2) hot rolling stands, identified as HRS #1 and HRS #2, constructed in 2002. These stands roll the steel strip from the continuous strip caster to the desired gauge. Fugitive particulate emissions controlled by the application of water to the steel strip, and exhausting to the LMS roof monitor identified as S-21.

D.10 – INSIGNIFICANT ACTIVITIES – PAVED AND UNPAVED ROADS

(e) Paved and unpaved roads and parking lots with public access. Transport on new and existing paved roadways and parking lots, unpaved roadways, and unpaved areas around existing raw material storage piles.

D. 13 – INSIGNIFICANT ACTIVITIES – SCRAP HANDLING AND PROCESSING

Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(f) Scrap handling, processing and cutting of ferrous metals and scrap substitutes. These activities exhaust indoors to general ventilation which in turn exhausts to Meltshop EAF baghouses 1 and 2.

D.15 – INSIGNIFICANT ACTIVITIES – GASOLINE DISPENSING FACILITIES

(g) A gasoline fuel transfer and dispensing operation handling less than or equal to 1,300 gallons per day, such as filling of tanks, locomotives, automobiles or other mobile equipment, having a storage capacity less than or equal to 10,500 gallons.

(1) Two (2) 10,000 gallon gasoline storage tanks, each handling less than 1,000 gallons per day.

(2) Two (2) 10,000 gallon diesel storage tanks, each handling less than 3,000 gallons per day.

(3) One (1) 1,000 gallon diesel storage tank handling less than 500 gallons per day.

D.22 – INSIGNIFICANT ACTIVITIES – COLD MILL – QUALITY CONTROL/REWIND INSPECTION LINE

Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(h) The unwinding and rewinding of steel coil for quality control inspections.

D.25 – INSIGNIFICANT ACTIVITIES – WELDING

(i) The following equipment related to manufacturing activities not resulting in the emission of HAPs: brazing equipment, cutting torches, soldering equipment, welding equipment including the galvanizing line welder.

(j) Structural steel and bridge fabrication activities using 80 tons or less of welding consumables.

D.26 – INSIGNIFICANT ACTIVITIES – MISCELLANEOUS SHEARS AND SIDE TRIMMERS

Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(k) Various shears located at various sites throughout the facility.

(l) Three (3) side trimmers in total. The side trimmers are located at the skin pass mill and at both pickle lines. Various side trimmers located at various sites throughout the facility.

D.29 – INSIGNIFICANT ACTIVITIES – DEGREASING

(m) Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21) consisting of: Degreasing operations, identified as DG, with a maximum throughput greater than 145 gallons per 12 months, uncontrolled and exhausting to the atmosphere.

D.33 – INSIGNIFICANT ACTIVITIES – MELTSHOP

(n) Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(1) Ladle tap hole cleaning and repair.

(2) Ladle/tundish refractory application and curing.

(3) Tundish dumping.

(4) Ladle dumping.

(5) Ladle/tundish refractory loading and removal.

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);

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

SECTION B GENERAL CONDITIONS

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

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

B.2 Permit Term [326 IAC 2-7-5(2)] [326 IAC 2-1.1-9.5] [326 IAC 2-7-4(a)(1)(D)] [13-15-3-6(a)]

(a) This permit, T107-7172-00038 is issued for a fixed term of five (5) years from the issuance date of this permit, as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or amendments of this permit do not affect the expiration date of this permit.

(b) If IDEM, OAQ, upon receiving a timely and complete renewal permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect, including any permit shield provided in 326 IAC 2-7-15, until the renewal permit has been issued or denied.

B.3 Term of Conditions [326 IAC 2-1.1-9.5]

Notwithstanding the permit term of a permit to construct, a permit to operate, or a permit modification, any condition established in a permit issued pursuant to a permitting program approved in the state implementation plan shall remain in effect until:

(a) The condition is modified in a subsequent permit action pursuant to Title I of the Clean Air Act; or

(b) The emission unit to which the condition pertains permanently ceases operation.

B.4 Enforceability [326 IAC 2-7-7]

Unless otherwise stated, all terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.

B.5 Termination of Right to Operate [326 IAC 2-7-10] [326 IAC 2-7-4(a)]

The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least nine (9) months prior to the date of expiration of the source’s existing permit, consistent with 326 IAC 2-7-3 and 326 IAC 2-7-4(a).

B.6 Severability [326 IAC 2-7-5(5)]

The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

B.7 Property Rights or Exclusive Privilege [326 IAC 2-7-5(6)(D)]

This permit does not convey any property rights of any sort or any exclusive privilege.

B.8 Duty to Provide Information [326 IAC 2-7-5(6)(E)]

(a) The Permittee shall furnish to IDEM, OAQ, within a reasonable time, any information that IDEM, OAQ, may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The submittal by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34). Upon request, the Permittee shall also furnish to IDEM, OAQ, copies of records required to be kept by this permit.

(b) For information furnished by the Permittee to IDEM, OAQ, the Permittee may include a claim of confidentiality in accordance with 326 IAC 17.1. When furnishing copies of requested records directly to U. S. EPA, the Permittee may assert a claim of confidentiality in accordance with 40 CFR 2, Subpart B.

B.9 Certification [326 IAC 2-7-4(f)] [326 IAC 2-7-6(1)] [326 IAC 2-7-5(3)(C)]

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

(b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification. One (1) certification may cover multiple forms in one (1) submittal.

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

B.10 Annual Compliance Certification [326 IAC 2-7-6(5)]

(a) The Permittee shall annually submit a compliance certification report which addresses the status of the source's compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. The initial certification shall cover the time period from the date of final permit issuance through December 31 of the same year. All subsequent certifications shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted in physical form no later than July 1 of each year to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Air Enforcement Branch - Indiana (AE-17J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

(b) The annual compliance certification report required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

(c) The annual compliance certification report shall include the following:

(1) The appropriate identification of each term or condition of this permit that is the basis of the certification;

(2) The compliance status;

(3) Whether compliance was continuous or intermittent;

(4) The methods used for determining the compliance status of the source, currently and over the reporting period consistent with 326 IAC 2-7-5(3); and

(5) Such other facts, as specified in Sections D of this permit, as IDEM, OAQ, may require to determine the compliance status of the source.

The submittal by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

B.11 Preventive Maintenance Plan [326 IAC 2-7-5(1),(3) and (13)] [326 IAC 2-7-6(1) and (6)] [326 IAC 1-6-3]

(a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) within ninety (90) days after issuance of this permit, including the following information for each facility:

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

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

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

If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

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

(b) A copy of the PMPs shall be submitted to IDEM, OAQ, upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ, may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit. The PMPs do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

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

B.12 Emergency Provisions [326 IAC 2-7-16]

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

(b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:

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

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

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

(4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ, within four (4) daytime business hours after the beginning of the

emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section), or
Telephone Number: 317-233-0178 (ask for Compliance Section)
Facsimile Number: 317-233-6865

Indianapolis Offices
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

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

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

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

(A) A description of the emergency;

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

(C) Corrective actions taken.

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

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

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

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

(e) The Permittee seeking to establish the occurrence of an emergency shall make records available upon request to ensure that failure to implement a PMP did not cause or contribute to an exceedance of any limitations on emissions. However, IDEM, OAQ, may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4(c)(9) be revised in response to an emergency.

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

(g) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the

Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.

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

B.13 Permit Shield [326 IAC 2-7-15] [326 IAC 2-7-20] [326 IAC 2-7-12]

(a) Pursuant to 326 IAC 2-7-15, the Permittee has been granted a permit shield. The permit shield provides that compliance with the conditions of this permit shall be deemed in compliance with any applicable requirements as of the date of permit issuance, provided that either the applicable requirements are included and specifically identified in this permit or the permit contains an explicit determination or concise summary of a determination that other specifically identified requirements are not applicable. The Indiana statutes from IC 13 and rules from 326 IAC, referenced in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a Part 70 permit under 326 IAC 2-7 or for applicable requirements for which a permit shield has been granted.

This permit shield does not extend to applicable requirements which are promulgated after the date of issuance of this permit unless this permit has been modified to reflect such new requirements.

(b) If, after issuance of this permit, it is determined that the permit is in nonconformance with an applicable requirement that applied to the source on the date of permit issuance, IDEM, OAQ, shall immediately take steps to reopen and revise this permit and issue a compliance order to the Permittee to ensure expeditious compliance with the applicable requirement until the permit is reissued. The permit shield shall continue in effect so long as the Permittee is in compliance with the compliance order.

(c) No permit shield shall apply to any permit term or condition that is determined after issuance of this permit to have been based on erroneous information supplied in the permit application. Erroneous information means information that the Permittee knew to be false, or in the exercise of reasonable care should have been known to be false, at the time the information was submitted.

(d) Nothing in 326 IAC 2-7-15 or in this permit shall alter or affect the following:

(1) The provisions of Section 303 of the Clean Air Act (emergency orders), including the authority of the U.S. EPA under Section 303 of the Clean Air Act;

(2) The liability of the Permittee for any violation of applicable requirements prior to or at the time of this permit's issuance;

(3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Clean Air Act; and

(4) The ability of U.S. EPA to obtain information from the Permittee under Section 114 of the Clean Air Act.

(e) This permit shield is not applicable to any change made under 326 IAC 2-7-20(b)(2) (Sections 502(b)(10) of the Clean Air Act changes) and 326 IAC 2-7-20(c)(2) (trading based on State Implementation Plan (SIP) provisions).

(f) This permit shield is not applicable to modifications eligible for group processing until after IDEM, OAQ, has issued the modifications. [326 IAC 2-7-12(c)(7)]

(g) This permit shield is not applicable to minor Part 70 permit modifications until after IDEM, OAQ, has issued the modification. [326 IAC 2-7-12(b)(8)]

B.14 Prior Permits Superseded [326 IAC 2-1.1-9.5] [326 IAC 2-7-10.5]

(a) All terms and conditions of permits established prior to T107-7172-00038 and issued pursuant to permitting programs approved into the state implementation plan have been either

(1) incorporated as originally stated,

(2) revised under 326 IAC 2-7-10.5, or

(3) deleted under 326 IAC 2-7-10.5.

(b) Provided that all terms and conditions are accurately reflected in this permit, all previous registrations and permits are superseded by this Part 70 operating permit.

B.15 Deviations from Permit Requirements and Conditions [326 IAC 2-7-5(3)(C)(ii)]

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

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.

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

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

B.16 Permit Modification, Reopening, Revocation and Reissuance, or Termination [326 IAC 2-7-5(6)(C)] [326 IAC 2-7-8(a)] [326 IAC 2-7-9]

(a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Part 70 permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any condition of this permit. [326 IAC 2-7-5(6)(C)] The notification by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

(b) This permit shall be reopened and revised under any of the circumstances listed in IC 13-15-7-2 or if IDEM, OAQ, determines any of the following:

(1) That this permit contains a material mistake.

(2) That inaccurate statements were made in establishing the emissions standards or other terms or conditions.

(3) That this permit must be revised or revoked to assure compliance with an applicable requirement. [326 IAC 2-7-9(a)(3)]

(c) Proceedings by IDEM, OAQ, to reopen and revise this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening and revision shall be made as expeditiously as practicable. [326 IAC 2-7-9(b)]

(d) The reopening and revision of this permit, under 326 IAC 2-7-9(a), shall not be initiated before notice of such intent is provided to the Permittee by IDEM, OAQ, at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ, may provide a shorter time period in the case of an emergency. [326 IAC 2-7-9(c)]

B.17 Permit Renewal [326 IAC 2-7-3] [326 IAC 2-7-4] [326 IAC 2-7-8(e)]

(a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ, and shall include the information specified in 326 IAC 2-7-4. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(21) and 326 IAC 2-7-1(40). The renewal application does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

A timely renewal application is one that is:

(1) Submitted at least nine (9) months prior to the date of the expiration of this permit; and

(2) If the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

(b) If the Permittee submits a timely and complete application for renewal of this permit, the source’s failure to have a permit is not a violation of 326 IAC 2-7 until IDEM, OAQ, takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by the deadline specified in writing by IDEM, OAQ, any additional information identified as being needed to process the application.

B.18 Permit Amendment or Modification [326 IAC 2-7-11] [326 IAC 2-7-12][40 CFR 72]

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

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

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

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

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

B.19 Permit Revision Under Economic Incentives and Other Programs [326 IAC 2-7-5(8)] [326 IAC 2-7-12 (b)(2)]

(a) No Part 70 permit revision shall be required under any approved economic incentives, marketable Part 70 permits, emissions trading, and other similar programs or processes for changes that are provided for in a Part 70 permit.

(b) Notwithstanding 326 IAC 2-7-12(b)(1) and 326 IAC 2-7-12(c)(1), minor Part 70 permit modification procedures may be used for Part 70 modifications involving the use of economic incentives, marketable Part 70 permits, emissions trading, and other similar approaches to the extent that such minor Part 70 permit modification procedures are explicitly provided for in the applicable State Implementation Plan (SIP) or in applicable requirements promulgated or approved by the U.S. EPA.

B.20 Operational Flexibility [326 IAC 2-7-20] [326 IAC 2-7-10.5]

(a) The Permittee may make any change or changes at the source that are described in 326 IAC 2-7-20(b), (c), or (e), without a prior permit revision, if each of the following conditions is met:

(1) The changes are not modifications under any provision of Title I of the Clean Air Act;

(2) Any preconstruction approval required by 326 IAC 2-7-10.5 has been obtained;

(3) The changes do not result in emissions which exceed the limitations provided in this permit (whether expressed herein as a rate of emissions or in terms of total emissions);

(4) The Permittee notifies the:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Regulation Development Branch - Indiana (AR-18J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

in advance of the change by written notification at least ten (10) days in advance of the proposed change. The Permittee shall attach every such notice to the Permittee's copy of this permit; and

(5) The Permittee maintains records on-site, on a rolling five (5) year basis, which document all such changes and emissions trades that are subject to 326 IAC 2-7-20(b), (c), or (e). The Permittee shall make such records available, upon reasonable request, for public review.

Such records shall consist of all information required to be submitted to IDEM, OAQ, in the notices specified in 326 IAC 2-7-20(b)(1), (c)(1), and (e)(2).

(b) The Permittee may make Section 502(b)(10) of the Clean Air Act changes (this term is defined at 326 IAC 2-7-1(36)) without a permit revision, subject to the constraint of 326 IAC 2-7-20(a). For each such Section 502(b)(10) of the Clean Air Act change, the required written notification shall include the following:

(1) A brief description of the change within the source;

(2) The date on which the change will occur;

(3) Any change in emissions; and

(4) Any permit term or condition that is no longer applicable as a result of the change.

The notification which shall be submitted is not considered an application form, report or compliance certification. Therefore, the notification by the Permittee does not require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

(c) Emission Trades [326 IAC 2-7-20(c)]
The Permittee may trade emissions increases and decreases at the source, where the applicable SIP provides for such emission trades without requiring a permit revision, subject to the constraints of Section (a) of this condition and those in 326 IAC 2-7-20(c).

(d) Alternative Operating Scenarios [326 IAC 2-7-20(d)]
The Permittee may make changes at the source within the range of alternative operating scenarios that are described in the terms and conditions of this permit in accordance with 326 IAC 2-7-5(9). No prior notification of IDEM, OAQ, or U.S. EPA is required.

(e) Backup fuel switches specifically addressed in, and limited under, Section D of this permit shall not be considered alternative operating scenarios. Therefore, the notification requirements of part (a) of this condition do not apply.

B.21 Source Modification Requirement [326 IAC 2-7-10.5] [326 IAC 2-2-2]

(a) A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2 and 326 IAC 2-7-10.5.

(b) Any modification at an existing major source is governed by the requirements of 326 IAC 2-2-2.

B.22 Inspection and Entry [326 IAC 2-7-6] [IC 13-14-2-2] [IC 13-30-3-1] [IC 13-17-3-2]

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee’s right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

(a) Enter upon the Permittee's premises where a Part 70 source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

(b) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, have access to and copy any records that must be kept under the conditions of this permit;

(c) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;

(d) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, sample or monitor substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and

(e) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

B.23 Transfer of Ownership or Operational Control [326 IAC 2-7-11]

(a) The Permittee must comply with the requirements of 326 IAC 2-7-11 whenever the Permittee seeks to change the ownership or operational control of the source and no other change in the permit is necessary.

(b) Any application requesting a change in the ownership or operational control of the source shall contain a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new Permittee. The application shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

The application which shall be submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

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

B.24 Annual Fee Payment [326 IAC 2-7-19] [326 IAC 2-7-5(7)][326 IAC 2-1.1-7]

(a) The Permittee shall pay annual fees to IDEM, OAQ, within thirty (30) calendar days of receipt of a billing. Pursuant to 326 IAC 2-7-19(b), if the Permittee does not receive a bill from IDEM, OAQ, the applicable fee is due April 1 of each year.

(b) Except as provided in 326 IAC 2-7-19(e), failure to pay may result in administrative enforcement action or revocation of this permit.

(c) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-4230 (ask for OAQ, Billing, Licensing, and Training Section), to determine the appropriate permit fee.

B.25 Credible Evidence [326 IAC 2-7-5(3)][326 IAC 2-7-6][62 FR 8314][326 IAC 1-1-6]

For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any condition of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the Permittee would have been in compliance with the condition of this permit if the appropriate performance or compliance test or procedure had been performed.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

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

C.1 Particulate Emission Limitations For Processes with Process Weight Rates Less Than One Hundred (100) Pounds per Hour [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2(e)(2), particulate emissions from any process not exempt under 326 IAC 6-3-1(b) or (c) which has a maximum process weight rate less than 100 pounds per hour, and the methods in 326 IAC 6-3-2(b) through (d) do not apply, shall not exceed 0.551 pounds per hour.

C.2 Opacity [326 IAC 5-1]

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

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

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

C.3 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1. 326 IAC 4-1-3 (a)(2)(A) and (B) are not federally enforceable.

C.4 Incineration [326 IAC 4-2] [326 IAC 9-1-2]

The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and 326 IAC 9-1-2.

C.5 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). 326 IAC 6-4-2(4) is not federally enforceable.

C.6 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]

Pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive particulate matter emissions shall be controlled according to the plan submitted on December 2004. The plan is included as Attachment A.

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

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of PM or sulfur dioxide is emitted. The provisions of 326 IAC 1-7-1(3), 326 IAC 1-7-2, 326 IAC 1-7-3(c) and (d), 326 IAC 1-7-4, and 326 IAC 1-7-5(a), (b), and (d) are not federally enforceable.

C.8 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

(a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.

(b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:

(1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or

(2) If there is a change in the following:

(A) Asbestos removal or demolition start date;

(B) Removal or demolition contractor; or

(C) Waste disposal site.

(c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).

(d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Quality
100 North Senate Avenue
MC 61-52 IGCN 1003
Indianapolis, Indiana 46204-2251

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(e) Procedures for Asbestos Emission Control
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-1, emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.

(f) Demolition and renovation
The Permittee shall thoroughly inspect the affected facility or part of the facility where the demolition or renovation will occur for the presence of asbestos pursuant to 40 CFR 61.145(a).

(g) Indiana Accredited Asbestos Inspector
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement to use an Indiana Accredited Asbestos inspector is not federally enforceable.

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

C.9 Performance Testing [326 IAC 3-6]

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

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

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ, if the Permittee submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Requirements [326 IAC 2-1.1-11]

C.10 Compliance Requirements [326 IAC 2-1.1-11]

The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

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

C.11 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

Unless otherwise specified in this permit, all monitoring and record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance. If required by Section D, the Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. If due to circumstances beyond its control, that equipment cannot be installed and operated within ninety (90) days, the Permittee may extend the compliance schedule related to the equipment for an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

in writing, prior to the end of the initial ninety (90) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification which shall be submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

Unless otherwise specified in the approval for the new emission unit(s), compliance monitoring for new emission units or emission units added through a source modification shall be implemented when operation begins.

C.12 Maintenance of Continuous Emission Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]

(a) The Permittee shall install, calibrate, maintain, and operate all necessary continuous emission monitoring systems (CEMS) and related equipment.

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

(c) Unless otherwise provided by a rule or in a D Section of this permit, whenever a continuous emission monitor other than an opacity monitor is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, a calibrated backup CEMS shall be brought online within four (4) hours of shutdown of the primary CEMS, and shall be operated until such time as the primary CEMS is back in operation.

(d) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous emission monitoring system pursuant to 36 IAC 2-2.

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

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

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

(a) When required by any condition of this permit, an analog instrument used to measure a parameter related to the operation of an air pollution control device shall have a scale such that the expected maximum reading for the normal range shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale.

(b) The Permittee may request that the IDEM, OAQ approve the use of an instrument that does not meet the above specifications provided the Permittee can demonstrate that an alternative pressure gauge or other instrument specification will adequately ensure compliance with permit conditions requiring the measurement of the parameters.

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

C.15 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

(a) The Permittee prepared and submitted written emergency reduction plans (ERPs) consistent with safe operating procedures on December 13, 1991.

(b) Upon direct notification by IDEM, OAQ, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate episode level.
[326 IAC 1-5-3]

C.16 Risk Management Plan [326 IAC 2-7-5(12)] [40 CFR 68]

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

C.17 Response to Excursions or Exceedances [326 IAC 2-7-5] [326 IAC 2-7-6]

(a) Upon detecting an excursion or exceedance, the Permittee shall restore operation of the emissions unit (including any control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.

(b) The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Corrective actions may include, but are not limited to, the following:

(1) initial inspection and evaluation;

(2) recording that operations returned to normal without operator action (such as through response by a computerized distribution control system); or

(3) any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.

(c) A determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include, but is not limited to, the following:

(1) monitoring results;

(2) review of operation and maintenance procedures and records;

(3) inspection of the control device, associated capture system, and the process.

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

(e) The Permittee shall maintain the following records:

(1) monitoring data;

(2) monitor performance data, if applicable; and

(3) corrective actions taken.

C.18 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5] [326 IAC 2-7-6]

(a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.

(b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.

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

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

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

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

(a) Pursuant to 326 IAC 2-6-3(a)(1), the Permittee shall submit by July 1 of each year an emission statement covering the previous calendar year. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4(c) and shall meet the following requirements:

(1) Indicate estimated actual emissions of all pollutants listed in 326 IAC 2-6-4(a);

(2) Indicate estimated actual emissions of regulated pollutants as defined by 326 IAC 2-7-1 (32) (“Regulated pollutant, which is used only for purposes of Section 19 of this rule”) from the source, for purpose of fee assessment.

The statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Quality
100 North Senate Avenue
MC 61-50 IGCN 1003
Indianapolis, Indiana 46204-2251

The emission statement does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

(b) The emission statement required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

C.20 General Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-6] [326 IAC 2-2] [326 IAC 2-3]

(a) Records of all required monitoring data, reports and support information required by this permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

(b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

(c) If there is a project (as defined in 326 IAC 2-2-1(qq)) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, other than projects at a source with Plantwide Applicability Limitation (PAL), which is not part of a “major modification” (as defined in 326 IAC 2-2-1(ee)) and the Permittee elects to utilize the “projected actual emissions” (as defined in 326 IAC 2-2-1(rr)) and/or 326 IAC 2-3-1(mm), the Permittee shall comply with following:

(1) Before beginning actual construction of the “project” (as defined in 326 IAC 2-2-1(qq)) at an existing emissions unit, document and maintain the following records:

(A) A description of the project.

(B) Identification of any emissions unit whose emissions of a regulated new source review pollutant could be affected by the project.

(C) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including:

(i) Baseline actual emissions;

(ii) Projected actual emissions;

(iii) Amount of emissions excluded under section 326 IAC 2-2-1(rr)(2)(A)(iii); and

(iv) An explanation for why the amount was excluded, and any netting calculations, if applicable.

(2) Monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any existing emissions unit identified in (1)(B) above; and

(3) Calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of five (5) years following resumption of regular operations after the change, or for a period of ten (10) years following resumption of regular operations after the change if the project increases the design capacity of or the potential to emit that regulated NSR pollutant at the emissions unit.

C.21 General Reporting Requirements [326 IAC 2-7-5(3)(C)] [326 IAC 2-1.1-11] [326 IAC 2-2] [326 IAC 2-3]

(a) The Permittee shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported. This report shall be submitted within thirty (30) days of the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

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

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

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

(d) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

(e) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period. Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit “calendar year” means the twelve (12) month period from January 1 to December 31 inclusive.

(f) If the Permittee is required to comply with the recordkeeping provisions of (c) in Section C.20 (General Record Keeping Requirements) for any “project” (as defined in 326 IAC 2-2-1(qq), and the project meets the following criteria, then the Permittee shall submit a report to IDEM, OAQ:

(1) The annual emissions, in tons per year, from the project identified in (c)(1) in Section C - General Record Keeping Requirements exceed the baseline actual emissions, as documented and maintained under Section C- General Record Keeping Requirements (c)(1)(C)(i), by a significant amount, as defined in 326 IAC 2-2-1, for that regulated NSR pollutant, and

(2) The emissions differ from the preconstruction projection as documented and maintained under Section C- General Record Keeping Requirements (c)(1)(C)(ii).

(3) The report for project at an existing emissions unit shall be submitted within sixty (60) days after the end of the year and contain the following:

(A) The name, address, and telephone number of the major stationary source.

(B) The annual emissions calculated in accordance with (c)(2) and (3) in Section C- General Record Keeping Requirements.

(C) The emissions calculated under the actual-to-projected actual test stated in 326 IAC 2-2-2(d)(3).

(D) Any other information that the Permittee deems fit to include in this report,

Reports required in this part shall be submitted to:

Indiana Department of Environmental Management
Air Compliance Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

(g) The Permittee shall make the information required to be documented and maintained in accordance with (c) in Section C - General Record Keeping Requirements available for review upon a request for inspection by IDEM, OAQ. The general public may request this information from the IDEM, OAQ under 326 IAC 17.1.

SECTION D.1 FACILITY OPERATION CONDITIONS

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

CASTRIP – VACUUM DEGASSER AND FLARE

(a) One (1) vacuum degasser with process gas lances, identified as V #1, constructed in 2004, to be modified in 2006, a maximum capacity of 270 tons of steel/hour, emissions controlled by a closed flare, and exhausting to Stack 500. This vacuum degasser removes entrained gases from the steel. Desulfurization and/or decarburization may also occur during the degassing process. The enclosed flare burner has a maximum heat input capacity of 2 MMBtu/hour, uses natural gas as its primary fuel with propane as back up fuel, and operates with a minimum temperature of 1,400 ^{o}F. The flare only operates when the vacuum degasser is in the degassing mode (i.e., when CO must be controlled).

(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 Vacuum Degasser PSD BACT Limits [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the Permittee shall comply with the following Best Available Control Technology (BACT) requirements:

(a) The carbon monoxide (CO) emissions from the vacuum degasser shall be controlled by a flare that uses natural gas as primary fuel, and propane as back up fuel.

(b) The carbon monoxide (CO) emissions from the vacuum degasser shall not exceed 0.075 pounds per ton of steel processed at the VTD, and 20.25 pounds per hour, based on a 3-hour block average.

(c) The sulfur dioxide (SO_2) emissions from the vacuum degasser shall not exceed 0.022 pounds per ton of steel processed at the VTD, and 5.4 pounds per hour, based on a 3-hour block average.

(d) The nitrogen oxides (NOx) emissions from the vacuum degasser shall not exceed 0.0055 pounds per ton of steel processed at the VTD, and 1.35 pounds per hour, based on a 3-hour block average.

(e) The volatile organic compound (VOC) emissions from the vacuum degasser shall not exceed 0.005 pounds per ton of steel processed at the VTD, and 1.35 pounds per hour, based on a 3-hour block average.

(f) The PM/PM_{10} (filterable plus condensable) emissions from the vacuum degasser shall not exceed 0.008 grain per dry standard cubic foot, and 0.45 pounds per hour, based on a 3-hour block average.

(g) The opacity from the vacuum degasser enclosed flare stack (Stack 500) shall not exceed three percent (3%) opacity, based on a six-minute average.

D.1.2 Operational Flexibility – PSD Requirements [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the Permittee may operate the vacuum degasser as follows:

(a) The gases can be removed from the steel after the steel has gone through the Castrip Ladle Metallurgical Station (LMS-2), or

(b) The gases can be removed from the steel before the steel goes through the Castrip Ladle Metallurgical Station (LMS-2), or

(c) The gases can be removed from the steel and the steel sent back to the Meltshop Continuous Casters for casting, or

(d) The steel may bypass the vacuum degassing process.

D.1.3 Flare PSD BACT Limits [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the Permittee shall comply with the following Best Available Control Technology (BACT) requirements:

(a) The 2 million British Thermal Unit per hour (MMBTU/hour) enclosed flare burner shall use natural gas as primary fuel and propane as back up fuel.

(b) The collateral nitrogen oxide (NO_x) emissions from the 2 MMBTU/hour flare burner shall not exceed 0.10 pounds per MMBTU. The NOx emissions from the 2 MMBTU/hour flare burner shall not exceed 0.005 pounds per ton of steel, and 0.675 pounds per hour, based on a 3-hour block average.

(c) The collateral sulfur dioxide (SO_2) emissions from the 2 MMBTU/hour flare burner shall not exceed 0.0006 pounds per MMBTU. The SO_2 emissions from the 2 MMBTU/hour flare burner shall not exceed 0.02 pounds per ton of steel, and 2.7 pounds per hour, based on a 3-hour block average.

(d) The collateral carbon monoxide (CO) emissions from the 2 MMBTU/hour flare burner shall not exceed 0.084 pounds per MMBTU. The CO emissions from the 2 MMBTU/hour flare burner shall not exceed 0.075 pounds per ton of steel, and 10.125 pounds per hour, based on a 3-hour block average.

(e) The collateral volatile organic compound (VOC) emissions from the 2 MMBTU/hour flare burner shall not exceed 0.0055 pounds per MMBTU. The VOC emissions from the 2 MMBTU/hour flare burner shall not exceed 0.005 pounds per ton of steel, and 0.675 pounds per hour, based on a 3-hour block average.

(f) The opacity from the vacuum degasser stack (500) 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). This limitation satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

(g) The collateral PM/PM_{10} (filterable plus condensable) emissions from the 2 MMBTU/hour flare burner shall not exceed 0.0076 pounds per MMBTU. The PM/PM_{10} emissions from the 2 MMBTU/hour flare burner shall not exceed 0.008 grain per dry standard cubic foot, and 0.45 pounds per hour, based on a 3-hour block average.

D.1.4 Preventive Maintenance Plan (PMP) [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan (PMP) of this permit, is required for the vacuum degasser and its associated control device, a flare.

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

D.1.5 Control Equipment Operation [326 IAC 2-2]

Pursuant to PSD SSM 107-21359-00038, issued April 27, 2006, the flare shall be in operation and control carbon monoxide (CO) emissions at all times when the vacuum degasser is in operation.

D.1.6 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11] [326 IAC 2-2]

Pursuant to PSD SSM 107-21359-00038, issued April 27, 2006:

(a) Within 60 days after achieving the maximum production rate, but no later than 180 days after initial start-up of the vacuum degasser and enclosed flare, the Permittee shall perform carbon dioxide (CO) testing on stack 500 to show compliance with Conditions D.1.1(b) and D.1.3(d).

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

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

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

D.1.7 Flare Operating Parameters [326 IAC 2-7-5] [326 IAC 2-7-6]

(a) The flare for the carbon monoxide (CO) emissions reductions shall be operated with a flame present at all times when the vacuum degasser is in operation.

(b) The presence of a flare pilot flame shall be monitored using a thermocouple or any equivalent device to detect the presence of the flame.

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

D.1.8 Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

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

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

SECTION D.2 FACILITY OPERATION CONDITIONS

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

CASTRIP – LOW NOx BOILER

(b) One (1) natural gas fueled low-NO_x boiler, identified as Boiler ID No. 501, constructed in 2004, a heat input capacity of 71.04 MMBtu/hour, utilizing low-NOx burners, and exhausting to Stack 501. This boiler provides steam to the vacuum degasser. Propane will be used as back up fuel.

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

(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.2.1 Boiler ID No. 501 PSD BACT Limits [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the Permittee shall comply with the following Best Available Control Technology (BACT) requirements for Boiler ID No. 501:

(a) Boiler ID No. 501 shall use natural gas as primary fuel and propane as backup fuel.

(b) The nitrogen oxides (NO_x) emissions from Boiler ID No. 501 shall not exceed 0.035 pounds per MMBtu.

(c) The carbon monoxide (CO) emissions from Boiler ID No. 501 shall not exceed 0.061 pounds per MMBtu.

(d) The volatile organic compound (VOC) emissions from Boiler ID No. 501 shall not exceed 0.0026 pounds per MMBtu.

(e) The sulfur dioxide (SO_2) emissions from Boiler ID No. 501 shall not exceed 0.0006 pounds per MMBtu.

(f) The PM/PM_{10} (filterable and condensible) emissions from Boiler ID No. 501 shall not exceed 0.0076 pounds per MMBtu.

D.2.2 Particulate Emission Limitations for Sources of Indirect Heating [326 IAC 6-2-4]

Pursuant to 326 IAC 6-2-4, the PM emissions from Boiler ID No. 501 shall be limited to 0.30 pounds per MMBtu heat input.

This limitation is based on the following equation:

$Pt = 1.09 / Q^{0.26}$ where Pt = Pounds of PM emitted per million Btu (lb/MMBtu) heat input, and

Q = Total source maximum operating capacity rating in million Btu per hour (MMBtu per hour) heat input.
(Q = 34.0 + 15.0 + 9.0 + 9.98 + 71.0 = 139.02)

D.2.3 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 Boiler ID No. 501, except when otherwise specified in 40 CFR Part 60, Subpart Dc.

D.2.4 Preventive Maintenance Plan (PMP) [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B – Preventive Maintenance Plan (PMP) of this permit, is required for Boiler ID No. 501.

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

D.2.5 Low NO_x Burners [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the Permittee shall equip and operate Boiler ID No. 501 with natural gas fueled low NO_x burners and perform good combustion practices.

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

D.2.6 Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

(a) Pursuant to 40 CFR Part 60, Subpart Dc, the Permittee shall keep records of fuel used each calendar month by Boiler ID No. 501, including the types of fuel and amount used.

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

SECTION D.3 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]:
CASTRIP – PREHEATERS, DRYERS, AND ALLOY UNLOADING

(c) One (1) natural gas fueled ladle preheater, identified as LP-3, constructed in 2004, to be modified in 2006, a heat input capacity of 12 MMBtu/hour utilizing low NOx burners, emissions uncontrolled, and exhausting to a roof monitor (S-21, also identified as 105,106). Some emissions of this ladle preheater may also exhaust through the Castrip LMS Baghouse stack S-20. Propane will be used as back up fuel.

(d) Two (2) natural gas-fired ladle preheaters, identified as LP-1 and LP-2, and one (1) natural gas-fired ladle dryer identified as LD-1, each constructed in 2002, to be modified in 2006, a heat input capacity of 12 MMBtu/hour each, utilizing low-NOx burners, and the capability to utilize propane as a backup fuel. The preheaters exhaust to roof monitor S-21. The ladle dryer exhausts to baghouse stack S-20.

(e) Two (2) natural gas-fired tundish preheaters, identified as TP-1 and TP-2, constructed in 2002, to be modified in 2006, a heat input capacity of 10 MMBtu per hour each, utilizing oxy-fuel burners, and have the capability to utilize propane as a backup fuel. Emissions exhaust to LMS baghouse stack S-20.

(f) Two (2) natural gas-fired tundish nozzle preheaters identified as TNP-1 and TNP-2, to be modified in 2006. Each tundish nozzle preheater shall be equipped with low-NOx burners, shall not exceed a maximum heat input rate of 2 MMBtu per hour, and has the capability to utilize propane as a backup fuel. Combustion emissions exhaust to the LMS baghouse stack identified as S-20.

(g) Three (3) natural gas-fired tundish dryers, identified as TD-1, TD-2, and TD-3, constructed in 2002, to be modified in 2006, with a maximum heat input capacity of 4 MMBtu per hour, 3 MMBtu per hour, and 1 MMBtu per hour, respectively, utilizing low-NOx burners, and having the capability to utilize propane as a backup fuel. Emissions exhaust to roof monitor S-21.

(h) Two (2) natural gas-fired transition piece preheaters, identified as TPP-3 and TPP-4, and two (2) natural gas-fired transition piece dryers, identified as TPD-1 and TPD-2, constructed in 2002, to be modified in 2006. The two (2) transition piece preheaters have a heat input capacity of 2 MMBtu per hour each for a combined total capacity of 4.0 MMBtu per hour, the two (2) transition piece dryers have heat input capacity of 0.15 MMBtu per hour each, utilizing low-NOx burners. The preheaters exhaust to baghouse stack S-20. The dryers exhaust to roof monitor S-21. The preheaters are used in the tundish operation located on the caster deck. The transition piece preheaters and transition piece dryers utilize propane as a backup fuel.

(i) Associated VTD alloy unloading, storage and feed systems, identified as AU-2, constructed in 2005, and consisting of:

(1) One (1) alloy truck dump station.
(2) Truck unloading/conveyors.
(3) Storage hoppers, all exhausting to a common bin vent, rated at 0.01 grains per dry standard cubic foot, into the building.

Alloy unloading is performed in a 3-sided building along the side of the existing Castrip building. Emissions exhaust to the atmosphere.

(j) Dumping, storage, and transfer operations of alloy raw materials for the strip caster plant, identified as AU-1 and constructed in 2002.

(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.3.1 Nitrogen Oxides (NO_X) Emission Limitations

(a) Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the small combustion units consisting of ladle preheaters LP-1, LP-2, and LP-3, tundish dryers TD-1, TD-2, and TD-3, and the transition piece dryers TPD-1 and TPD-2, shall comply with the following requirements:

(1) Each combustion facility shall utilize “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel; and

(2) The following combustion facilities shall vent to S-21 roof monitor:

Combustion Facility	No. Units	Each Unit’s Max Heat Input Rate (MMBtu/hr)	Burner Type (or equivalent)	Stack
Ladle Preheaters LP-1, LP-2, and LP-3	4	12	Low-NOx	S-21
Tundish Dryer TD-1	1	4	Low-NOx	S-21
Tundish Dryer TD-2	1	3	Low-NOx	S-21
Tundish Dryer TD-3	1	1	Low-NOx	S-21
Transition Piece Dryers TPD-1 and TPD-2	2	0.15	Low-NOx	S-21

(b) Pursuant to 326 IAC 2-2-3 (PSD BACT) and PSD SSM 107-21359-00038, issued April 27, 2006, the BACT for NOx from the tundish dryers identified as TD-1, TD-2, TD-3, and each transition piece dryer identified as TPD-1 and TPD-2 shall be proper equipment operation, the use of low NOx burners, and NOx emission rate shall not exceed an emission rate of 0.10 pounds per MMBtu. Further, the hourly NOx emission rate shall not exceed 0.40, 0.30, and 0.10 lbs per hour for emission units TD-1, TD-2, and TD-3, respectively, and the hourly NOx emission rate shall not exceed 0.015 lbs per hour for each transition piece dryer identified as TPD-1 and TPD-2.

(c) Pursuant to 326 IAC 2-2-3 (PSD BACT) and PSD SSM 107-21359-00038, issued April 27, 2006, the BACT for NOx from each ladle preheater identified as LP-1, LP-2, and LP-3 shall be proper operation and shall not exceed a NOx emission rate of 0.10 pounds per MMBtu and 1.2 lbs per hour.

D.3.2 Sulfur Dioxide (SO_2) Emission Limitations

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the combustion units specified in Condition D.3.1(a) shall utilize “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel. The combustion units shall comply with the following requirements:

(a) BACT for SO_2 from the tundish dryers identified as TD-1, TD-2, and TD-3 and each transition piece dryer identified as TPD-1 and TPD-2 shall be proper operation and shall not exceed a SO_2 emission rate of 0.0006 pounds per MMBtu. Further, the hourly SO_2 emission rate shall not exceed 0.0024, 0.0018, and 0.0006 lbs per hour for emission units TD-1, TD-2, and TD-3, respectively, and the hourly SO_2 emission rate shall not exceed 0.0001 lbs per hour for each transition piece dryer identified as TPD-1 and TPD-2.

(b) BACT for SO_2 from each ladle preheater identified as LP-1, LP-2, and LP-3 shall be proper operation and shall not exceed a SO_2 emission rate of 0.0006 pounds per MMBtu and 0.007 lbs per hour.

D.3.3 Carbon Monoxide (CO) Emission Limitations

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the combustion units specified in Condition D.3.1(a) shall utilize “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, and comply with the following requirements:

(a) BACT for CO from the tundish dryers identified as TD-1, TD-2, and TD-3 and each transition piece dryer identified as TPD-1 and TPD-2 shall be proper operation and shall not exceed a CO emission rate of 0.084 pounds per MMBtu. Further, the hourly CO emission rate shall not exceed 0.336, 0.252, and 0.084 lbs per hour for emission units TD-1, TD-2, and TD-3, respectively, and the hourly CO emission rate shall not exceed 0.013 lbs per hour for each transition piece dryer identified as TPD-1 and TPD-2.

(b) BACT for CO from each ladle preheater identified as LP-1, LP-2, and LP-3 shall be proper operation and shall not exceed a CO emission rate of 0.084 pounds per MMBtu and 1.01 lbs per hour.

D.3.4 Particulate Matter (PM/PM10) Emission Limitations

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the combustion units specified in Condition D.3.1(a) shall utilize proper operation, utilize “pipeline quality” natural gas as the primary fuel, and may utilize propane as a backup fuel, and shall comply with the following requirements:

(a) BACT for PM/PM10 (filterable plus condensable) from the tundish dryers identified as TD-1, TD-2, TD-3 and each transition piece dryer identified as TPD-1 and TPD-2 shall be utilization of “good combustion practices” and shall not exceed a PM/PM10 (filterable plus condensable) emission rate of 0.0076 pounds per MMBtu. Further, the hourly PM/PM10 (filterable plus condensable) emission rate shall not exceed 0.030, 0.023, and 0.008 lbs per hour for emission units TD-1, TD-2, and TD-3, respectively, and the hourly PM/PM10 (filterable plus condensable) emission rate shall not exceed 0.0011 lbs per hour for each transition piece dryer identified as TPD-1 and TPD-2.

(b) BACT for PM/PM10 (filterable plus condensable) from each ladle preheater identified as LP-1, LP-2, and LP-3 shall be utilization of “good combustion practices” and shall not exceed a PM/PM10 (filterable plus condensable) emission rate of 0.0076 pounds per MMBtu and 0.091 lbs per hour.

(c) The opacity from the LMS-2 roof monitor (S-21) 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). Compliance with this limitation satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

D.3.5 Volatile Organic Compounds (VOC) Emission Limitations

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the combustion units specified in Condition D.3.1(a) shall utilize “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, and comply with the following requirements:

(a) BACT for VOC from the tundish dryers identified as TD-1, TD-2, and TD-3 and each transition piece dryer identified as TPD-1 and TPD-2 shall be proper operation and shall not exceed a VOC emission rate of 0.0054 pounds per MMBtu. Further, the hourly VOC emission rate shall not exceed 0.011, 0.016, and 0.005 lbs per hour for emission units TD-1, TD-2, and TD-3, respectively, and the hourly VOC emission rate shall not exceed 0.0035 lbs per hour for each transition piece dryer identified as TPD-1 and TPD-2.

(b) BACT for VOC from each ladle preheater identified as LP-1, LP-2, and LP-3 shall be proper operation and shall not exceed a VOC emission rate of 0.0054 pounds per MMBtu and 0.065 lbs per hour.

D.3.6 Nitrogen Oxide (NOx) Emission Limitation [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the combustion units consisting of ladle dryer LD-1, tundish preheaters TP-1 and TP-2, transition piece preheaters TPP-3 and TPP-4, and tundish nozzle preheaters TNP-1 and TNP-2, shall comply with the following requirements:

(a) Each combustion facility shall utilize “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel; and

(b) The following combustion facilities shall vent to LMS-2 Baghouse stack S-20:

Combustion Facility	No. Units	Each Unit’s Max Heat Input Rate (MMBtu/hr)	Burner Type (or equivalent)	Stack
Ladle Dryer LD-1	1	12	Low-NOx	S-20
Tundish Preheaters TP-1 and TP-2	2	10	Oxy-Fuel	S-20
Transition Piece Preheaters TPP-3 and TPP-4	2	2	Low-NOx	S-20
Tundish Nozzle Preheaters TNP-1 and TNP-2	2	2	Low-NOx	S-20

D.3.7 VTD Alloy Handling PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the following BACT requirements apply to the VTD alloy unloading operations AU-2:

(a) The Permittee shall perform alloy unloading in a 3-sided building.

(b) The visible emissions from the alloy unloading shall not exceed 3% opacity, based on a 6-minute average.

(c) Except as otherwise provided by statute, rule, or this permit, the VTD material handling system bin vent filters for PM control shall be in operation and control emissions at all times the associated equipment controlled by the filters are in operation.

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

D.3.8 Dumping, Storage, and Transfer Operations PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the emissions from dumping, storage, and transfer operations of raw materials identified as AU-1 shall not exceed five percent (5%) opacity based on a six-minute average (24 readings taken in accordance with 40 CFR Part 60, Appendix A, Method 9). This limitation satisfies the opacity limitations required by 326 IAC 5.1 (Opacity Limitations).

D 3.9 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the particulate emissions from alloy handling and dumping, storage, and transfer operations (AU-1 and AU-2) shall not exceed the pound per hour emission rates established as E in the following formulas:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the following equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour, and
P = process weight rate in tons per hour

or

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (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

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

D.3.10 Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

(a) The Permittee shall maintain records of all vendor guarantees for all combustion units listed in this section to demonstrate compliance with Condition D.3.2.

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

SECTION D.4 FACILITY OPERATION CONDITIONS

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

CASTRIP – LMS, TUNDISH, AND CONTINUOUS STRIP CASTER

(k) A strip caster line rated at a maximum steel production rate of 270 tons per hour consisting of:

(1) One (1) ladle metallurgy station, identified as LMS-2, constructed in 2002, to be modified in 2006, and maximum production capacity of 270 tons of steel per hour, and emissions captured by a side draft hood that has a PM capture efficiency of 99 percent and controlled by the LMS-2 baghouse, and exhausting to the LMS-2 baghouse stack identified as S-20. The remaining uncontrolled emissions shall be exhausted through the LMS-2 roof monitor identified as S-21. The LMS-2 baghouse has an enclosed dust handling system or equivalent for material recovery and particulate matter control.

(2) Tundishes, identified as T-1, constructed in 2002, to be modified in 2006, with a maximum production capacity of 270 tons of steel per hour. The two (2) natural gas-fired tundish preheaters, identified as TP-1 and TP-2 and the three (3) natural gas-fired tundish dryers, identified as TD-1, TD-2 and TD-3, supply heat to the tundish. Only one (1) tundish may be operated at a given time. The tundish in operation feeds the molten metal from the LMS-2 ladle to one (1) continuous strip caster identified as CS-1.

(3) One (1) continuous strip caster, identified as CS-1, constructed in 2002, to be modified in 2006, a maximum capacity of 270 tons of steel per hour, and emissions captured by a canopy hood that has a PM capture efficiency of 98 percent. The captured PM in the gas stream shall be controlled by the LMS-2 baghouse and the gas stream shall be exhausted though the LMS-2 baghouse stack identified as S-20. The remaining uncontrolled emissions shall be exhausted through the LMS-2 roof monitor identified as S-21.

(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.4.1 Particulate PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD SSM 107-21359-00038, issued April 27, 2006, the strip caster line (consisting of units LMS-2, T-1 and CS-1) shall comply with the following BACT requirements.

(a) The ladles associated with strip caster CS-1 shall be covered with lids which shall be closed at all times when transporting molten metal in the ladles, in order to minimize uncontrolled emissions.

(b) Ladle Metallurgy Station LMS-2 shall be equipped with a side draft hood that evacuates particulate fumes from the LMS-2 to the LMS-2 baghouse. The side draft hood shall have a minimum capture efficiency of 99 percent.

(c) Tundish T-1 and continuous strip caster CS-1 shall be controlled by a canopy hood that evacuates particulate fumes to the LMS-2 baghouse. The hood shall have a minimum capture efficiency of at least 98 percent.

(d) The filterable PM/PM_{10} emissions from the LMS-2 baghouse shall not exceed 0.0117 pounds of filterable PM/PM_{10} per ton of steel processed at the LMS-2 and 0.0018 grains per dry standard cubic feet (gr/dscf) at a maximum volumetric air flow rate of 200,000 dry standard cubic feet per minute.

(e) The filterable and condensable PM/PM_{10} emissions from the LMS-2 baghouse shall not exceed 0.0338 pounds of filterable and condensable PM/PM_{10} per ton of steel processed at the LMS-2 and 0.0052 gr/dscf at a maximum volumetric air flow rate of 200,000 dry standard cubic feet per minute.

(f) The opacity from the LMS-2 baghouse stack (S-20) 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) when emitted from any baghouse, roof monitor or building opening. This limitation satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

(g) Except as otherwise provided by statute, rule, or this permit, the baghouses for PM control shall be in operation and control emissions at all times the associated equipment controlled by the baghouse are in operation.

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

D.4.2 Nitrogen Oxide (NOx) PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD SSM 107-21359-00038, issued April 27, 2006, the total emissions from the Castrip LMS-2 baghouse stack (S-20) shall not exceed 0.19 pounds of NOx per ton of steel processed at the LMS-2.

D.4.3 Carbon Monoxide (CO) PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD SSM 107-21359-00038, issued April 27, 2006, the total emissions from the Castrip LMS-2 baghouse stack (S-20) shall not exceed 0.141 pound of CO per ton of steel processed at the LMS-2.

D.4.4 Sulfur Dioxide (SO2) PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD SSM 107-21359-00038, issued April 27, 2006, the total emissions from the Castrip LMS-2 baghouse stack (S-20) shall not exceed 0.210 pounds SO_2 per ton of steel processed at the LMS-2.

D.4.5 PSD BACT for Metals [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), and PSD SSM 107-24348-00038, the Permittee shall comply with the following BACT requirements:

(a) The Lead emissions from the Castrip, CS-1 shall be limited to 0.00048 pound per ton of steel produced and 0.13 pound per hour, based on a 3-hour block average.

(b) The Mercury emissions from the Castrip, CS-1 shall be limited to 0.02 pound per hour, based on a 3-hour block average.

(c) The Beryllium emissions from the Castrip, CS-1 shall be limited to 0.002 pound per hour, based on a 3-hour block average.

(d) The Fluorides emissions from the Castrip, CS-1 shall be limited to 0.01 pound per ton of steel produced and 2.7 pounds per hour, based on a 3-hour block average.

The fluorides emissions from the Castrip shall be minimized by using granular Fluorspar, to minimize fluorides emissions and it shall be applied at a rate of 250 pounds/heat at the Castrip.

(e) The emissions from the lead and mercury shall be minimized in accordance with the Scrap Management Program (SMP) and

(f) The emissions from the Castrip shall be controlled by a baghouse.

D.4.6 Operation Limitations [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), and PSD SSM 107-21359-00038, issued April 27, 2006, the strip caster line shall not exceed a maximum steel throughput of 2,365,200 tons per twelve (12) consecutive month period. The Permittee shall demonstrate compliance with these steel processing limits based on a consecutive twelve (12) month period.

D.4.7 Preventive Maintenance Plan

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the LMS-2 and continuous strip caster CS-1 and the particulate capture and control systems associated with LMS-2 and CS-1.

Compliance Determination and Monitoring

D.4.8 Performance Testing [326 IAC 2-2] [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) Pursuant to 326 IAC 2-1.1-11, 326 IAC 2-2, and PSD SSM 107-21359-00038, issued April 27, 2006, the Permittee shall perform PM/PM_{10} (filterable and condensable), NOx, CO, and SO_2, compliance stack tests for the LMS-2 baghouse stack (S-20) within one hundred eighty (180) days of April 27, 2006.

(b) Pursuant to 326 IAC 2-1.1-11 and 326 IAC 2-2, the Permittee shall perform opacity compliance stack tests for the LMS-2 baghouse stack (S-20) within one hundred eighty (180) days of April 27, 2006.

(c) Opacity tests shall be performed concurrently with the particulate compliance stack test for the LMS-2 baghouse stack, unless meteorological conditions require rescheduling the opacity tests to another date.

(d) Within sixty (60) days but no later than one hundred and eighty (180) days after the initial start up of the modified EAF operation in Section D.31 and the new LMF in Section D.32 in this PSD/SSM NO. 107-24348-00038, the Permittee shall perform a compliance test on the LMS-2 baghouse controlling the Castrip for Lead, Mercury, Beryllium and Fluorides, in order to comply with Condition D.4.5.

(e) All compliance stack tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

IDEM, OAQ retains the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary. Testing shall be conducted in accordance with Section C – Performance Testing requirements.

D.4.9 Visible Emissions Notations

(a) Visible emission notations of the LMS-2 baghouse stack exhaust shall be performed once per day during normal daylight operations. 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 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.4.10 Baghouse Parametric Monitoring

(a) The Permittee shall record the pressure drop across the LMS-2 baghouse used in conjunction with LMS-2 or CS-1, at least once per day when the process is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 2.0 and 8.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - 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 - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instrument used for determining the pressure 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 annually.

(b) The Permittee shall record the fan amperes of LMS baghouse fan at least once per day when the associated LMS or continuous strip caster is in operation. Unless operated under conditions for which Section C - Response to Excursions or Exceedances specifies otherwise, the fan amperes of the capture and control system shall be maintained within plus or minus 15% of the rate established during the most recent compliant stack test. Section C - Response to Excursions or Exceedances for this unit shall contain troubleshooting contingency and response steps for when the fan amperes are more than 15% above or below the above-mentioned rate for any one reading. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation of this permit.

The instrument used for determining the fan amperes 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 annually.

D.4.11 Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

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

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

D.4.12 Record Keeping Requirements

(a) To document compliance with Condition D.4.9, the Permittee shall maintain records of visible emission notations of the LMS baghouse stack exhaust once per day. 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).

(b) To document compliance with Condition D.4.10(a), the Permittee shall maintain once per day records of the total static pressure drop during normal operation.

(c) To document compliance with Condition D.4.10(b), the Permittee shall maintain once per day records of the fan amperes during normal operation.

(d) To document compliance with Condition D.4.12, the Permittee shall maintain records of baghouse inspections. These records shall include as a minimum, dates, initials of the person performing the inspections, results, and corrective actions taken in response to excursions as required by the CAM for the Castrip, CS-1 (if any are required).

(e) To document compliance with Condition D.4.5(d), the Permittee shall maintain records of the amount of Fluorspar applied at the Castrip.

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

D.4.13 Reporting Requirements

(a) A quarterly summary of the information to document compliance with Condition D.4.6 shall be submitted to the address(es) listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within 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).

(b) The Permittee shall submit performance test protocols and performance test reports required by Operation Condition D.4.9 in accordance with the reporting requirements established in Section C - Performance Testing and Section C - General Reporting Requirements.

SECTION D.5 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – MISCELLANEOUS SILOS

(a) Raw materials handling/storage, including silos which contain the following materials:

(1) One (1) lime silo TFS-1.

(2) Baghouse #1 lime silo (HRE #1).

(3) One (1) Iron Oxide Silo (IOS #1).

(4) Three (3) Baghouse Dust Silos (BHS#1, BHS#2, BHS#3).

(5) One (1) Soda Ash Silo (SAS #1) (this will become the sand silo).

(6) One (1) Iron Carbide Silo #1 (no longer in service).

(7) One (1) Lime Silo (#1 SEAF).

(8) One (1) Lime Silo (#2 SEAF).

(9) One (1) Lime Silo (#3 NEAF).

(10) One (1) Lime Silo (#4 NEAF).

(11) One (1) Injection Carbon Silo #1.

(12) One (1) Injection Carbon Silo #2.

(13) One (1) Charge Carbon Silo #1.

(14) One (1) Charge Carbon Silo #2.

(15) Three (3) AOD alloy system silos (AOD#1, AOD#2, and AOD#3).

(16) Ten (10) Melt Shop Alloy Feed System silos (MS alloy #1, MS alloy #2, MS alloy #3, MS alloy #4, MS alloy #5, MS alloy #6, MS alloy #7, MS alloy #8, MS alloy #9, MS alloy #10).

(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.5.1 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the particulate emissions from the insignificant silos shall not exceed a pound per hour emission rate established as E in the following formula:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

or

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (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 is pounds per hour and
P = process weight rate in tons per hour

SECTION D.6 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – CASTRIP – COILERS, COIL CUTTING, AND HOT ROLLING STAND

Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(b) Two (2) coilers, identified as C-1 and C-2, constructed in 2002. Fugitive particulate emissions from this process are controlled by the application of water to the coilers and exhausting to the roof monitor S-21. These coil the steel strip from the continuous strip caster.

(c) Scrap coil cutting in the Castrip area, identified as CC-1, constructed in 2002, occurs on an as needed basis, controlled by the Castrip LMS Baghouse and exhausting to stack S-20.

(d) Two (2) hot rolling stands, identified as HRS #1 and HRS #2, constructed in 2002. These stands roll the steel strip from the continuous strip caster to the desired gauge. Fugitive particulate emissions controlled by the application of water to the steel strip, and exhausting to the LMS roof monitor identified as S-21.

(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.6.1 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the particulate emissions from the insignificant coilers, coil cutting, and hot rolling stand shall not exceed a pound per hour emission rate established as E in the following formula:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the following equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour, and
P = process weight rate in tons per hour

D.6.2 Baghouse Operation [326 IAC 2-2]

(a) Pursuant to PSD SSM 107-16823-00038, issued November 21, 2003, and 326 IAC 2-2, the Castrip LMS Baghouse for particulate control shall be in operation and control emissions at all times that coil cutting is operating in the Castrip area, except for when the Meltshop LMF Baghouse serves as a back up.

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

SECTION D.7 FACILITY OPERATION CONDITIONS

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

WASTEWATER TREATMENT PLANT

(l) One wastewater treatment plant, identified as WWTP, constructed in September 2002, consisting of two water recovery systems i.e. oil/alkali wastes and acid rinse water, and surge vessels for the regenerated acid, acid rinse water and spent pickle liquor. The WWTP consists of following:

(1) Oily waste tanks:

(A) Two (2) batch treatment tanks, identified as T-853 and T-854, with a maximum capacity of 12,000 gallons each, with emissions uncontrolled, and exhausting inside the building.

(B) One (1) decant oil tank, identified as T-856, with maximum capacity of 9,000 gallons with emissions uncontrolled, and exhausting inside the building.

(C) One (1) oily waste evaporator feed tank, identified as T-858, with maximum capacity of 20,000 gallons with emissions uncontrolled.

(D) One (1) oily waste evaporator concentrate tank, identified as T-857, with maximum capacity of 20,000 gallons with emissions uncontrolled, and exhausting inside the building.

(2) Acid tanks:

(A) Three (3) acid rinse water surge tanks, identified as T-850, T-851 and T-852, with a maximum capacity of 33,000 gallons each, with emissions controlled by the pickle line scrubber #1, and exhausting to stack S-17.

(B) One (1) lime neutralization tank, identified as T-875, with maximum capacity of 10,000 gallons, with emissions controlled by a wet particulate scrubber, and exhausting to stack S-60.

(C) One (1) acidic rinse evaporator feed tank, identified as T-877, with maximum capacity of 20,000 gallons with emissions uncontrolled and exhausting to stack S-17.

(D) One (1) acidic rinse evaporator concentrator tank, identified as T-878, with maximum capacity of 20,000 gallons with emissions uncontrolled and exhausting to stack S-17.

(3) Two (2) closed chamber type evaporators, identified as EV-1 and EV-2, each with a maximum capacity of 1,800 gallons per hour. This is a closed loop system with no emissions.

(m) Three (3) regenerated acid tanks, identified as T-867, T-868 and T-869, constructed in September 2002, with a maximum capacity of 33,000 gallons each, with emissions controlled by the pickle line scrubber, and exhausting to S-17.

Under 40 CFR Part 63, Subpart CCC, these units are considered new hydrochloric acid storage vessels.

(n) Four (4) spent pickle liquor tanks, identified as T-863, T-864, T-865 and T-866, constructed in September 2002, each with a maximum capacity of 33,000 gallons each, with emissions controlled by the pickle line scrubber, and exhausting to S-17.

(o) Lime silo system, constructed in 1989 and relocated in September 2002, including the following equipment:

(1) One (1) lime silo, identified as TFS-1, with a maximum capacity of 60,000 pounds.

(2) One (1) live bin bottom.

(3) One (1) screw conveyor.

(4) One (1) wet particulate 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(i)]

D.7.1 General Provisions Relating to NESHAP [326 IAC 20-1][40 CFR Part 63, Subpart A]

The provisions of 40 CFR Part 63, Subpart A (General Provisions), which are incorporated by reference in 326 IAC 20-1, apply to HCl storage vessels T-867, T-868, and T-869 except when otherwise specified in 40 CFR Part 63, Subpart CCC.

D.7.2 Steel Pickling – HCl Process Facilities and Hydrochloric Acid Regeneration Plants NESHAP [40 CFR Part 63, Subpart CCC][326 IAC 20]

Pursuant to MSM 107-14782-00038, issued October 4, 2001, 40 CFR Part 63, Subpart CCC and 326 IAC 20-1-1, HCl storage vessels T-867, T-868, and T-869 are subject to the following conditions:

The owner or operator of an affected vessel shall provide and operate, except during loading and unloading of acid, a closed vent system for each vessel. Loading and unloading shall be conducted either through enclosed lines or each point where the acid is exposed to the atmosphere shall be equipped with a local fume capture system, ventilated through an air pollution control device.

SECTION D.8 FACILITY OPERATION CONDITIONS

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

SLAG PROCESSING

(p) Slag processing, identified as EU-10, constructed in 1989, is performed by Whitesville Mill Service Company, an on-site contractor. Slag and other steel mill related materials are transported by slag pots or other mobile equipment, processed, and stockpiled with a maximum throughput of 305 tons/hr. This emission unit consists of storage piles (unprocessed and processed materials), grizzly feeding, slag processing (screening, conveying, and crushing), slag pot dumping, product loading for transport, and unpaved roads. The fugitive emissions from slag processing are controlled by water sprays and exhaust to the atmosphere.

(q) One (1) mill scale screen and conveyor system, identified as MSS-1, constructed in 2001, with a maximum throughput rate of 350 tons of mill scale per hour, with emissions uncontrolled, and exhausting to the atmosphere.

(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.8.1 PSD (Prevention of Significant Deterioration) - BACT [326 IAC 2-2]

(a) Pursuant to PSD 107-2764-00038, issued on November 30, 1993, the Fugitive Dust Control Plan (included as Attachment A to this permit), shall be implemented to control fugitive dust from paved roads, unpaved roads, parking lots, traveled open areas, and uncontrolled slag process and storage pile emissions. Adherence to the fugitive dust control plan is considered BACT.

(b) Pursuant to A 107-8255-00038 to PSD 107-2764-00038, issued November 30, 1993, and 326 IAC 2-2, the fugitive dust emissions from the various slag handling and processing operations shall be controlled in accordance with the Fugitive Dust Control Plan approved on March 28, 1999 (attached as Attachment A to this permit) such that the following opacity limitations are not exceeded at each point where such slag handling and processing operations occur:

Slag Handling/Processing Operation	Opacity Limitation*
Transferring of skull slag to slag pot	10% Opacity
Pouring of liquid slag from EAF or Caster to slag pots	3% Opacity
Dumping of liquid slag from slag pot to slag pit and cooling	3% Opacity
Transferring of skull slag from slag pot to skull pit	5% Opacity
Digging skull slag pits	5% Opacity
Digging slag pits	3% Opacity
Stockpiling of slag adjacent to the grizzly feeder	3% Opacity
Wind erosion of stockpiles	3% Opacity
Crushing	3% Opacity
Screening	3% Opacity
Conveyor transfer points	3% Opacity
Continuous stacking of processed slag to stockpiles	3% Opacity

Slag Handling/Processing Operation	Opacity Limitation*
Loadout of processed slag from stockpiles to haul trucks for shipment	3% Opacity
Inplant hauling of slag pots (filled) and processed slag	3% Opacity

*All opacity limitations are based on six (6) minute averages.

These emission limits are considered BACT.

D.8.2 Prevention of Significant Deterioration (PSD) Minor Limit [326 IAC 2-2]

Pursuant to MSM 107-15599-00038, issued April 10, 2002, the mill scale throughput rate to the mill scale screen and conveyor system (MSS-1) shall not exceed 1,092,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month. Compliance with this limit is equivalent to less than or equal to 18.8 tons/yr of PM emissions and less than or equal to 9.0 tons/yr of PM10 emissions. Emissions from the 2002 modification limited to less than 25 tons per year of PM and 15 tons per year of PM10. Compliance with this limit renders the requirements of 326 IAC 2-2 not applicable.

D.8.3 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the mill scale screen and conveyor system (MSS-1) shall not exceed 64.8 pounds per hour when operating at a process weight rate of 350 tons per hour.

The pounds per hour limitation was calculated with the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (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

D.8.4 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the slag processing operation (EU-10) shall not exceed 63.2 pounds per hour when operating at a process weight rate of 305 tons per hour.

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

Compliance Determination Requirements

D.8.5 PM/PM10 Emissions

Compliance with Condition D.8.2 shall be demonstrated within 30 days of the end of each month based on the total throughput weight for the most recent twelve (12) consecutive month period.

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

D.8.6 Visible Emissions Notations

(a) Visible emission notations of the exhaust from MSS-1 shall be performed once per day during normal daylight operations. 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 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.

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

D.8.7 Record Keeping Requirements

(a) To document compliance with Condition D.8.2, the Permittee shall maintain records of the mill scale throughput weight for each compliance period.

(b) To document compliance with Condition D.8.6, the Permittee shall maintain records of the once per day visible emission notations.

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

D.8.8 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.8.2 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within 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.9 FACILITY OPERATION CONDITIONS

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

BOC GASES PLANT

(r) The BOC Gases Plant is operated by BOC Gases, an on-site contractor. It provides gases (oxygen, nitrogen, hydrogen, argon, and liquid air) consisting of:

(1) One (1) natural gas-fired boiler identified as ID No. 1, constructed in 1989, with a heat input capacity of 9 MMBtu per hour, with emissions uncontrolled, and exhausting to stack S-36. This boiler uses propane as a backup fuel.

(2) One (1) natural gas-fired boiler, identified as ID No. 2, constructed in 1994, with a heat input capacity of 15.0 MMBtu per hour, with emissions uncontrolled, and exhausting to stack S-37. This boiler uses propane as a backup fuel.

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

(3) One (1) natural gas-fired boiler, identified as the hydrogen plant boiler, constructed in 1996, with a heat input capacity of 9.98 MMBtu per hour, with Emissions uncontrolled, and exhausting to stack S-30. This boiler uses propane as a backup fuel.

(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.9.1 Preventive Maintenance Plan (PMP) [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B – Preventive Maintenance Plan (PMP), of this permit, is required for the facilities listed in this section.

D.9.2 BOC Gases Boiler PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2 and PSD 107-5235-00038, issued June 20, 1996, the Permittee shall comply with the following BACT requirements:

(1) The 9.98 MMBtu per hour hydrogen plant boiler shall burn natural gas with propane as backup fuel.

(2) The NOx emissions from the 9.98 MMBtu per hour hydrogen plant boiler shall not exceed 100 pounds per million cubic feet of natural gas combusted.

(b) Pursuant to 326 IAC 2-2 and PSD 107-3702-00038, issued March 28, 1995:

(1) The 9.0 MMBtu per hour boiler (ID No. 1) and the 15.0 MMBtu per hour boiler (ID No. 2) shall burn natural gas with propane as backup fuel.

(2) The NOx emissions from the 15.0 MMBtu per hour boiler (ID No. 2) shall not exceed 140 pounds per million cubic feet of natural gas combusted.

(3) The NOx emissions from the 9.0 MMBtu per hour boiler (ID No. 1) shall not exceed 100 pounds per million cubic feet of natural gas combusted.

D.9.3 Particulate Matter Emission Limitations for Sources of Indirect Heating [326 IAC 6-2-4]

Pursuant to 326 IAC 6-2-3, the particulate matter (PM) from:

(a) The 9.98 MMBtu per hour heat input hydrogen plant boiler shall be limited to 0.363 pounds per MMBtu heat input.

(b) The 9.0 MMBtu per hour heat input boiler (ID No. 1) shall be limited to 0.41 pounds per MMBtu heat input

(c) The 15.0 MMBtu per hour heat input boiler (ID No. 2) shall be limited to 0.379 pounds per MMBtu heat input

These limitations are based on the following equation:

$Pt = 1.09 / Q^{0.26}$ where Pt = Pounds of PM emitted per million Btu (lb/MMBtu) heat input, and

Q = Total source maximum operating capacity rating in million Btu per hour (MMBtu per hour) heat input.

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

D.9.4 Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19] [40 CFR Part 60 Subpart Dc]

(a) Pursuant to 40 CFR 60.48c(g), the Permittee shall keep records of the fuel used each day by Boiler ID No. 2, including the types of fuel and amount used.

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

SECTION D.10 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – PAVED AND UNPAVED ROADS

(e) Paved and unpaved roads and parking lots with public access. Transport on new and existing paved roadways and parking lots, unpaved roadways, and unpaved areas around existing raw material storage piles.

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

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

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

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the paved surface silt loading shall not exceed 16.8 pounds of silt per mile and the average instantaneous opacity from paved roadways and parking lots shall not exceed ten percent (10%).

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

The three (3) opacity readings for each vehicle pass shall be taken as follows:

(a) The first reading will be taken at the time of emission generation;

(b) The second reading will be taken five (5) seconds later; and

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

The three (3) readings shall be taken at the point of maximum opacity. The observer shall stand at least fifteen (15) feet, but no more than one-fourth (1/4) mile, from the plume and as close to approximately right angles to the plume as permissible under EPA Reference Method 9. Each reading shall be taken approximately four (4) feet above the surface of the paved roadway.

D.10.2 PSD Requirements [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the visible emissions from unpaved roadways and unpaved areas around raw material storage piles shall not exceed an average instantaneous opacity of ten percent (10%).

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

The three (3) opacity readings for each vehicle pass shall be taken as follows:

(a) The first reading will be taken at the time of emission generation;

(b) The second reading will be taken five (5) seconds later; and

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

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

The observer shall stand at least fifteen (15) feet, but no more than one-fourth (1/4) mile, from the plume and as close to approximately right angles to the plume as permissible under EPA Reference Method 9.

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

D.10.3 PSD Requirements [326 IAC 2-2]

Pursuant to PSD 107-2764-00038, issued on November 30, 1993, the Fugitive Dust Control Plan (included as Attachment A to this permit), shall be implemented to control fugitive dust from paved roads, unpaved roads, parking lots, traveled open areas, and uncontrolled slag process and storage pile emissions.

Adherence to the fugitive dust control plan is considered a BACT requirement.

SECTION D.11 FACILITY OPERATION CONDITIONS

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

PETROLEUM PRODUCT STORAGE

(s) One (1) 500 gallon aboveground gasoline storage tank, identified as GST #1, installed in 1988, using submerged filling technology to control VOC emissions, which exhausts to the atmosphere.

(t) Three (3) 500 gallon aboveground diesel storage tanks, identified as DST #1, DST #2, and DST #3, all installed in 1988, using submerged filling technology to control VOC emissions, which exhausts to the atmosphere.

(u) One (1) 5,000 gallon aboveground diesel storage tank, identified as DST #4, installed in 1988, using submerged filling technology to control VOC emissions, which exhausts to the atmosphere.

(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.11.1 Petroleum Product Storage PSD BACT [326 IAC 2-2]

The petroleum product storage shall be limited as follows:

(a) Pursuant to 326 IAC 2-2 and PSD 107-2764-00038, issued November 30, 1993, amended August 11, 1999 via A 107-11154-00038, the one (1) 500 gallon aboveground gasoline storage tank (GST #1) shall use submerged filling technology to control VOC emissions.

(b) Pursuant to 326 IAC 2-2 and PSD 107-2764-00038, issued November 30, 1993, amended August 11, 1999 via A 107-11154-00038, the three (3) 500 gallon aboveground diesel storage tanks (DST #1, DST #2, DST #3) shall use submerged filling technology to control VOC emissions.

(c) Pursuant to 326 IAC 2-2 and PSD 107-2764-00038, issued November 30, 1993, amended August 11, 1999 via A 107-11154-00038, the one (1) 5000 gallon aboveground diesel storage tank (DST #4) shall use submerged filling technology to control VOC emissions.

(d) Pursuant to PSD 107-2764-00038, issued November 30, 1993, the visible emissions from each petroleum product storage tank shall not exceed 5% opacity, based on a 6-minute average.

SECTION D.12 FACILITY OPERATION CONDITIONS

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

COOLING TOWERS

(v) The contact and noncontact cooling towers are equipped with drift eliminators. Each cooling tower exhausts to the atmosphere.

Cooling Towers	No. of Cells	Capacity (gal/min)	Cooling Towers	No. of Cells	Average Capacity (gal/min)
Meltshop Non Contact	9	60,000	Galvanizing/Annealing Non Contact	2	6,500
Meltshop Caster Contact	2	5,000	Annealing Non Contact	2	5,000
Meltshop Caster Contact (expansion)	2	5,000	Castrip Contact	4	12,000
Hot Mill Contact	4	16,383	Castrip Non Contact	7	14,400
Hot Mill Contact (expansion)	1	4,000	Castrip Compressor Non Contact	3	2,400
Hot Mill Non Contact	4	25,319	BOC Non Contact (CT-91A)	1	750
Laminar Contact	3	11,600	BOC Non Contact (CT-91B)	2	3,200
Cold Mill Non Contact	2	10,000	Main Compressor Non Contact	4	3,200
Cold Mill Non Contact (expansion)	1	5,000			
Vacuum Degasser Contact	1	8,000	Vacuum Degasser Non Contact	1	8,000

(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.12.1 Cooling Towers PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2, PSD SSM 107-16823-00038, issued November 21, 2003, and PSD SSM 107-21359-00038, issued April 27, 2006, the Permittee shall comply with the following BACT requirements:

(a) The design drift rate from each cooling tower shall not exceed 0.005%.

(b) The Permittee shall retain records demonstrating that the cooling towers are designed to achieve 0.005% drift.

(c) The visible emissions from each cooling tower shall not exceed 20% opacity, based on a 6-minute average.

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

D.12.2 Drift/Mist Eliminators [326 IAC 2-2]

Pursuant to PSD SSM 107-16823-00038, issued November 21, 2003, and PSD SSM 107-21359-00038, issued April 27, 2006, the integral drift/mist eliminators shall be in operation at all times that the respective cooling towers are in operation.

SECTION D.13 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – SCRAP HANDLING AND PROCESSING

Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(f) Scrap handling, processing and cutting of ferrous metals and scrap substitutes. These activities exhaust indoors to general ventilation which in turn exhausts to Meltshop EAF baghouses 1 and 2.

(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 Scrap Handling, Processing and Cutting [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-16823-00038, issued November 21, 2003, the Permittee shall comply with the following BACT requirements:

(a) Skulls, coils and steel scrap shall be mechanically reduced in size. Any skull, coil, steel scrap not mechanically reduced in size can be lanced out or transported to the steel works building or another suitable building.

(b) Good working practices shall be observed.

(c) Scrap cutting allowed outdoors is limited to scrap items such as furnace roof, railroad cards, ductwork, long pieces of scrap pipe and bar stock, that can not fit in the existing building. Galvanized scrap shall not be cut outdoors. Outdoor means the cutting is done outside of a building.

(d) The visible emissions from the building enclosing the scrap cutting operation shall not exceed 3% opacity based on a 6-minute average.

(e) The visible emissions from the outdoor scrap cutting operation shall not exceed 3% opacity based on a 6-minute average.

D.13.2 Particulate [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the particulate emissions from the insignificant scrap handling and cutting shall not exceed the pound per hour emission rate established as E in the following formula:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the following equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour, and
P = process weight rate in tons per hour

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

D.13.3 Visible Emissions Notations

(a) Visible emission notations of the scrap handling, processing and cutting building shall be performed once per day when scrap cutting is performed in that building. 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- 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.

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

D.13.4 Record Keeping Requirements

(a) The Permittee shall maintain records of the once per day visible emission notations required by Condition D.13.3.

(b) 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)]

EMERGENCY GENERATORS

(w) Diesel fired generators and air compressors for power outages and emergencies.

(1) Cold Mill generator, identified as GEN #3, constructed in 1997, with a capacity of 280 HP, with emissions uncontrolled.

(2) Hot Mill NC Cooling Tower generator, identified as GEN #1, constructed in 1989, with a capacity of 2,100 HP, with emissions uncontrolled.

(3) Galv Line Pot generator, identified as GEN #4, constructed in 1992, with a capacity of 890 HP, with emissions uncontrolled.

(4) MS Cooling Tower Cold Well generator, identified as GEN #2, constructed in 1996, with a capacity of 2,520 HP, with emissions uncontrolled.

(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.14.1 Emergency Generators PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-16823-00038, issued November 21, 2003, the Permittee shall comply with the following BACT requirements:

(a) The emergency generators shall solely provide back up power when electric power is interrupted, or during maintenance or testing of generators.

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

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

(d) Good combustion practices shall be performed.

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

D.14.2 Record Keeping Requirements

(a) The Permittee shall maintain records of the hours of operation of each emergency generator.

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

SECTION D.15 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – GASOLINE DISPENSING FACILITIES

(g) A gasoline fuel transfer and dispensing operation handling less than or equal to 1,300 gallons per day, such as filling of tanks, locomotives, automobiles or other mobile equipment, having a storage capacity less than or equal to 10,500 gallons.

(1) Two (2) 10,000 gallon gasoline storage tanks, each handling less than 1,000 gallons per day.

(2) Two (2) 10,000 gallon diesel storage tanks, each handling less than 3,000 gallons per day.

(3) One (1) 1,000 gallon diesel storage tank handling less than 500 gallons per day.

(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.15.1 Gasoline Dispensing Facilities [326 IAC 8-4-6]

(a) Pursuant to 326 IAC 8-4-6, the Permittee operating a gasoline dispensing facility shall not allow the transfer of gasoline between any transport and any storage tank unless such a tank is equipped with the following:

(1) A submerged fill pipe.

(2) Either a pressure relief valve set to release at no less than seven-tenths (0.7) pounds per square inch or an orifice of five-tenths (0.5) inch in diameter.

(3) A vapor balance system connected between the tank and the transport, operating according to the manufacturer’s specifications.

(b) If the Permittee is not present during loading, it shall be the responsibility of the owner or operator of the transport to make certain the vapor balance system is connected between the transport and the storage tank and is operating according to the manufacturer’s specifications.

SECTION D.16 FACILITY OPERATION CONDITIONS

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

COLD MILL – PICKLE LINES 1 AND 2

(x) Both Pickle Lines use enhanced HCl pickling solution and rinse water and are equipped with process tanks.

(1) Pickle Line 1, identified as PL1, constructed in 1988, with a maximum capacity of 250 tons/hr, controlled by a counter flow-packed scrubber and mist eliminators, and exhausting to stack S-17. The Pickle Line 1 scrubber has a design flow rate of 12,000 acf/min and a loading of 0.01 gr/dscf. Each pickle line has an electric static oiler.

Under 40 CFR Part 63, Subpart CCC, Pickle Line 1 is considered an existing continuous pickle line.

(2) Pickle Line 2, consisting of the following units:

(A) One (1) Pickle Line, identified as PL2, constructed in 1997, with a maximum capacity of 250 tons/hr, controlled by a tray scrubber and mist eliminators, and exhausting to stack S-18. The Pickle Line 2 scrubber has a design flow rate of 9,000 acf/min and a loading of 0.01 gr/dscf. Each pickle line has an electric static oiler.

Under 40 CFR Part 63, Subpart CCC, Pickle Line 2 is considered a continuous pickle line.

(B) One (1) acidless metal cleaning line, identified as AMC, approved for construction in 2007, located on Pickle Line 2, with a maximum throughput capacity of 250 tons of steel per hour, using continuous abrasive blasting to remove scale from steel coil, with a maximum blast rate of 272,160 pounds of steel grit/shot per hour, with particulate emissions controlled by a baghouse, and exhausting to stack S-AMC.

(3) The tank farm treats the rinse water from Pickle Line 1 and Pickle Line 2. These tanks also store spent acid, raw acid, regenerated acid, oily wastewater treated waters for reuse, treatment process wastewater, and other process and treated waters.

Under 40 CFR Part 63, Subpart CCC, the tanks that store virgin or regenerated hydrochloric acid are considered new hydrochloric acid storage vessels.

(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.16.1 Pickling PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-16823-00038, issued on November 21, 2003, Pickle Lines 1 and 2 (PL1 and PL2) shall comply with the following BACT requirements:

(a) Each pickling line (PL1 and PL2) shall be controlled by its own scrubber and with an exhaust grain loading of no greater than 0.01 gr/dscf.

(b) Each tank shall operate with a closed vent system, covered by lids, and maintained under negative pressure, except during loading and unloading.

(c) Loading and unloading shall be conducted either through enclosed lines or each point shall be controlled.

(d) The visible emissions from each pickling line scrubber stack shall not exceed 5% opacity, based on a 6-minute average.

(e) Good working practices shall be observed, such as adjusting damper controls and settings on the fume systems.

D.16.2 PSD Minor Limits [326 IAC 2-2]

(a) The PM emissions from emission unit AMC shall be limited to less than 5.7 pounds per hour.

(b) The PM10 emissions from emission unit AMC shall be limited to less than 3.42 pounds per hour.

(c) The Beryllium emissions from emission unit AMC shall be limited to less than 9.1E-5 pounds per hour.

Compliance with these limits will render the requirements of 326 IAC 2-2 (PSD) not applicable.

D.16.3 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

(a) Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from Pickle Line 1 and Pickle Line 2 (PL1 and PL2) each shall not exceed 61.0 pounds per hour each when operating at process weight rates of 250 tons per hour each.

The pounds per hour limitation was calculated with 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

(b) Pursuant to 326 IAC 6-3-2, the particulate matter (PM) from the acidless metal cleaning line (AMC) shall not exceed 61.0 pounds per hour when operating at a process weight rate of 250 tons per hour. The pound per hour limitation was calculated with the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (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

D.16.4 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for Pickle Lines 1 and 2 (PL1 and PL2) and the acidless metal cleaning line (AMC) and their control devices.

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

D.16.5 Scrubber Operation [326 IAC 2-2][40 CFR 63, Subpart CCC]

Pursuant to PSD SSM 107-16823-00038, issued November 21, 2003, 326 IAC 2-2 and 40 CFR Part 63, Subpart CCC, and as revised in this permit modification:

(a) The Pickle Line 1 (PL1) scrubber shall be in operation and control emissions at all times that the Pickle Line 1 is in operation.

(b) The Pickle Line 2 (PL2) scrubber shall be in operation and control emissions at all times that pickling is occurring at Pickle Line 2.

D.16.6 Testing Requirements [326 IAC 2-7-6(1)] [40 CFR Part 63, Subpart CCC] [326 IAC 20] [326 IAC 2-1.1-11]

(a) Pursuant to 40 CFR Part 63, Subpart CCC, and PSD SSM 107-16823-00038, issued November 21, 2003, and in order to demonstrate compliance with Condition D.16.1(a), the Permittee shall perform the following testing no later than September 30, 2006 for the PL1 scrubber and August 31, 2007 for the PL2 scrubber:

(1) Determine the collection efficiency of each scrubber by simultaneously measuring mass flows of HCl at the inlet and outlet of each scrubber (PL1 scrubber and PL2 scrubber); or

(2) Measure the HCl concentration in gases exiting the process or scrubbers;

Testing shall be completed utilizing methods specified in 40 CFR Part 63, Subpart CCC or other methods as approved by the Commissioner.

(b) Any stack which has multiple processes which exhaust to the same stack shall operate all of the processes simultaneously in accordance with 326 IAC 3-5 (Source Sampling Procedures).

(c) These tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

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

(e) Within sixty (60) days after achieving maximum production rate, but not later than 180 days after initial startup, and in order to demonstrate compliance with Conditions D.16.2 and D.16.3, the Permittee shall perform PM, PM10, and Beryllium testing for emission unit AMC utilizing methods as approved by the Commissioner. This test 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 conducted in accordance with Section C- Performance Testing.

D.16.7 Particulate Control [326 IAC 2-2] [326 IAC 6-3-2]

(a) In order to comply with Conditions D.16.2 and D.16.3, the baghouse for particulate control shall be in operation and control emissions from the acidless metal cleaning line (AMC) at all times that the acidless metal cleaning line (AMC) is in operation.

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

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

D.16.8 Scrubber Detection

In the event that a scrubber malfunction has been observed:

Failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions). Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

D.16.9 Visible Emissions Notations [326 IAC 2-7-5(3)(A)(iii)][326 IAC 2-7-5(d)]

(a) Visible emission notations of the acidless metal cleaning line (AMC) baghouse stack exhaust shall be performed once per day during normal daylight operations. 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 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.16.10 Baghouses Parametric Monitoring [326 IAC 2-7-5(3)(A)(iii)][326 IAC 2-7-5(d)]

The Permittee shall record the pressure drop across the baghouse used in conjunction with the acidless metal cleaning line (AMC) at least once per day when the acidless metal cleaning line (AMC) is in operation. When for any one reading, the pressure drop across the baghouse is outside the range of 3 to 8 inches of water or a range established during the latest stack test, the Permittee shall take reasonable steps in accordance with Section C - 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 reasonable response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

The instrument used for determining the pressure 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 annually.

D.16.11 Broken or Failed Bag Detection

(a) For a single compartment baghouse-controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

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

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

D.16.12 Record Keeping Requirements

(a) To document compliance with Condition D.16.9, the Permittee shall maintain a daily record of the visible emission notations at the acidless metal cleaning line (AMC) baghouse stack exhaust. 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).

(b) To document compliance with Condition D.16.10, the Permittee shall maintain a daily record of the pressure drop across the baghouse controlling emission unit. 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).

(c) In order to demonstrate compliance with Conditions D.16.5(b) and D.16.7(a), the Permittee shall maintain a daily record of when the acidless metal cleaning (AMC) is in operation and no pickling is occurring at Pickle Line 2.

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

**National Emissions Standards for Hazardous Air Pollutants (NESHAP) Requirements:
HCl Process Facilities and Hydrochloric Acid Regeneration Plants**

D.16.13 General Provisions Relating to NESHAP [326 IAC 20-1] [40 CFR Part 63, Subpart A]

Pursuant to 40 CFR 63.1155, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 20-1-1, for the Pickle Line 1, identified as PL1, Pickle Line 2, identified as PL2, and the tanks in the tank farm that store virgin or regenerated hydrochloric acid from Pickle Line 1 and Pickle Line 2 as specified in Appendix A of 40 CFR Part 63, Subpart CCC in accordance with schedule in 40 CFR Part 63, Subpart CCC.

D.16.14 National Emissions Standards for Hazardous Air Pollutants for Steel Pickling-HCl Process Facilities and Hydrochloric Acid Regeneration Plants [40 CFR Part 63, Subpart CCC]

Pursuant to 40 CFR Part 63, Subpart CCC, Pickle Line 1, identified as PL1, Pickle Line 2, identified as PL2, and the tanks in the tank farm that store virgin or regenerated hydrochloric acid tank farm from Pickle Line 1 and Pickle Line 2 shall comply with the following provisions:

Subpart CCC—National Emission Standards for Hazardous Air Pollutants for Steel Pickling—HCl Process Facilities and Hydrochloric Acid Regeneration Plants

§ 63.1155 Applicability.

(a) The provisions of this subpart apply to the following facilities and plants that are major sources for hazardous air pollutants (HAP) or are parts of facilities that are major sources for HAP:

(1) All new and existing steel pickling facilities that pickle carbon steel using hydrochloric acid solution that contains 6 percent or more by weight HCl and is at a temperature of 100 °F or higher; and

(3) The provisions of this subpart do not apply to facilities that pickle carbon steel without using hydrochloric acid, to facilities that pickle only specialty steel, or to acid regeneration plants that regenerate only acids other than hydrochloric acid.

(b) For the purposes of implementing this subpart, the affected sources at a facility or plant subject to this subpart are as follows: Continuous and batch pickling lines, hydrochloric acid regeneration plants, and hydrochloric acid storage vessels.

(c) Table 1 to this subpart specifies the provisions of this part 63, subpart A that apply and those that do not apply to owners and operators of steel pickling facilities and hydrochloric acid regeneration plants subject to this subpart.

§ 63.1156 Definitions.

Terms used in this subpart are defined in the Clean Air Act, in subpart A of this part, or in this section as follows:

Batch pickling line means the collection of equipment and tanks configured for pickling metal in any form but usually in discrete shapes where the material is lowered in batches into a bath of acid solution, allowed to remain until the scale is dissolved, then removed from the solution, drained, and rinsed by spraying or immersion in one or more rinse tanks to remove residual acid.

Carbon steel means steel that contains approximately 2 percent or less carbon, 1.65 percent or less manganese, 0.6 percent or less silicon, and 0.6 percent or less copper.

Closed-vent system means a system that is not open to the atmosphere and that is composed of piping, ductwork, connections, and, if necessary, flow-inducing devices that transport emissions from a process unit or piece of equipment (e.g., pumps, pressure relief devices, sampling connections, open-ended valves or lines, connectors, and instrumentation systems) back into a closed system or into any device that is capable of reducing or collecting emissions.

Continuous pickling line means the collection of equipment and tanks configured for pickling metal strip, rod, wire, tube, or pipe that is passed through an acid solution in a continuous or nearly continuous manner and rinsed in another tank or series of tanks to remove residual acid. This definition includes continuous spray towers.

Hydrochloric acid regeneration plant means the collection of equipment and processes configured to reconstitute fresh hydrochloric acid pickling solution from spent pickle liquor using a thermal treatment process.

Hydrochloric acid regeneration plant production mode means operation under conditions that result in production of usable regenerated acid or iron oxide.

Hydrochloric acid storage vessel means a stationary vessel used for the bulk containment of virgin or regenerated hydrochloric acid.

Responsible maintenance official means a person designated by the owner or operator as having the knowledge and the authority to sign records and reports required under this rule.

Specialty steel means a category of steel that includes silicon electrical, alloy, tool, and stainless steels.

Spray tower means an enclosed vertical tower in which acid pickling solution is sprayed onto moving steel strip in multiple vertical passes.

Steel pickling means the chemical removal of iron oxide mill scale that is formed on steel surfaces during hot rolling or hot forming of semi-finished steel products through contact with an aqueous solution of acid where such contact occurs prior to shaping or coating of the finished steel product. This definition does not include removal of light rust or scale from finished steel products or activation of the metal surface prior to plating or coating.

Steel pickling facility means any facility that operates one or more batch or continuous steel pickling lines.

§ 63.1157 Emission standards for existing sources.

(a) *Pickling lines.* No owner or operator of an existing affected continuous or batch pickling line at a steel pickling facility shall cause or allow to be discharged into the atmosphere from the affected pickling line:

(1) Any gases that contain HCl in a concentration in excess of 18 parts per million by volume (ppmv); or

(2) HCl at a mass emission rate that corresponds to a collection efficiency of less than 97 percent.

§ 63.1158 Emission standards for new or reconstructed sources.

(a) *Pickling lines*—(1) *Continuous pickling lines.* No owner or operator of a new or reconstructed affected continuous pickling line at a steel pickling facility shall cause or allow to be discharged into the atmosphere from the affected pickling line:

(i) Any gases that contain HCl in a concentration in excess of 6 ppmv; or

(ii) HCl at a mass emission rate that corresponds to a collection efficiency of less than 99 percent.

§ 63.1159 Operational and equipment standards for existing, new, or reconstructed sources.

(b) *Hydrochloric acid storage vessels.* The owner or operator of an affected vessel shall provide and operate, except during loading and unloading of acid, a closed-vent system for each vessel. Loading and unloading shall be conducted either through enclosed lines or each point where the acid is exposed to the atmosphere shall be equipped with a local fume capture system, ventilated through an air pollution control device.

§ 63.1160 Compliance dates and maintenance requirements.

(a) *Compliance dates.* (1) The owner or operator of an affected existing steel pickling facility and/or hydrochloric acid regeneration plant subject to this subpart shall achieve initial compliance with the requirements of this subpart no later than June 22, 2001.

(2) The owner or operator of a new or reconstructed steel pickling facility and/or hydrochloric acid regeneration plant subject to this subpart that commences construction or reconstruction after September 18, 1997, shall achieve compliance with the requirements of this subpart immediately upon startup of operations or by June 22, 1999, whichever is later.

(b) *Maintenance requirements.* (1) The owner or operator of an affected source shall comply with the operation and maintenance requirements prescribed under §63.6(e) of subpart A of this part.

(2) In addition to the requirements specified in paragraph (b)(1) of this section, the owner or operator shall prepare an operation and maintenance plan for each emission control device to be implemented no later than the compliance date. The plan shall be incorporated by reference into the source's title V permit. All such plans must be consistent with good maintenance practices and, for a scrubber emission control device, must at a minimum:

(i) Require monitoring and recording the pressure drop across the scrubber once per shift while the scrubber is operating in order to identify changes that may indicate a need for maintenance;

(ii) Require the manufacturer's recommended maintenance at the recommended intervals on fresh solvent pumps, recirculating pumps, discharge pumps, and other liquid pumps, in addition to exhaust system and scrubber fans and motors associated with those pumps and fans;

(iii) Require cleaning of the scrubber internals and mist eliminators at intervals sufficient to prevent buildup of solids or other fouling;

(iv) Require an inspection of each scrubber at intervals of no less than 3 months with:

(A) Cleaning or replacement of any plugged spray nozzles or other liquid delivery devices;

(B) Repair or replacement of missing, misaligned, or damaged baffles, trays, or other internal components;

(C) Repair or replacement of droplet eliminator elements as needed;

(D) Repair or replacement of heat exchanger elements used to control the temperature of fluids entering or leaving the scrubber; and

(E) Adjustment of damper settings for consistency with the required air flow.

(v) If the scrubber is not equipped with a viewport or access hatch allowing visual inspection, alternate means of inspection approved by the Administrator may be used.

(vi) The owner or operator shall initiate procedures for corrective action within 1 working day of detection of an operating problem and complete all corrective actions as soon as practicable. Procedures to be initiated are the applicable actions that are specified in the maintenance plan. Failure to initiate or provide appropriate repair, replacement, or other corrective action is a violation of the maintenance requirement of this subpart.

(vii) The owner or operator shall maintain a record of each inspection, including each item identified in paragraph (b)(2)(iv) of this section, that is signed by the responsible maintenance official and that shows the date of each inspection, the problem identified, a description of the repair, replacement, or other corrective action taken, and the date of the repair, replacement, or other corrective action taken.

§ 63.1161 Performance testing and test methods.

(a) *Demonstration of compliance.* The owner or operator shall conduct an initial performance test for each process or emission control device to determine and demonstrate compliance with the applicable emission limitation according to the requirements in §63.7 of subpart A of this part and in this section.

(1) Following approval of the site-specific test plan, the owner or operator shall conduct a performance test for each process or control device to either measure simultaneously the mass flows of HCl at the inlet and the outlet of the control device (to determine compliance with the applicable collection efficiency standard) or measure the concentration of HCl (and Cl_2 for hydrochloric acid regeneration plants) in gases exiting the process or the emission control device (to determine compliance with the applicable emission concentration standard).

(2) Compliance with the applicable concentration standard or collection efficiency standard shall be determined by the average of three consecutive runs or by the average of any three of four consecutive runs. Each run shall be conducted under conditions representative of normal process operations.

(3) Compliance is achieved if either the average collection efficiency as determined by the HCl mass flows at the control device inlet and outlet is greater than or equal to the applicable collection efficiency standard, or the average measured concentration of HCl or Cl_2 exiting the process or the emission control device is less than or equal to the applicable emission concentration standard.

(b) *Establishment of scrubber operating parameters.* During the performance test for each emission control device, the owner or operator using a wet scrubber to achieve compliance shall establish site-specific operating parameter values for the minimum scrubber makeup water flow rate and, for scrubbers that operate with recirculation, the minimum recirculation water flow rate. During the emission test, each operating parameter must be monitored continuously and recorded with sufficient frequency to establish a representative average value for that parameter, but no less frequently than once every 15 minutes. The owner or operator shall determine the operating parameter monitoring values as the averages of the values recorded during any of the runs for which results are used to establish the emission concentration or collection efficiency per paragraph (a)(2) of this section. An owner or operator may conduct multiple performance tests to establish alternative compliant operating parameter values. Also, an owner or operator may reestablish compliant operating parameter values as part of any performance test that is conducted subsequent to the initial test or tests.

(d) *Test methods.* (1) The following test methods in appendix A of 40 CFR part 60 shall be used to determine compliance under §63.1157(a), §63.1157(b), §63.1158(a), and §63.1158(b) of this subpart:

(i) Method 1, to determine the number and location of sampling points, with the exception that no traverse point shall be within one inch of the stack or duct wall;

(ii) Method 2, to determine gas velocity and volumetric flow rate;

(iii) Method 3, to determine the molecular weight of the stack gas;

(iv) Method 4, to determine the moisture content of the stack gas; and

(v) Method 26A, “Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources—Isokinetic Method,” to determine the HCl mass flows at the inlet and outlet of a control device or the concentration of HCl discharged to the atmosphere, and also to determine the concentration of Cl_2 discharged to the atmosphere from acid regeneration plants. If compliance with a collection efficiency standard is being demonstrated, inlet and outlet measurements shall be performed simultaneously. The minimum sampling time for each run shall be 60 minutes and the minimum sample volume 0.85 dry standard cubic meters (30 dry standard cubic feet). The concentrations of HCl and Cl_2 shall be calculated for each run as follows:

$C_{HCl}(ppmv) = 0.659\ C_{HCl}(mg/dscm)$,

and $C_{C12}(ppmv) = 0.339\ C_{C12}(mg/dscm)$,

where C(ppmv) is concentration in ppmv and C(mg/dscm) is concentration in milligrams per dry standard cubic meter as calculated by the procedure given in Method 26A.

(2) The owner or operator may use equivalent alternative measurement methods approved by the Administrator.

§ 63.1162 Monitoring requirements.

(a) The owner or operator of a new, reconstructed, or existing steel pickling facility or acid regeneration plant subject to this subpart shall:

(1) Conduct performance tests to measure the HCl mass flows at the control device inlet and outlet or the concentration of HCl exiting the control device according to the procedures described in §63.1161 of this subpart. Performance tests shall be conducted either annually or according to an alternative schedule that is approved by the applicable permitting authority, but no less frequently than every 2 1/2 years or twice per title V permit term. If any performance test shows that the HCl emission limitation is being exceeded, then the owner or operator is in violation of the emission limit.

(2) In addition to conducting performance tests, if a wet scrubber is used as the emission control device, install, operate, and maintain systems for the measurement and recording of the scrubber makeup water flow rate and, if required, recirculation water flow rate. These flow rates must be monitored continuously and recorded at least once per shift while the scrubber is operating. Operation of the wet scrubber with excursions of scrubber makeup water flow rate and recirculation water flow rate less than the minimum values established during the performance test or tests will require initiation of corrective action as specified by the maintenance requirements in §63.1160(b)(2) of this subpart.

(3) If an emission control device other than a wet scrubber is used, install, operate, and maintain systems for the measurement and recording of the appropriate operating parameters.

(4) Failure to record each of the operating parameters listed in paragraph (a)(2) of this section is a violation of the monitoring requirements of this subpart.

(5) Each monitoring device shall be certified by the manufacturer to be accurate to within 5 percent and shall be calibrated in accordance with the manufacturer's instructions but not less frequently than once per year.

(6) The owner or operator may develop and implement alternative monitoring requirements subject to approval by the Administrator.

(c) The owner or operator of an affected hydrochloric acid storage vessel shall inspect each vessel semiannually to determine that the closed-vent system and either the air pollution control device or the enclosed loading and unloading line, whichever is applicable, are installed and operating when required.

§ 63.1163 Notification requirements.

(a) *Initial notifications.* As required by §63.9(b) of subpart A of this part, the owner or operator shall submit the following written notifications to the Administrator:

(2) As required by §63.9(b)(2) of subpart A of this part, the owner or operator of an affected source that has an initial startup before June 22, 1999, shall notify the Administrator that the source is subject to the requirements of the standard. The notification shall be submitted not later than October 20, 1999 (or within 120 calendar days after the source becomes subject to this standard), and shall contain the information specified in §§63.9(b)(2)(i) through 63.9(b)(2)(v) of subpart A of this part.

(3) As required by §63.9(b)(3) of subpart A of this part, the owner or operator of a new or reconstructed affected source, or a source that has been reconstructed such that it is an affected source, that has an initial startup after the effective date and for which an application for approval of construction or reconstruction is not required under §63.5(d) of subpart A of this part, shall notify the Administrator in writing that the source is subject to the standards no later than 120 days after initial startup. The notification shall contain the information specified in §§63.9(b)(2)(i) through 63.9(b)(2)(v) of subpart A of this part, delivered or postmarked with the notification required in §63.9(b)(5) of subpart A of this part.

(4) As required by §63.9(b)(4) of subpart A of this part, the owner or operator of a new or reconstructed major affected source that has an initial startup after June 22, 1999, and for which an application for approval of construction or reconstruction is required under §63.5(d) of subpart A of this part shall provide the information specified in §§63.9(b)(4)(i) through 63.9(b)(4)(v) of subpart A of this part.

(5) As required by §63.9(b)(5) of subpart A of this part, the owner or operator who, after June 22, 1999, intends to construct a new affected source or reconstruct an affected source subject to this standard, or reconstruct a source such that it becomes an affected source subject to this standard, shall notify the Administrator, in writing, of the intended construction or reconstruction.

(b) *Request for extension of compliance.* As required by §63.9(c) of subpart A of this part, if the owner or operator of an affected source cannot comply with this standard by the applicable compliance date for that source, or if the owner or operator has installed BACT or technology to meet LAER consistent with §63.6(i)(5) of subpart A of this part, he/she may submit to the Administrator (or the State with an approved permit program) a request for an extension of compliance as specified in §§63.6(i)(4) through 63.6(i)(6) of subpart A of this part.

(c) *Notification that source is subject to special compliance requirements.* As required by §63.9(d) of subpart A of this part, an owner or operator of a new source that is subject to special compliance requirements as specified in §§63.6(b)(3) and 63.6(b)(4) of subpart A of this part shall notify the Administrator of his/her compliance obligations not later than the notification dates established in §63.9(b) of subpart A of this part for new sources that are not subject to the special provisions.

(d) *Notification of performance test.* As required by §63.9(e) of subpart A of this part, the owner or operator of an affected source shall notify the Administrator in writing of his or her intention to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin, to allow the Administrator to review and approve the site-specific test plan required under §63.7(c) of subpart A of this part and, if requested by the Administrator, to have an observer present during the test.

(e) *Notification of compliance status.* The owner or operator of an affected source shall submit a notification of compliance status as required by §63.9(h) of subpart A of this part when the source becomes subject to this standard.

§ 63.1164 Reporting requirements.

(a) *Reporting results of performance tests.* As required by §63.10(d)(2) of subpart A of this part, the owner or operator of an affected source shall report the results of any performance test as part of the notification of compliance status required in §63.1163 of this subpart.

(b) *Progress reports.* The owner or operator of an affected source who is required to submit progress reports under §63.6(i) of subpart A of this part shall submit such reports to the Administrator (or the State with an approved permit program) by the dates specified in the written extension of compliance.

(c) *Periodic startup, shutdown, and malfunction reports.* Section 63.6(e) of subpart A of this part requires the owner or operator of an affected source to operate and maintain each affected emission source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the level required by the standard at all times, including during any period of startup, shutdown, or malfunction. Malfunctions must be corrected as soon as practicable after their occurrence in accordance with the startup, shutdown, and malfunction plan.

(1) *Plan.* As required by §63.6(e)(3) of subpart A of this part, the owner or operator shall develop and implement a written startup, shutdown, and malfunction plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, or malfunction, and a program of corrective action for malfunctioning process and air pollution control equipment used to comply with the relevant standard.

(2) *Reports.* As required by §63.10(d)(5)(i) of subpart A of this part, if actions taken by an owner or operator during a startup, shutdown, or malfunction of an affected source (including actions taken to correct a malfunction) are consistent with the procedures specified in the startup, shutdown, and malfunction plan, the owner or operator shall state such information in a semiannual report. The report, to be certified by the owner or operator or other responsible official, shall be submitted semiannually and delivered or postmarked by the 30th day following the end of each calendar half; and

(3) *Immediate Reports.* Any time an action taken by an owner or operator during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) is not consistent with the procedures in the startup, shutdown, and malfunction plan, the owner or operator shall comply with all requirements of §63.10(d)(5)(ii) of subpart A of this part.

§ 63.1165 Recordkeeping requirements.

(a) *General recordkeeping requirements.* As required by §63.10(b)(2) of subpart A of this part, the owner or operator shall maintain records for 5 years from the date of each record of:

(1) The occurrence and duration of each startup, shutdown, or malfunction of operation (i.e., process equipment);

(2) The occurrence and duration of each malfunction of the air pollution control equipment;

(3) All maintenance performed on the air pollution control equipment;

(4) Actions taken during periods of startup, shutdown, and malfunction and the dates of such actions (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) when these actions are different from the procedures specified in the startup, shutdown, and malfunction plan;

(5) All information necessary to demonstrate conformance with the startup, shutdown, and malfunction plan when all actions taken during periods of startup, shutdown, and malfunction (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) are consistent with the procedures specified in such plan. This information can be recorded in a checklist or similar form (see §63.10(b)(2)(v) of subpart A of this part);

(6) All required measurements needed to demonstrate compliance with the standard and to support data that the source is required to report, including, but not limited to, performance test measurements (including initial and any subsequent performance tests) and measurements as may be necessary to determine the conditions of the initial test or subsequent tests;

(7) All results of initial or subsequent performance tests;

(8) If the owner or operator has been granted a waiver from recordkeeping or reporting requirements under §63.10(f) of subpart A of this part, any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements;

(9) If the owner or operator has been granted a waiver from the initial performance test under §63.7(h) of subpart A of this part, a copy of the full request and the Administrator's approval or disapproval;

(10) All documentation supporting initial notifications and notifications of compliance status required by §63.9 of subpart A of this part; and

(11) Records of any applicability determination, including supporting analyses.

(b) *Subpart CCC records.* (1) In addition to the general records required by paragraph (a) of this section, the owner or operator shall maintain records for 5 years from the date of each record of:

(i) Scrubber makeup water flow rate and recirculation water flow rate if a wet scrubber is used;

(ii) Calibration and manufacturer certification that monitoring devices are accurate to within 5 percent; and

(iii) Each maintenance inspection and repair, replacement, or other corrective action.

(3) The owner or operator shall keep the written operation and maintenance plan on record after it is developed to be made available for inspection, upon request, by the Administrator for the life of the affected source or until the source is no longer subject to the provisions of this subpart. In addition, if the operation and maintenance plan is revised, the owner or operator shall keep previous (i.e., superseded) versions of the plan on record to be made available for inspection by the Administrator for a period of 5 years after each revision to the plan.

(c) *Recent records.* General records and subpart CCC records for the most recent 2 years of operation must be maintained on site. Records for the previous 3 years may be maintained off site.

Table 1 to Subpart CCC of Part 63—Applicability of General Provisions (40 CFR Part 63, Subpart A) to Subpart CCC

Reference	Applies to Subpart CCC	Explanation
63.1-63.5	Yes.	
63.6 (a)-(g)	Yes.	
63.6 (h)	No	Subpart CCC does not contain an opacity or visible emission standard.
63.6 (i)-(j)	Yes.	
63.7-63.9	Yes.	
63.10 (a)-(c)	Yes.	
63.10 (d) (1)-(2)	Yes.	
63.10 (d)(3)	No	Subpart CCC does not contain an opacity or visible emission standard.
63.10 (d) (4)-(5)	Yes.	
63.10 (e)-(f)	Yes.	
63.11	No	Subpart CCC does not require the use of flares.
63.12-63.15	Yes	

D.16.15 One Time Deadlines Relating to National Emission Standards for Hazardous Air Pollutants for Steel Pickling, HCl Process Facilities, and Hydrochloric Acid Regeneration Plants [40 CFR Part 63, Subpart CCC]

(a) The Permittee must conduct the initial performance tests within 60 days after achieving maximum production rate, but no later than 180 days after start-up.

(b) The Permittee must submit a notification of compliance status report for pickle line PL1 no later than October 20, 1999.

(c) The Permittee must submit a notification of compliance status report for pickle line PL2 no later than 120 days after initial startup.

SECTION D.17 FACILITY OPERATION CONDITIONS

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

COLD MILL – COLD REVERSING MILL 1 AND COLD MILL BOILER (CMB #1)

(y) Cold Reversing Mill 1, identified as EU-09, constructed in 1988, with a maximum capacity of 250 tons/hour. Emulsion oil is sprayed on the strip, controlled by hoods mounted on both sides of the mill stand and exhausting**,** through collision mist eliminators at a design flow rate of 84,000 acf/min and 0.01 gr/dscf, to stack S-32.

(z) One (1) natural gas fueled Cold Mill Boiler, identified as CMB#1, constructed in 1988, with a heat input capacity of 34 MMBtu per hour, with emissions uncontrolled and exhausting to stack S-19. The boiler uses propane as a backup fuel.

Under 40 CFR Part 63, Subpart DDDDD, this unit is considered an existing boiler in the large gaseous fuel subcategory.

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

(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.17.1 Cold Reversing Mill 1 PSD BACT Limit [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-16823-00038, issued November 21, 2003, the Permittee shall comply with the following BACT requirements:

(a) The Cold Reversing Mill 1 (EU-09) shall not exceed its annual maximum capacity of 2,190,000 tons per twelve (12) consecutive month period with compliance demonstrated at the end of each month.

(b) The VOC emissions from the Cold Reversing Mill 1 (EU-09) shall not exceed 0.06 lb/ton of steel.

(c) The Cold Reversing Mill 1 shall comply with the following existing requirements specified in PSD 107-2764-00038, issued November 30, 1993:

(1) PM and PM_{10} emissions from the Cold Reversing Mill 1 (EU-09) shall be captured by hoods mounted on both sides of the mill stand and evacuated to a panel-type media packed collision mist eliminator and filter prior to venting to the atmosphere.

(2) Filterable PM and filterable PM_{10} emissions shall not exceed 0.01 gr/dscf, 7.2 pounds per hour, and 31.5 tons per year.

(3) The emissions from the Cold Reversing Mill 1 (EU-09) shall not exceed 5 percent opacity. Compliance with this condition shall be determined using 40 CFR 60 Appendix A, Method 9 and 326 IAC 5-1.

D.17.2 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the Cold Reversing Mill 1 (EU-09) shall not exceed 61.0 pounds per hour when operating at a process weight rate of 250 tons per hour.

The pounds per hour limitation was calculated with 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

D.17.3 Cold Mill Boiler (CMB #1) PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2 and PSD SSM 107-16823-00038, issued November 21, 2003, the Permittee shall comply with the following BACT requirements once CMB #1 is modified as permitted by that approval:

(1) The Cold Mill Boiler (CMB #1) shall use pipeline natural gas as primary fuel and propane as back up fuel.

(2) The Cold Mill Boiler (CMB #1) shall be equipped and operated with low NO_x burners.

(3) The NO_x emissions from Cold Mill Boiler (CMB #1) shall not exceed 0.035 lb/MMBtu.

(4) The CO emissions from Cold Mill Boiler (CMB #1) shall not exceed 0.061 lb/MMBtu.

(5) The VOC emissions from Cold Mill Boiler (CMB #1) shall not exceed 0.0026 lb/MMBtu.

(6) The SO_2 emissions from Cold Mill Boiler (CMB #1) shall not exceed 0.0006 lb/MMBtu.

(7) The filterable and condensible PM_{10} emissions from Cold Mill Boiler (CMB #1) shall not exceed 0.0076 lb/MMBtu.

(8) The filterable PM emissions from Cold Mill Boiler (CMB #1) shall not exceed 0.0019 lb/MMBtu.

(9) Good combustion shall be practiced.

(b) Pursuant to PSD 107-2764-00038, issued November 30, 1993 and 326 IAC 2-2, the Permittee shall comply with the following BACT requirements for the Cold Mill Boiler (CMB #1) until it is modified as permitted by PSD SSM 107-16823-00038, issued November 21, 2003:

(1) The emissions shall not exceed 5 percent opacity. Compliance with this condition shall be determined using 40 CFR 60 Appendix A, Method 9 and 326 IAC 5-1.

(2) The Cold Mill Boiler (CMB #1) shall only use natural gas.

(3) The heat input shall not exceed 34.0 MMBtu per hour.

(4) PM/PM10 emissions shall not exceed 3.0 pounds per million cubic feet of natural gas burned, 0.1 pounds per hour and 0.4 tons per year.

(5) NOx emissions shall be controlled by the use of staged combustion low NOx burners, or their equivalent, and shall not exceed 200 pounds per million cubic feet of natural gas burned, 6.8 pounds per hour and 29.8 tons per year.

(6) CO emissions shall not exceed 35.0 pounds per million cubic feet of natural gas burned, 1.2 pounds per hour and 5.2 tons per year.

(7) VOC emissions shall not exceed 2.8 pounds per million cubic feet of natural gas burned, 0.1 pounds per hour and 0.4 tons per year.

D.17.4 Particulate Matter Emission Limitations for Sources of Indirect Heating [326 IAC 6-2-4]

Pursuant to 326 IAC 6-2-3, the particulate matter (PM) from the 34.0 MMBtu per hour heat input Cold Mill boiler (CMB #1) shall be limited to 0.368 pounds per MMBtu heat input.

This limitation is based on the following equation:

$Pt = 1.09 / Q^{0.26}$ where Pt = Pounds of particulate matter emitted per million Btu (lb/MMBtu) heat input, and

Q = Total source maximum operating capacity rating in million Btu per hour (MMBtu per hour) heat input.

D.17.5 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan (PMP) of this permit, is required for the facilities and control devices listed in this section.

D.17.6 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 boiler CMB #1, except when otherwise specified in 40 CFR Part 60, Subpart Dc.

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

D.17.7 Mist Eliminators [326 IAC 2-2]

Pursuant to PSD SSM 107-16823-00038, issued November 21, 2003, the mist eliminators for particulate control shall be in operation and control emissions at all times that Cold Reversing Mill 1 (EU-09) is in operation.

D.17.8 Natural Gas Fuel [326 IAC 2-2]

Pursuant to PSD SSM 107-16823-00038, issued November 21, 2003, and as revised by this Part 70 permit, boiler CMB #1 shall use only natural gas that is a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions. Natural gas contains 20.0 grains or less of total sulfur per 100 standard cubic feet. Additionally, natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 Btu per standard cubic foot. Natural gas does not include the following gaseous fuels: landfill gas, digester gas, refinery gas, sour gas, blast furnace gas, coal-derived gas, producer gas, coke oven gas, or any gaseous fuel produced in a process which might result in highly variable sulfur content or heating value.

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

D.17.9 Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19] [40 CFR Part 60, Subpart Dc]

(a) To document compliance with Condition D.17.1, the Permittee shall maintain monthly records of steel production.

(b) Pursuant to 40 CFR 60.48c(g), and to document compliance with Condition D.17.3, the Permittee shall keep daily records of the fuel used by boiler CMB # 1.

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

D.17.10 Reporting Requirements

A quarterly report of the information needed to document compliance with Condition D.17.1(a) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting form located at the end of this permit, or its equivalent, within 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.18 FACILITY OPERATION CONDITIONS

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

COLD MILL – COLD MILL BOILER (CMB#2)

(aa) One (1) natural gas fueled Cold Mill Boiler (CMB #2), identified as EU-19, with a heat input capacity of 40 MMBtu per hour, with emissions exhausting to stack S-23. Propane is used as a back-up fuel. The Cold Mill Boiler (CMB #2) is approved for construction in 2007.

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

(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.18.1 Cold Mill Boiler PSD BACT Limit [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), the Permittee shall comply with the following BACT requirements for the 40.0 MMBtu/hr Cold Mill Boiler (CMB #2):

(a) The Cold Mill Boiler (CMB #2) shall use pipeline natural gas as primary fuel and propane as back up fuel.

(b) The Cold Mill Boiler (CMB #2) shall be equipped and operated with low NO_x burners.

(c) The NO_x emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.035 lb/MMBtu.

(d) The CO emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.061 lb/MMBtu.

(e) The VOC emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.0026 lb/MMBtu.

(f) The SO_2 emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.0006 lb/MMBtu.

(g) The filterable and condensible PM_{10} emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.0076 lb/MMBtu.

(h) The filterable PM emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.0076 lb/MMBtu.

(i) Good combustion shall be practiced.

D.18.2 Particulate Matter Emission Limitations for Sources of Indirect Heating [326 IAC 6-2-4]

(a) Pursuant to 326 IAC 6-2-4, the particulate matter (PM) from the 40.0 MMBtu per hour heat input Cold Mill boiler CMB #2 shall be limited to 0.283 pounds per MMBtu heat input.

This limitation is based on the following equation:

$Pt = 1.09 / Q^{0.26}$ where Pt = Pounds of PM emitted per million Btu (lb/MMBtu) heat input, and

Q = Total source maximum operating capacity rating in million Btu per hour (MMBtu per hour) heat input.

D.18.3 Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units [40 CFR Part 63, Subpart Dc]

Pursuant to 40 CFR 60, Subpart Dc, the Permittee shall comply with the requirements specified in E.1 for the Cold Mill Boiler (CMB #2) rated at 40.0 MMBtu/hr.

D.18.4 Preventive Maintenance Plan (PMP) [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B – Preventive Maintenance Plan (PMP), of this permit, is required for the facility listed in this section.

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

D.18.5 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11] [326 IAC 2-2]

Within sixty (60) days after achieving maximum capacity but no later than one hundred and eighty (180) days after initial startup of the Cold Mill Boiler (CMB #2) in this SECTION D.18, the Permittee shall conduct performance tests to measure the NOx, CO, VOC, SO2, PM and PM10 emissions, utilizing methods as approved by the Commissioner. PM-10 includes filterable and condensible PM-10. NOx, CO, VOC, SO2, PM and PM10 emissions tests shall be repeated at least once every two and half (2.5) years from the date of the most recent valid compliance demonstration.

D.18.6 Natural Gas Fuel [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), the Permittee shall use pipeline natural gas that is a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions, and which is provided by the supplier through a pipeline.

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

SECTION D.19 FACILITY OPERATION CONDITIONS

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

COLD MILL – REVERSING AND TEMPERING (R/T) MILL

(bb) Reversing and Tempering (R/T) Mill, (previously known as Temper Mill), identified as EU-14, constructed in 1995, with a maximum capacity of 250 tons of steel per hour, with emulsion oil sprayed on the strip, and controlled by hoods mounted on both sides of the mill stand and a fabric filter, exhausting through a panel-type collision mist eliminators to stack S-22. The panel-type collision mist eliminator has a design flow rate of 84,000 acf/min and an outlet grain loading of 0.01 gr/dscf. Note: This mill can reverse and temper. The mist eliminators operate as controls only when the mill is operating as a cold reversing mill.

(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.19.1 Reversing and Tempering (R/T) Mill PSD BACT [326 IAC 2-2]

Pursuant to PSD SSM 107-16823-00038, issued November 21, 2003, and 326 IAC 2-2, the Permittee shall comply with the following BACT requirements:

(a) The R/T Mill shall not exceed its annual maximum capacity of 2,190,000 tons per twelve (12) consecutive month period, with compliance determined at the end of each month on a rolling 12-month basis.

(b) This R/T Mill is allowed to reverse and temper.

(c) The VOC emissions from the R/T Mill shall not exceed 0.06 lb/ton.

(d) The visible emissions from the R/T Mill stack shall not exceed 5% opacity, based on a 6-minute average.

(e) The R/T Mill shall comply with the following requirements specified in PSD 107-3702-00038, issued March 28, 1995:

(1) When reversing, PM and PM10 emissions from the R/T Mill shall be captured by hoods mounted on both sides of the mill stand and evacuated to a panel-type media packed collision mist eliminator and filter prior to venting to the atmosphere.

(2) When reversing, filterable PM and PM_{10} shall not exceed 0.01 gr/dscf, 7.2 pounds per hour, and 31.5 tons per year.

D.19.2 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the R/T Mill shall not exceed 61.0 pounds per hour when operating at a process weight rate of 250 tons per hour.

The pounds per hour limitation was calculated with 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

D.19.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

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

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

D.19.4 Mist Eliminators [326 IAC 2-2]

Pursuant to PSD SSM 107-16823-00038, issued November 21, 2003, the mist eliminators for particulate control shall be in operation and control emissions at all times that the R/T Mill is in operation as a cold reversing mill.

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

D.19.5 Record Keeping Requirements

(a) The Permittee shall maintain monthly records of the amount of steel processed in the R/T Mill.

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

D.19.6 Reporting Requirements

A quarterly report of the information needed to document compliance with Condition D.19.1(a) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting form located at the end of this permit, or its equivalent, within 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.20 FACILITY OPERATION CONDITIONS

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

COLD MILL – ALKALINE CLEANING STATION

(cc) Alkali Cleaning at the Galvanizing line with mist eliminator as control. Emissions are exhausted to stack #510. The Alkaline Cleaning Station has a capacity of 140 tons of steel per hour.

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

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

D.20.1 Alkali Cleaning PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-16823-00038, issued November 21, 2003, the Permittee shall comply with the following BACT requirements:

(a) The Galvanizing Line Alkaline Cleaning station shall be controlled by mist eliminators and the PM emissions shall not exceed 0.003 gr/dscf.

(b) Visible emissions from the Galvanizing Line Alkaline Cleaning station stack shall not exceed 10% opacity, based on a 6-minute average.

(c) Good operating practices shall be observed.

D.20.2 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the Galvanizing Line Alkaline Cleaning Station shall not exceed 54.7 pounds per hour when operating at a process weight rate of 140 tons per hour.

The pounds per hour limitation was calculated with 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

D.20.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the Galvanizing Line Alkaline Cleaning Station and the mist eliminators.

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

D.20.4 Mist Eliminators [326 IAC 2-2]

Pursuant to PSD SSM 107-16823-00038, issued November 21, 2003, the mist eliminators for particulate control shall be in operation and control emissions at all times that the Galvanizing Line Alkaline Cleaning Station is in operation.

SECTION D.21 FACILITY OPERATION CONDITIONS

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

COLD MILL – ANNEALING FURNACES

(dd1) Eighteen (18) natural gas-fueled batch Annealing Furnaces, identified as EU-03, constructed in 2001. Each has a heat input capacity of 4.8 MMBtu per hour and a maximum throughput capacity of 200 tons of steel per hour. Emissions are uncontrolled and exhaust to roof vent (S-26).

(dd2) One (1) natural gas-fired annealing furnace, identified as AN-19, approved for construction in 2007, with a heat input capacity of 4.8 MMBtu per hour and a maximum throughput capacity of 200 tons of steel per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to roof vent (S-26).

(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.21.1 Annealing Furnace PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the eighteen (18) batch annealing furnaces identified as EU-03 and constructed in 2001 shall comply with the following BACT requirements:

(a) Each batch annealing furnace shall be equipped and operated with low NO_x burners.

(b) The NO_x emissions from each annealing furnace shall not exceed 0.10 lb/MMBtu.

(c) The CO emissions from each annealing furnace shall not exceed 0.084 lb/MMBtu.

(d) The annealing furnaces shall use natural gas as primary fuel and may utilize propane as a back up fuel.

D.21.2 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from each of the nineteen (19) annealing furnaces in the Cold Mill shall not exceed 58.5 pounds per hour when operating at a process weight rate of 200 tons per hour.

The pounds per hour limitation was calculated with 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

D.21.3 PSD Limit [326 IAC 2-2]

The input of propane to annealing furnace AN-19, combined with the input of propane to emission units LP #4, LP #7, TD #3, MD #1, MD #2, LDS #1, LP #1, LP #2, LP #3, and LP #5 (permitted in Section D.34) shall be limited to less than 1,089 thousand gallons of propane (LPG) per twelve consecutive month period, with compliance determined at the end of each month. NOx emissions shall not exceed 0.208 pounds per MMBtu when burning propane.

Compliance with this limit will ensure that the potential to emit from the modification performed under SSM 107-23609-00038 is less than forty (40) tons of NOx per year and will render the requirements of 326 IAC 2-2 (PSD) not applicable.

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

D.21.4 Vendor Certification

The Permittee shall submit the vendor guarantees for the above-mentioned batch annealing furnace which is yet to be installed to demonstrate compliance with Operation Conditions D.23.1(a), (b), and (c).

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

D.21.5 Record Keeping Requirements

(a) To document compliance with Condition D.21.3, the Permittee shall maintain records of the actual quantity of propane (LPG) used in annealing furnace AN-19. Records shall be taken monthly and shall be complete and sufficient to establish compliance with the limit established in Condition D.21.3. Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.

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

D.21.6 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.21.3 shall be submitted to the addresses listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within 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.22 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – COLD MILL – QUALITY CONTROL/REWIND INSPECTION LINE

Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(h) The unwinding and rewinding of steel coil for quality control inspections.

(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.22.1 Particulate [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), the allowable particulate emission rate from the Quality Control/Rewind Inspection Line shall not exceed 46.3 pounds per hour when operating at a process weight rate of 60 tons per hour.

The pounds per hour limitation was calculated with 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

SECTION D.23 FACILITY OPERATION CONDITIONS

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

COLD MILL – ACID REGENERATION

(ee) Acid Regeneration system, identified as EU-04, constructed in 1989, consisting of two natural gas fueled tangentially fired burners with a maximum rating of 5.6 MMBtu per hour, and an absorber and cyclone with emissions controlled by its own counter flow packed scrubber (identified as AR scrubber) with mist eliminator exhausting to stack S-31. The counter flow-packed scrubber has a design flow rate of 4,269 acf/min and loading of 0.04 gr/dscf. Propane is used as back up fuel.

Under 40 CFR Part 63, Subpart CCC, this unit is considered an existing acid regeneration plant.

(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.23.1 Acid Regeneration PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD SSM 107-24348-00038, the acid regeneration system (EU-04) shall comply with the following BACT limits:

(a) The two (2) tangentially fired burners shall burn natural gas as primary fuel and propane as back up fuel.

(b) The gas shall be cleaned in a cyclone, absorber, and a counter flow-packed scrubber prior to being vented to the atmosphere through the exhaust fan and stack.

(c) PM and PM_{10} emissions shall be limited to 7.6 pounds per million cubic feet of natural gas burned, 0.04 pounds per hour and 0.19 tons per year.

(d) NO_x emissions shall be limited to 100 pounds per million cubic feet of natural gas burned, 0.56 pounds per hour, and 2.45 tons per year.

(e) CO emissions shall be limited to 84 pounds per million cubic feet of natural gas burned, 0.47 pounds per hour, and 2.06 tons per year.

(f) Volatile organic compound emissions shall be limited to 5.5 pounds per million cubic feet of natural gas burned, 0.31 pounds per hour, and 1.35 tons per year.

(g) Visible emissions from the acid regeneration scrubber/control system shall not exceed 5% opacity, based on a 6-minute average.

D.23.2 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the acid regeneration system (EU-04) shall not exceed 11.6 pounds per hour when operating at a process weight rate of 4.75 tons per hour.

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the following equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour, and
P = process weight rate in tons per hour

D.23.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the acid regeneration system (EU-04) and its control devices.

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

D.23.4 Scrubber Operation

Pursuant to PSD 107-2764-00038, issued November 30, 1993, the counter flow-packed scrubber shall be in operation and control emissions at all times that the acid regeneration system (EU-04) is in operation.

D.23.5 Testing Requirements [326 IAC 2-7-6(1),(6)][40 CFR Part 63, Subpart CCC][326 IAC 20]

(a) Pursuant to 40 CFR Part 63, Subpart CCC, and PSD 107-16823-00038, issued November 21, 2003, the Permittee shall perform testing to measure the HCl and Cl_2 concentrations utilizing methods specified in 40 CFR Part 63, Subpart CCC or other methods as approved by the Commissioner. The testing shall be performed no later than November 4, 2006.

(b) Any stack which has multiple processes which exhaust to the same stack shall operate all of the processes simultaneously in accordance with 326 IAC 3-5 (Source Sampling Procedures).

(c) These tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

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

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

D.23.6 Scrubber Monitoring

(a) The Permittee shall continuously monitor the flow rate of the scrubbing liquid and record the flow rate as a 3-hour average. For the purposes of this condition, continuously means no less often than once per minute. When for any one reading, the flow rate is below the minimum of 80 gallons per minute or the minimum established during the latest stack test, the Permittee shall take reasonable steps in accordance with Section C - Response to Excursions or Exceedances. A flow rate reading that is below the above mentioned minimum is not a deviation from this permit. Failure to take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(b) The instruments used for determining the 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 a year.

D.23.7 Scrubber Detection

In the event that a scrubber malfunction has been observed:

Failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions). Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

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

D.23.8 Record Keeping Requirements

(a) To document compliance with Conditions D.23.6 and D.23.7, the Permittee shall maintain records of:

(1) The continuous flow rate records (on a 3-hour average basis) for the scrubber.

(2) Documentation of all reasonable response steps implemented for every flow rate reading outside of the normal range.

(b) To document compliance with Condition D.23.3, the Permittee shall maintain records of any additional inspections prescribed by the Operation, Maintenance, and Monitoring (OMM) Plan.

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

D.23.9 General Provisions Relating to NESHAP [326 IAC 20-1] [40 CFR Part 63, Subpart A]

Pursuant to 40 CFR 63.1155, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 20-1-1, for the Acid Regeneration system, identified as EU-04, as specified in Appendix A of 40 CFR Part 63, Subpart CCC in accordance with schedule in 40 CFR Part 63, Subpart CCC.

D.23.10 National Emissions Standards for Hazardous Air Pollutants for Steel Pickling-HCl Process Facilities and Hydrochloric Acid Regeneration Plants [40 CFR Part 63, Subpart CCC]

Pursuant to 40 CFR Part 63, Subpart CCC, the Acid Regeneration system, identified as EU-04, shall comply with the following provisions:

§ 63.1159 Operational and equipment standards for existing, new, or reconstructed sources.

(a) *Hydrochloric acid regeneration plant.* The owner or operator of an affected plant must operate the affected plant at all times while in production mode in a manner that minimizes the proportion of excess air fed to the process and maximizes the process offgas temperature consistent with producing usable regenerated acid or iron oxide.

§ 63.1160 Compliance dates and maintenance requirements.

(a) *Compliance dates.* (1) The owner or operator of an affected existing steel pickling facility and/or hydrochloric acid regeneration plant subject to this subpart shall achieve initial compliance with the requirements of this subpart no later than June 22, 2001.

(b) *Maintenance requirements.* (1) The owner or operator of an affected source shall comply with the operation and maintenance requirements prescribed under §63.6(e) of subpart A of this part.

(2) In addition to the requirements specified in paragraph (b)(1) of this section, the owner or operator shall prepare an operation and maintenance plan for each emission control device to be implemented no later than the compliance date. The plan shall be incorporated by reference into the source's title V permit. All such plans must be consistent with good maintenance practices and, for a scrubber emission control device, must at a minimum:

(i) Require monitoring and recording the pressure drop across the scrubber once per shift while the scrubber is operating in order to identify changes that may indicate a need for maintenance;

(ii) Require the manufacturer's recommended maintenance at the recommended intervals on fresh solvent pumps, recirculating pumps, discharge pumps, and other liquid pumps, in addition to exhaust system and scrubber fans and motors associated with those pumps and fans;

(iii) Require cleaning of the scrubber internals and mist eliminators at intervals sufficient to prevent buildup of solids or other fouling;

(iv) Require an inspection of each scrubber at intervals of no less than 3 months with:

(A) Cleaning or replacement of any plugged spray nozzles or other liquid delivery devices;

(B) Repair or replacement of missing, misaligned, or damaged baffles, trays, or other internal components;

(C) Repair or replacement of droplet eliminator elements as needed;

(D) Repair or replacement of heat exchanger elements used to control the temperature of fluids entering or leaving the scrubber; and

(E) Adjustment of damper settings for consistency with the required air flow.

(v) If the scrubber is not equipped with a viewport or access hatch allowing visual inspection, alternate means of inspection approved by the Administrator may be used.

(vi) The owner or operator shall initiate procedures for corrective action within 1 working day of detection of an operating problem and complete all corrective actions as soon as practicable. Procedures to be initiated are the applicable actions that are specified in the maintenance plan. Failure to initiate or provide appropriate repair, replacement, or other corrective action is a violation of the maintenance requirement of this subpart.

(vii) The owner or operator shall maintain a record of each inspection, including each item identified in paragraph (b)(2)(iv) of this section, that is signed by the responsible maintenance official and that shows the date of each inspection, the problem identified, a description of the repair, replacement, or other corrective action taken, and the date of the repair, replacement, or other corrective action taken.

(3) The owner or operator of each hydrochloric acid regeneration plant shall develop and implement a written maintenance program. The program shall require:

(i) Performance of the manufacturer's recommended maintenance at the recommended intervals on all required systems and components;

(ii) Initiation of procedures for appropriate and timely repair, replacement, or other corrective action within 1 working day of detection; and

(iii) Maintenance of a daily record, signed by a responsible maintenance official, showing the date of each inspection for each requirement, the problems found, a description of the repair, replacement, or other action taken, and the date of repair or replacement.

§ 63.1161 Performance testing and test methods.

(a) *Demonstration of compliance.* The owner or operator shall conduct an initial performance test for each process or emission control device to determine and demonstrate compliance with the applicable emission limitation according to the requirements in §63.7 of subpart A of this part and in this section.

(1) Following approval of the site-specific test plan, the owner or operator shall conduct a performance test for each process or control device to either measure simultaneously the mass flows of HCl at the inlet and the outlet of the control device (to determine compliance with the applicable collection efficiency standard) or measure the concentration of HCl (and Cl_2 for hydrochloric acid regeneration plants) in gases exiting the process or the emission control device (to determine compliance with the applicable emission concentration standard).

(2) Compliance with the applicable concentration standard or collection efficiency standard shall be determined by the average of three consecutive runs or by the average of any three of four consecutive runs. Each run shall be conducted under conditions representative of normal process operations.

(3) Compliance is achieved if either the average collection efficiency as determined by the HCl mass flows at the control device inlet and outlet is greater than or equal to the applicable collection efficiency standard, or the average measured concentration of HCl or Cl_2 exiting the process or the emission control device is less than or equal to the applicable emission concentration standard.

(b) *Establishment of scrubber operating parameters.* During the performance test for each emission control device, the owner or operator using a wet scrubber to achieve compliance shall establish site-specific operating parameter values for the minimum scrubber makeup water flow rate and, for scrubbers that operate with recirculation, the minimum recirculation water flow rate. During the emission test, each operating parameter must be monitored continuously and recorded with sufficient frequency to establish a representative average value for that parameter, but no less frequently than once every 15 minutes. The owner or operator shall determine the operating parameter monitoring values as the averages of the values recorded during any of the runs for which results are used to establish the emission concentration or collection efficiency per paragraph (a)(2) of this section. An owner or operator may conduct multiple performance tests to establish alternative compliant operating parameter values. Also, an owner or operator may reestablish compliant operating parameter values as part of any performance test that is conducted subsequent to the initial test or tests.

(c) *Establishment of hydrochloric acid regeneration plant operating parameters.* (1) During the performance test for hydrochloric acid regeneration plants, the owner or operator shall establish site-specific operating parameter values for the minimum process offgas temperature and the maximum proportion of excess air fed to the process as described in §63.1162(b)(1) of this subpart. During the emission test, each operating parameter must be monitored and recorded with sufficient frequency to establish a representative average value for that parameter, but no less frequently than once every 15 minutes for parameters that are monitored continuously. Amount of iron in the spent pickle liquor shall be determined for each run by sampling the liquor every 15 minutes and analyzing a composite of the samples. The owner or operator shall determine the compliant monitoring values as the averages of the values recorded during any of the runs for which results are used to establish the emission concentration per paragraph (a)(2) of this section. An owner or operator may conduct multiple performance tests to establish alternative compliant operating parameter values. Also, an owner or operator may reestablish compliant operating parameter values as part of any performance test that is conducted subsequent to the initial test or tests.

(2) During this performance test, the owner or operator of an existing affected plant may establish an alternative concentration standard if the owner or operator can demonstrate to the Administrator's satisfaction that the plant cannot meet a concentration limitation for Cl_2 of 6 ppmv when operated within its design parameters. The alternative concentration standard shall be established through performance testing while the plant is operated at maximum design temperature and with the minimum proportion of excess air that allows production of iron oxide of acceptable quality while measuring the Cl_2 concentration in the process exhaust gas. The measured concentration shall be the concentration standard for that plant.

(d) *Test methods.* (1) The following test methods in appendix A of 40 CFR part 60 shall be used to determine compliance under §63.1157(a), §63.1157(b), §63.1158(a), and §63.1158(b) of this subpart:

(i) Method 1, to determine the number and location of sampling points, with the exception that no traverse point shall be within one inch of the stack or duct wall;

(ii) Method 2, to determine gas velocity and volumetric flow rate;

(iii) Method 3, to determine the molecular weight of the stack gas;

(iv) Method 4, to determine the moisture content of the stack gas; and

(v) Method 26A, "Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources—Isokinetic Method," to determine the HCl mass flows at the inlet and outlet of a control device or the concentration of HCl discharged to the atmosphere, and also to determine the concentration of Cl_2 discharged to the atmosphere from acid regeneration plants. If compliance with a collection efficiency standard is being demonstrated, inlet and outlet measurements shall be performed simultaneously. The minimum sampling time for each run shall be 60 minutes and the minimum sample volume 0.85 dry standard cubic meters (30 dry standard cubic feet). The concentrations of HCl and Cl_2 shall be calculated for each run as follows:

C_{HCl}(ppmv) = 0.659 C_{HCl}(mg/dscm),

and C_{C12}(ppmv) = 0.339 C_{C12}(mg/dscm),

where C(ppmv) is concentration in ppmv and C(mg/dscm) is concentration in milligrams per dry standard cubic meter as calculated by the procedure given in Method 26A.

(2) The owner or operator may use equivalent alternative measurement methods approved by the Administrator.

§ 63.1162 Monitoring requirements.

(a) The owner or operator of a new, reconstructed, or existing steel pickling facility or acid regeneration plant subject to this subpart shall:

(1) Conduct performance tests to measure the HCl mass flows at the control device inlet and outlet or the concentration of HCl exiting the control device according to the procedures described in §63.1161 of this subpart. Performance tests shall be conducted either annually or according to an alternative schedule that is approved by the applicable permitting authority, but no less frequently than every 2 1/2 years or twice per title V permit term. If any performance test shows that the HCl emission limitation is being exceeded, then the owner or operator is in violation of the emission limit.

(2) In addition to conducting performance tests, if a wet scrubber is used as the emission control device, install, operate, and maintain systems for the measurement and recording of the scrubber makeup water flow rate and, if required, recirculation water flow rate. These flow rates must be monitored continuously and recorded at least once per shift while the scrubber is operating. Operation of the wet scrubber with excursions of scrubber makeup water flow rate and recirculation water flow rate less than the minimum values established during the performance test or tests will require initiation of corrective action as specified by the maintenance requirements in §63.1160(b)(2) of this subpart.

(3) If an emission control device other than a wet scrubber is used, install, operate, and maintain systems for the measurement and recording of the appropriate operating parameters.

(4) Failure to record each of the operating parameters listed in paragraph (a)(2) of this section is a violation of the monitoring requirements of this subpart.

(5) Each monitoring device shall be certified by the manufacturer to be accurate to within 5 percent and shall be calibrated in accordance with the manufacturer's instructions but not less frequently than once per year.

(6) The owner or operator may develop and implement alternative monitoring requirements subject to approval by the Administrator.

(b) The owner or operator of a new, reconstructed, or existing acid regeneration plant subject to this subpart shall also install, operate, and maintain systems for the measurement and recording of the:

(1) Process offgas temperature, which shall be monitored continuously and recorded at least once every shift while the facility is operating in production mode; and

(2) Parameters from which proportion of excess air is determined. Proportion of excess air shall be determined by a combination of total air flow rate, fuel flow rate, spent pickle liquor addition rate, and amount of iron in the spent pickle liquor, or by any other combination of parameters approved by the Administrator in accordance with §63.8(f) of subpart A of this part. Proportion of excess air shall be determined and recorded at least once every shift while the plant is operating in production mode.

(3) Each monitoring device must be certified by the manufacturer to be accurate to within 5 percent and must be calibrated in accordance with the manufacturer's instructions but not less frequently than once per year.

(4) Operation of the plant with the process offgas temperature lower than the value established during performance testing or with the proportion of excess air greater than the value established during performance testing is a violation of the operational standard specified in §63.1159(a) of this subpart.

(c) The owner or operator of an affected hydrochloric acid storage vessel shall inspect each vessel semiannually to determine that the closed-vent system and either the air pollution control device or the enclosed loading and unloading line, whichever is applicable, are installed and operating when required.

§ 63.1163 Notification requirements.

(a) *Initial notifications.* As required by §63.9(b) of subpart A of this part, the owner or operator shall submit the following written notifications to the Administrator:

(2) As required by §63.9(b)(2) of subpart A of this part, the owner or operator of an affected source that has an initial startup before June 22, 1999, shall notify the Administrator that the source is subject to the requirements of the standard. The notification shall be submitted not later than October 20, 1999 (or within 120 calendar days after the source becomes subject to this standard), and shall contain the information specified in §§63.9(b)(2)(i) through 63.9(b)(2)(v) of subpart A of this part.

(b) *Request for extension of compliance.* As required by §63.9(c) of subpart A of this part, if the owner or operator of an affected source cannot comply with this standard by the applicable compliance date for that source, or if the owner or operator has installed BACT or technology to meet LAER consistent with §63.6(i)(5) of subpart A of this part, he/she may submit to the Administrator (or the State with an approved permit program) a request for an extension of compliance as specified in §§63.6(i)(4) through 63.6(i)(6) of subpart A of this part.

(c) *Notification that source is subject to special compliance requirements.* As required by §63.9(d) of subpart A of this part, an owner or operator of a new source that is subject to special compliance requirements as specified in §§63.6(b)(3) and 63.6(b)(4) of subpart A of this part shall notify the Administrator of his/her compliance obligations not later than the notification dates established in §63.9(b) of subpart A of this part for new sources that are not subject to the special provisions.

(d) *Notification of performance test.* As required by §63.9(e) of subpart A of this part, the owner or operator of an affected source shall notify the Administrator in writing of his or her intention to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin, to allow the Administrator to review and approve the site-specific test plan required under §63.7(c) of subpart A of this part and, if requested by the Administrator, to have an observer present during the test.

(e) *Notification of compliance status.* The owner or operator of an affected source shall submit a notification of compliance status as required by §63.9(h) of subpart A of this part when the source becomes subject to this standard.

§ 63.1164 Reporting requirements.

(a) *Reporting results of performance tests.* As required by §63.10(d)(2) of subpart A of this part, the owner or operator of an affected source shall report the results of any performance test as part of the notification of compliance status required in §63.1163 of this subpart.

(b) *Progress reports.* The owner or operator of an affected source who is required to submit progress reports under §63.6(i) of subpart A of this part shall submit such reports to the Administrator (or the State with an approved permit program) by the dates specified in the written extension of compliance.

(c) *Periodic startup, shutdown, and malfunction reports.* Section 63.6(e) of subpart A of this part requires the owner or operator of an affected source to operate and maintain each affected emission source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the level required by the standard at all times, including during any period of startup, shutdown, or malfunction. Malfunctions must be corrected as soon as practicable after their occurrence in accordance with the startup, shutdown, and malfunction plan.

(1) *Plan.* As required by §63.6(e)(3) of subpart A of this part, the owner or operator shall develop and implement a written startup, shutdown, and malfunction plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, or malfunction, and a program of corrective action for malfunctioning process and air pollution control equipment used to comply with the relevant standard.

(2) *Reports.* As required by §63.10(d)(5)(i) of subpart A of this part, if actions taken by an owner or operator during a startup, shutdown, or malfunction of an affected source (including actions taken to correct a malfunction) are consistent with the procedures specified in the startup, shutdown, and malfunction plan, the owner or operator shall state such information in a semiannual report. The report, to be certified by the owner or operator or other responsible official, shall be submitted semiannually and delivered or postmarked by the 30th day following the end of each calendar half; and

(3) *Immediate Reports.* Any time an action taken by an owner or operator during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) is not consistent with the procedures in the startup, shutdown, and malfunction plan, the owner or operator shall comply with all requirements of §63.10(d)(5)(ii) of subpart A of this part.

§ 63.1165 Recordkeeping requirements.

(a) *General recordkeeping requirements.* As required by §63.10(b)(2) of subpart A of this part, the owner or operator shall maintain records for 5 years from the date of each record of:

(1) The occurrence and duration of each startup, shutdown, or malfunction of operation (i.e., process equipment);

(2) The occurrence and duration of each malfunction of the air pollution control equipment;

(3) All maintenance performed on the air pollution control equipment;

(4) Actions taken during periods of startup, shutdown, and malfunction and the dates of such actions (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) when these actions are different from the procedures specified in the startup, shutdown, and malfunction plan;

(5) All information necessary to demonstrate conformance with the startup, shutdown, and malfunction plan when all actions taken during periods of startup, shutdown, and malfunction (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) are consistent with the procedures specified in such plan. This information can be recorded in a checklist or similar form (see §63.10(b)(2)(v) of subpart A of this part);

(6) All required measurements needed to demonstrate compliance with the standard and to support data that the source is required to report, including, but not limited to, performance test measurements (including initial and any subsequent performance tests) and measurements as may be necessary to determine the conditions of the initial test or subsequent tests;

(7) All results of initial or subsequent performance tests;

(8) If the owner or operator has been granted a waiver from recordkeeping or reporting requirements under §63.10(f) of subpart A of this part, any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements;

(9) If the owner or operator has been granted a waiver from the initial performance test under §63.7(h) of subpart A of this part, a copy of the full request and the Administrator's approval or disapproval;

(10) All documentation supporting initial notifications and notifications of compliance status required by §63.9 of subpart A of this part; and

(11) Records of any applicability determination, including supporting analyses.

(b) *Subpart CCC records.* (1) In addition to the general records required by paragraph (a) of this section, the owner or operator shall maintain records for 5 years from the date of each record of:

(i) Scrubber makeup water flow rate and recirculation water flow rate if a wet scrubber is used;

(ii) Calibration and manufacturer certification that monitoring devices are accurate to within 5 percent; and

(iii) Each maintenance inspection and repair, replacement, or other corrective action.

(2) The owner or operator of an acid regeneration plant shall also maintain records for 5 years from the date of each record of process offgas temperature and parameters that determine proportion of excess air.

(3) The owner or operator shall keep the written operation and maintenance plan on record after it is developed to be made available for inspection, upon request, by the Administrator for the life of the affected source or until the source is no longer subject to the provisions of this subpart. In addition, if the operation and maintenance plan is revised, the owner or operator shall keep previous (i.e., superseded) versions of the plan on record to be made available for inspection by the Administrator for a period of 5 years after each revision to the plan.

(c) *Recent records.* General records and subpart CCC records for the most recent 2 years of operation must be maintained on site. Records for the previous 3 years may be maintained off site.

Table 1 to Subpart CCC of Part 63—Applicability of General Provisions (40 CFR Part 63, Subpart A) to Subpart CCC

Reference	Applies to Subpart CCC	Explanation
63.1-63.5	Yes.	
63.6 (a)-(g)	Yes.	
63.6 (h)	No	Subpart CCC does not contain an opacity or visible emission standard.
63.6 (i)-(j)	Yes.	
63.7-63.9	Yes.	
63.10 (a)-(c)	Yes.	
63.10 (d) (1)-(2)	Yes.	
63.10 (d)(3)	No	Subpart CCC does not contain an opacity or visible emission standard.
63.10 (d) (4)-(5)	Yes.	
63.10 (e)-(f)	Yes.	
63.11	No	Subpart CCC does not require the use of flares.
63.12-63.15	Yes	

D.23.11 One Time Deadlines Relating to National Emission Standards for Hazardous Air Pollutants for Steel Pickling, HCl Process Facilities, and Hydrochloric Acid Regeneration Plants [40 CFR Part 63, Subpart CCC]

(a) The Permittee must conduct the initial performance tests within 60 days after achieving maximum production rate, but no later than 180 days after start-up.

(b) The Permittee must submit a notification of compliance status report for pickle line PL1 no later than October 20, 1999.

SECTION D.24 FACILITY OPERATION CONDITIONS

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

COLD MILL – GALVANIZING LINE

(ff) Thirty six (36) Main Burners, identified as PHB #1 – PHB #36, constructed in 1992, and modified in 2002, input capacity of 1.622 MMBtu per hour each, and three (3) Auxiliary Burners, each with a heat input capacity of 0.1 MMBtu per hour in the preheat furnace section of the galvanizing line using natural gas rated at maximum total capacity of 58.7 MMBtu per hour. The main burners exhaust to stack S-27. The three (3) Auxiliary Burners exhaust to the atmosphere. The NOx emissions are controlled by a Selective Catalytic Reduction/Selective Non-Catalytic Reduction (SCR/SNCR) Systems. Exhausts to roof ventilation. The galvanizing line has an electric static oiler. A continuous emissions monitor (CEM) is used to monitor NOx emissions.

(gg) Additional burners as follows:

(1) Forty four (44) Burners, identified as RB#1 – RB#44, constructed in 2002, each with a heat input capacity of 0.323 MMBtu per hour in radiant tube section with a maximum total capacity of 14.2 MMBtu per hour and option to replace non-conforming burners. The NOx emissions are controlled by SCR System. Exhausts to stack S-27. The SCR/SNCR and SCR systems shall be referred to collectively as the SCR/SNCR system.

(2) One (1) auxiliary burner with a maximum heat input of 3.2 MMBtu/hr in the Alkaline Cleaning Section. The burner is natural gas fired and use propane as backup.

(3) Two (2) auxiliary burners with a maximum heat input of 1.5 MMBtu/hr each in the Strip Dryer Section. The burners are natural gas fired and use propane as backup.

(4) Four (4) auxiliary burners with a maximum heat input of 0.052 MMBtu/hr each in the Pot Roll Heater. The burners are natural gas fired and use propane as backup.

(5) Two (2) emergency burners with a maximum heat input of 0.58 MMBtu/hr each in the Zinc Pot Section. The burners are natural gas fired and use propane as backup.

(6) Two (2) auxiliary burners with a maximum heat input of 0.013 MMBtu/hr each in the Preheat open end burners section. The burners are natural gas fired and use propane as backup.

The SCR/SNCR and SCR systems shall be referred to collectively as the SCR/SNCR system.

(hh) One (1) Zinc Coating pot, identified as ZP#1, constructed in 1992, with a maximum capacity of 140 tons of steel per hour, uncontrolled and exhausting to the atmosphere.

(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.24.1 Nitrogen Oxides (NOx) – PSD BACT [326 IAC 2-2-3]

(a) Pursuant to 326 IAC 2-2-3, Agreed Order 2000-8861-A, and PSD SSM 107-14297-00038, issued June 6, 2002, the total nitrogen oxide(s) (NOx) emissions from the 36 Main Burners, each at 1.622 MMBtu per hour and 3 Auxiliary Burners, each at 0.1 MMBtu per hour in the preheat furnace section of the galvanizing line shall not exceed 2.9 pounds per hour which is equivalent to 50 pounds per million standard cubic feet of natural gas used on a twenty four (24) operating hour block average.

(b) Pursuant to 326 IAC 2-2-3, Agreed Order 2000-8861-A, and PSD SSM 107-14297-00038, issued June 6, 2002, the total nitrogen oxide(s) (NOx) emissions from the 44 Burners, each at 0.323 MMBtu per hour in the radiant tube section of the galvanizing line shall not exceed 2.8 pounds per hour which is equivalent to 200 pounds per million standard cubic feet of natural gas used on a twenty four (24) operating hour block average.

(c) During the Startup and Shutdown period, the SCR/SNCR operations are exempt from complying with the above limits for this duration. The Permittee shall not produce more than incidental product during the Startup and Shutdown period from the Galvanizing line.

(d) During the refractory lining drying period, the SCR/SNCR operations are exempt from complying with the above limits for this duration. The Permittee shall not produce more than incidental product during the refractory lining drying period from the Galvanizing line.

D.24.2 Particulate Matter (PM/PM-10) PSD BACT Limits [326 IAC 2-2-3]

(a) Pursuant to 326 IAC 2-2-3 and PSD SSM 107-14297-00038, issued June 6, 2002, the total PM and PM10 (where PM10 includes filterable and condensable components) emissions from the 36 Main Burners, each at 1.622 MMBtu per hour, and the 3 Auxiliary Burners, each at 0.1 MMBtu per hour in the preheat furnace section of the galvanizing line shall not exceed 1.9 and 7.6 pounds per million standard cubic feet of natural gas usage respectively and use good combustion practices.

(b) Pursuant to 326 IAC 2-2-3 and PSD SSM 107-14297-00038, issued June 6, 2002, the total PM and PM10 (where PM10 includes filterable and condensable components) emissions from the 44 Burners, each at 0.323 MMBtu per hour in the radiant tube section of the galvanizing line shall not exceed 1.9 and 7.6 pounds per million standard cubic feet of natural gas usage respectively and use good combustion practices.

(c) This limit in the permit accounts for PM10 emissions (where PM10 includes filterable and condensable components) from the combustion of natural gas only. The ammonia slip may cause elevated PM10 emissions. If in a latter stack test higher PM10 emissions are observed, the Permittee shall request for a review of this limit as part of the a new BACT evaluation.

D.24.3 Carbon Monoxide (CO) – PSD BACT [326 IAC 2-2-3]

Pursuant to 326 IAC 2-2-3 and PSD SSM 107-14297-00038, issued June 6, 2002, the CO emissions from the 36 Main Burners, each at 1.622 MMBtu per hour, the 3 Auxiliary Burners, each at 0.1 MMBtu per hour in the preheat furnace section, and 44 Burners, each at 0.323 MMBtu per hour in the radiant tube section of the galvanizing line shall not exceed 84 pounds per million standard cubic feet of natural gas usage using good combustion practices.

D.24.4 Volatile Organic Compounds (VOC) – PSD BACT [326 IAC 2-2-3]

Pursuant to 326 IAC 2-2-3 and PSD SSM 107-14297-00038, issued June 6, 2002, the VOC emissions from the 36 Main Burners, each at 1.622 MMBtu per hour, the 3 Auxiliary Burners, each at 0.1 MMBtu per hour in the preheat furnace section, and 44 Burners, each at 0.323 MMBtu per hour in the radiant tube section of the galvanizing line shall not exceed 5.5 pounds per million standard cubic feet of natural gas usage using good combustion practices.

D.24.5 Ammonia Limitations [326 IAC 2-1.1-5]

Pursuant to 326 IAC 2-1.1-5 and PSD SSM 107-14297-00038, issued June 6, 2002, the ammonia emissions from the galvanizing line SCR systems stack shall not exceed twenty-five (25) ppmvd corrected to 15% O_2.

D.24.6 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan, is required for the galvanizing line burners and their control device.

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

D.24.7 Nitrogen Oxides (NOx) [326 IAC 2-2-3]

Pursuant to 326 IAC 2-2-3, Agreed order 2000-8861-A, and PSD SSM 107-14297-00038, issued June 6, 2002, the SCR/SNCR on the preheat furnace and SCR on the radiant tube section of the Galvanizing line shall be in operation and control emissions from the burners at all times they are in operation. The SCR/SNCR systems shall be operated as recommended by the manufacturer to minimize the NOx emissions and ammonia slip.

D.24.8 Oxides of Nitrogen NOx (SCR operation) [326 IAC 2-2]

From the date of the valid stack test, which was March 9, 2001, during a startup, the Permittee shall start urea injection in the SCR/SNCR unit to control NOx emissions from the galvanizing line, as soon as the catalyst bed reaches 500^{o}F, the optimum catalyst temperature determined during the March 9, 2001 stack test.

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

D.24.9 Nitrogen Oxides (NOx) Emissions Monitoring [326 IAC 3-5] [326 IAC 7-2-1(g)]

Pursuant to 326 IAC 2-5.1-3 and 326 IAC 2-2:

(a) The Permittee shall install a continuous emissions monitoring system or alternative monitoring plan as allowed under the Clean Air Act and 326 IAC 3-5-1(d).

(b) The Permittee shall install, calibrate, certify, operate and maintain a continuous emissions monitoring system to monitor NOx emissions, in accordance with 326 IAC 3-5-2 through 326 IAC 3-5-7.

(1) The continuous emissions monitoring system (CEMS) shall measure the NOx emission rate in pounds per hour. The use of CEMS to measure and record the hourly NOx emission rates over a twenty-four (24) operating hour block averaging period is sufficient to demonstrate compliance with the limits established in the Conditions D.24.1(a) and D.24.1(b). The source shall maintain records of emission rates in pounds per hour.

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

(3) Relative accuracy tests and routine quarterly audits shall be performed in accordance with the contents of the standard operating procedures pursuant to 326 IAC 3-5-5.

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

(5) The source may submit to the OAQ alternative emission factors based on the source’s CEMS data (collected over one (1) season of operation; where a season is defined as the period of time from May 1 through September 30) and the corresponding site temperatures, to use in lieu of the vendor provided emission factors in instances of downtime. The alternative emissions factors must be approved by the OAQ prior to use in calculating emissions for the limitations established in this permit. The alternative emission factors shall be based upon collected monitoring and test data supplied from an approved continuous emissions monitoring system. In the event that the information submitted does not contain sufficient data to establish appropriate emission factors, the source shall continue to collect data until appropriate emission factors can be established.

Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]

D.24.10 Record Keeping Requirements

(a) To document compliance with Conditions D.24.1(a), D.24.1(b), and D.24.9, the Permittee shall maintain records of the continuous emission monitoring data in accordance with 326 IAC 3-5.

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

D.24.11 Reporting Requirements

The Permittee shall submit the following information on a quarterly basis:

(a) Records of excess NOx emissions (defined in 326 IAC 3-5-7 and 40 Part 60.7) from the continuous emissions monitoring system. These reports shall be submitted within thirty (30) calendar days following the end of each calendar quarter and in accordance with Section C – General Reporting Requirements of this permit.

(b) A quarterly summary of the CEMs data used to document compliance with Conditions D.24.1(a) and D,24.1(b) shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being reported.

SECTION D.25 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – WELDING

(i) The following equipment related to manufacturing activities not resulting in the emission of HAPs: brazing equipment, cutting torches, soldering equipment, welding equipment including the galvanizing line welder.

(j) Structural steel and bridge fabrication activities using 80 tons or less of welding consumables.

(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.25.1 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the brazing equipment, cutting torches, soldering equipment, welding equipment, and structural steel and bridge fabrication activities shall not exceed a pound per hour emission rate established as E in the following formula:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

or

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (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 is pounds per hour and
P = process weight rate in tons per hour

SECTION D.26 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – MISCELLANEOUS SHEARS AND SIDE TRIMMERS

Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(k) Various shears located at various sites throughout the facility.

(l) Three (3) side trimmers in total. The side trimmers are located at the skin pass mill and at both pickle lines. Various side trimmers located at various sites throughout the facility.

(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.26.1 Particulate [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the particulate emissions from the shears and side trimmers shall not exceed a pound per hour emission rate established as E in the following formula:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

or

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (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 is pounds per hour and
P = process weight rate in tons per hour

SECTION D.27 FACILITY OPERATION CONDITIONS

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

HOT STRIP MILL & TUNNEL FURNACE SYSTEM

(ii) The Hot Strip Mill, identified as HSM, constructed in 1989, with a maximum capacity of 502 tons/hour consisting of various rolling mill processes: Shearing, Descaling, Finishing, Rollout Table, Coilers, Skin Pass Mill and Roll Grinders. Parts of the Hot Mill Strip are controlled by water roll cooling.

(jj) Tunnel Furnace System, identified as EU-02, constructed in 1989, with a maximum capacity of 502 tons/hour, with a maximum total heat input capacity of 200 MMBtu per hour, emissions uncontrolled, tunnel furnace 1 exhausts to stack S13 and S14, tunnel furnace 2 exhausts to stack S15, and consisting of:

(1) Tunnel Furnace 1 – Natural gas fired with a heat input capacity of 84 MMBtu per hour. Tunnel Furnace 1 was constructed in 1989 as part of the original Tunnel Furnace System.

(2) Tunnel Furnace 2 – Natural gas fired with a heat input capacity of 84 MMBtu per hour. Tunnel Furnace 2 was constructed in 1994.

(3) Shuttle Furnaces 1 and 2 – Natural gas fired with a heat input capacity of 13 MMBtu per hour each using low NOx burners. Shuttle Furnaces 1 and 2 were constructed in 1994.

(4) Snub Furnace – Natural gas fired with a heat input capacity of 6 MMBtu per hour. The snub furnace was constructed in 1989 and modified in 1994.

(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.27.1 Hot Strip Mill PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD 107-2764-00038, issued on November 30, 1993, revised by PSD SSM 107-16823-00038, issued November 21, 2003, the Hot Strip Mill (HSM) shall comply with the following BACT requirements:

(a) The rolling mill in the Hot Strip Mill shall be operated using water roll cooling sprays with any PM, in solid or liquid form, collected in flumes and transported to the scale pit.

(b) PM and PM10 emissions from the Hot Strip Mill process shall be limited to 0 pound per hour.

(c) Fugitive emissions generated at the Hot Strip Mill shall not exceed 0% opacity when emitted from any roof monitor or building opening, based on a 6-minute average.

(d) The VOC emissions from the Hot Strip Mill (HSM) shall not exceed 0.06 lb/ton of steel produced.

D.27.2 Tunnel Furnace System PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD 107-3702-00038, issued March 28, 1995, tunnel furnaces No. 1 and No. 2, shuttle furnaces No. 1 and No. 2, and the snub furnace, shall comply with the following requirements:

(a) NOx emissions from tunnel furnaces No. 1 and No. 2 shall be limited to 190 pounds per million cubic feet of natural gas burned.

(b) NOx emissions from shuttle furnaces No. 1 and No. 2 shall be limited to 100 lbs per million cubic feet of natural gas burned.

(c) Tunnel furnaces No. 1 and No. 2, shuttle furnaces No. 1 and No. 2, and the snub furnace shall burn natural gas as primary fuel and propane as back up fuel.

(d) Shuttle furnaces No. 1 and No. 2 shall be equipped and operated with low NOx burners.

Pursuant to 326 IAC 2-2 and PSD 107-5235-00038, issued June 20, 1996, the snub furnace shall comply with the following requirements:

(a) The NOx emissions from the snub furnace shall be limited to 190 lbs per million cubic feet of natural gas burned.

(b) The snub furnace shall be equipped and operated with low NOx burners.

D.27.3 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the Tunnel Furnace System (EU-02) shall not exceed 69.0 pounds per hour when operating at a process weight rate of 502 tons per hour.

The pounds per hour limitation was calculated with 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

SECTION D.28 FACILITY OPERATION CONDITIONS

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

HOT STRIP MILL – ANNEALING FURNACES

(kk) Four (4) natural gas-fired annealing furnaces using propane as a backup fuel, identified as HM #1-HM #4, each with a maximum heat input capacity of 14.505 MMBtu per hour. Emissions are controlled by low NOx burners and exhaust to the atmosphere. HM#1 and HM#2 were installed in 2006. HM#3 and HM#4 were not installed yet.

(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.28.1 Nitrogen Oxides (NOx) [326 IAC 2-7-5]

Pursuant to 326 IAC 2-7-5, MSM 107-21527-00038, issued September 23, 2005, and MPM 107-21907-00038, issued May 24, 2006:

(a) The input of the natural gas to the annealing furnaces shall be limited to less than 501.3 million cubic feet of natural gas per 12 consecutive month period, with compliance determined at the end of each month. NOx emissions shall not exceed 0.098 lb NOx/MMBtu.

(b) For purposes of determining compliance with the fuel usage limit, 5.22 thousand gallons of propane (LPG) shall be equivalent to one million cubic feet of natural gas.

(c) When combusting propane, NOx emissions shall not exceed 0.208 lb NOx/MMBtu.

D.28.2 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from each annealing furnace (HM #1, HM #2, HM #3, and HM #4) in the Hot Mill shall not exceed 59.0 pounds per hour when operating at a process weight rate of 210 tons per hour each.

The pounds per hour limitation was calculated with 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

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

D.28.3 Record Keeping Requirements

(a) Actual type and quantity of fuel used (including gallons of propane, cubic feet of natural gas, and equivalent thousand gallons of propane LPG as million cubic feet of natural gas), since the last compliance determination period; and

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

D.28.4 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.28.1 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting form located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarterly period being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-1.1-1(1).

SECTION D.29 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – DEGREASING

(m) Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21) consisting of: Degreasing operations, identified as DG, with a maximum throughput greater than 145 gallons per 12 months, uncontrolled and exhausting to the atmosphere.

(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.29.1 Cold Cleaner Operation [326 IAC 8-3-2]

Pursuant to 326 IAC 8-3-2, the Permittee shall do the following with respect to unit DG:

(a) equip the cleaner with a cover;

(b) equip the cleaner with a facility for draining cleaned parts;

(c) close the degreaser cover whenever parts are not being handled in the cleaner;

(d) drain cleaned parts for at least fifteen (15) seconds or until dripping ceases;

(e) provide a permanent, conspicuous label summarizing the operating requirements;

(f) store waste solvent only in covered containers and not dispose of waste solvent or transfer it to another party, in such a manner that greater than twenty percent (20%) of the waste solvent (by weight) can evaporate to the atmosphere.

SECTION D.30 FACILITY OPERATION CONDITIONS

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

MELT SHOP – MATERIAL TRANSFER STATION

(ll) Material transfer station #1, located inside the building exhausting to general ventilation, which will service both the EAFs and the LMFs, used to transfer various types and grades of lime, carbon, foamy slag, scrap, scrap substitutes, and other alloys from rail cars. Railcars are unloaded to trucks, silos, or the meltshop alloy handling system. Identified as MT #1, constructed in 2003, and consisting of:

(1) Rail car bottom unloading through a rubber boot to a conveyor with emissions uncontrolled.

(2) One (1) totally enclosed conveyor, identified as MTC, constructed in 2003, with emissions controlled by a bin vent dust collector and exhausting to stack S-45.

(3) One (1) loading spout connected to the load truck with emissions uncontrolled.

(mm) Material transfer station #2, located outside the building and exhausting to the atmosphere, which services the EAFs and the LMFs, used to transfer various types and grades of lime, carbon, foamy slag, scrap, scrap substitutes, and other alloys from rail cars. Railcars are unloaded to trucks, silos, or the meltshop alloy handling system. Identified as MT #2, constructed in 2006, and consisting of:

(1) Ten (10) storage silos, each controlled by individual bin vent filters or the Meltshop EAF baghouses (1 and 2).

(2) One (1) rail unloading operation under a roof.

(3) One (1) truck dumping station enclosed by a three sided building.

(4) One (1) loader dumping station enclosed by a three sided building.

(5) Associated enclosed conveyors.

(6) Storage bins.

(7) Misc. feed equipment and controls.

(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.30.1 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the allowable particulate emission rate from the material transfer station (MT #1) shall not exceed 55.4 pounds per hour when operating at a process weight rate of 150 tons per hour. The pounds per hour limitation was 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

D.30.2 Particulate Control Equipment Operation [326 IAC 2-2]

Pursuant to 326 IAC 2-2 and PSD SSM 107-16823-00038, issued November 21, 2003, amended via 107-21611-00038 issued August 24, 2005, each silo shall be controlled by the Meltshop EAF Baghouses (1 and/or 2) or individual bin vent filters, with the following specifications: each bin vent filter will have an outlet grain loading of 0.01 grains per dry standard cubic foot.

D.30.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B – Preventive Maintenance Plan, of this permit, is required for the material transfer station (MT #1) and its control devices.

Compliance Determination Requirements

D.30.4 Particulate Control

(a) The bin vent dust collector for particulate control shall be in operation and control emissions from the totally enclosed conveyor (MTC) at all times that the MTC is in operation.

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

SECTION D.31 FACILITY OPERATION CONDITIONS

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

MELTSHOP– ELECTRIC ARC FURNACES, ARGON OXYGEN DECARBURIZATION (AOD) VESSELS, DESULFURIZATION, CONTINUOUS CASTERS, EAF DUST TREATMENT FACILITY

(nn) Two (2) Meltshop Electric Arc Furnaces (EAFs), identified as EAF #1 and EAF #2, constructed in 1989 and approved for modification in 2007 to replace the furnace bottoms. EAF #1 consists of three (3) co-jet oxyfuel burner/lance, each has a rated capacity of 6 megawatt constructed in 1989, and one (1) co-jet oxyfuel burner/lance, with rated capacity of 10 megawatt using oxygen, natural gas and propane as backup fuels, approved for construction in 2007. EAF #2 consists of three (3) co-jet oxyfuel burner/lance, each has a rated capacity of 6 megawatt constructed in 1989, and one (1) co-jet oxyfuel burner/lance, with rated capacity of 10 megawatt using oxygen, natural gas and propane as backup fuels, approved for construction in 2007. EAF #1 consists of three (3) carbon injectors with total maximum rated capacity of 1000 pounds per minute and EAF #2 consists of three (3) carbon injectors with total maximum rated capacity of 1000 pounds per minute constructed in 1989. Together the EAFs and the Argon Oxygen Decarburization (AOD) have a maximum capacity of 502 tons/hour, with emissions controlled by multi compartment reverse air type baghouses (identified as Meltshop EAF Baghouse1 and Meltshop EAF Baghouse2). In addition the EAFs have the following associated equipment:

(1) Seven (7) small charge buckets, five (5) buckets constructed in 1989 and two (2) charge buckets approved for construction in 2007.

(2) Three (3) additional large charge buckets used for single furnace charges on both EAFs, approved for construction in 2007.

(3) Twenty-five (25) EAFs ladles, twenty-one (21) constructed in 1989, four (4) ladles approved for construction in 2007.

(4) EAF charge handling currently utilizing two (2) overhead cranes with magnets and a conveyor to load charge buckets constructed in 1989 and approved for modification in 2007 with the addition of 2 new scrap cranes with magnetics, enhancement of existing cranes and/or magnetics, use of rail and/or truck dump and loader operations and the use of mobile cranes to load charge buckets in the scrap yard.

(5) Flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the EAFs constructed in 1989 and approved for modification in 2007 with the addition of bulk loading of material to the system in a three-sided building.

A continuous emission monitor (CEM) is used to monitor NOx, CO, and SO_2 emissions from the EAFs.

Under 40 CFR Part 60, Subpart AAa, these units are considered electric arc furnaces.

(1) The EAFs also utilize the following technologies:

(A) A direct shell evacuation (DSE) control system ("a fourth hole duct”),

(B) An overhead roof exhaust system consisting of canopy hoods,

(C) Oxy fuel burners, and

(2) Each or any combination of the Meltshop EAFs and AOD can independently produce the maximum capacity of 502 tons/hour of steel. Each Meltshop EAF can operate

SECTION D.31 FACILITY OPERATION CONDITIONS

concurrently or independently to achieve this maximum capacity.

(3) Both the Meltshop EAF Baghouse1 and Meltshop EAF Baghouse2 capture the emissions from the Meltshop EAFs, AOD vessel, Desulfurization, Meltshop Continuous Casters and other miscellaneous sources.

Each Meltshop Baghouse can sufficiently control emissions independently.

Each Meltshop EAF Baghouse serves as a back up control to the Meltshop LMFs.

(A) The Meltshop EAF Baghouse1 is a multi compartment positive pressure baghouse, has a design air flow rate of 1,527,960 actual cubic foot/min (acf/min) and an outlet PM loading of 0.0018 grains/dry standard cubic foot (gr/dscf).

This Meltshop EAF Baghouse1 exhausts to a roof vent/monitor identified as vent BH1.

(B) The Meltshop EAF Baghouse2 is a multi compartment positive pressure baghouse, has a design flow rate of 915,000 dscf/min and 1,200,000 acf/min and an outlet PM loading of 0.0018 gr/dscf.

This Meltshop EAF Baghouse2 exhausts to a stack identified as BH2.

(4) The fugitive emissions generated during the furnace operations are captured by the Meltshop Roof Canopies or contained within the Meltshop Building.

(5) The Meltshop roof monitors include exhausts from the ladle preheaters, ladle dryers, tundish preheaters, tundish dryers, ladle lancing station, tundish dumping, fugitive emissions from the LMFs, fugitive emissions from the Meltshop Casters and other Meltshop operations.

(oo) One (1) Argon oxygen decarburization (AOD) vessel, identified as AOD1, constructed in 1995, and approved for modification in 2007 with the addition of one (1) AOD vessel, identified as AOD2 with a capacity of 160 tons/hour, one (1) top lance for both AODs, rated at 300,000 cubic feet/hour of oxygen, and one (1) rebricking station. Together the AODs and the Meltshop EAFs have a total maximum capacity of 502 tons/hour, with emissions controlled by the Meltshop EAF Baghouse1 which exhausts to a roof vent/monitor identified as vent BH1, and Meltshop EAF Baghouse2 which exhausts to stack BH2. Only one (1) AOD vessel can operate at a time.

Under 40 CFR Part 60, Subpart AAa, these units are considered argon-oxygen decarburization vessels.

(pp) Desulfurization (DS) is an additional step in the Meltshop operations that remove sulfur. It has a maximum capacity of 502 tons of metal per hour.

(qq) Two (2) Meltshop Continuous Casters, identified as CC #1 and CC #2, CC #1 was constructed in 1989, CC #2 was constructed in 1994, with total maximum capacity of 502 tons/hour, with emissions controlled by the Meltshop EAF Baghouse1 identified as vent BH1 which exhausts to a roof vent/monitor or Meltshop EAF Baghouse2 which exhausts to stack BH2. The steam from the Meltshop Continuous Casters exhausts through stack S-11.

(rr) An EAF dust treatment facility, identified as DTF, constructed in 2004, with a capacity of 100,000 lb/hour, with emission control by bin vents for the silos, scrubber for dust treatment and baghouse for truck loading. Dust transfer will also occur inside the building.

Under 40 CFR Part 60, Subpart AAa, this unit is considered a dust handling system. Options for

SECTION D.31 FACILITY OPERATION CONDITIONS

the dust transfer are:

(1) from silo to truck through a loading spout,

(2) from silo to railcar through a loading spout,

(3) From silo to truck through a loading spout to transfer to the existing Meltshop EAF Baghouses. Unloading from the truck at the existing Meltshop EAF Baghouses also occurs in the building, transferring the dust through augers and a bucket elevator to the existing silo. In this option, the existing EAF dust treatment will have a maximum capacity of 100,000 lb/hr.

(4) Treating dust at the new silo and transferring to a truck. No loading spout is necessary because the material is no longer dusty, as treated.

The EAF dust treatment facility consists of the following:

(A) One (1) lime storage silo, identified as HRE #1, constructed in 1999, with a maximum capacity of 109 tons, emissions controlled by a bin vent filter, and exhausting to stack HR/E-2. Lime is pneumatically loaded to the silo at a maximum transfer rate of 40,000 pounds per hour.

(B) One (1) pugmill, identified as PM, constructed in 1999, with a maximum capacity of 100,000 pounds per hour, emissions controlled by one (1) cyclone in series with one (1) venture scrubber, and exhausting to stack HR/E-1. Lime is transferred to the pugmill via a screw conveyor system at a maximum transfer rate of 5,100 pounds per hour and EAF dust is transferred to the pugmill via gravity through an enclosed cone bottom loading spout at a maximum transfer rate of 100,000 pounds per hour.

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

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

D.31.1 Meltshop EAF Baghouses PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Permittee shall comply with the following BACT requirements:

(1) The Meltshop EAF Baghouses (1 and 2) shall capture and control the emissions from the Meltshop EAFs, AOD vessels, Desulfurization station, and Meltshop Continuous Casters (EAF #1, EAF #2, AODs, DS, CC #1, and CC #2).

(2) Steel production shall not exceed 4,397,520 tons of steel poured/tapped per 12-consecutive month period with compliance demonstrated at the end of each month.

(3) The total sulfur dioxide (SO_2) emissions from the Meltshop EAF Baghouses (1 and 2), controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall not exceed 0.25 pound per ton of steel produced and 125 pounds of SO_2 per hour, based on a 3-hour block average.

(4) The total nitrogen oxide (NO_x) emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall not exceed 0.35 pounds per ton of steel produced and 175.7 pounds of NO_x per hour.

(5) The total carbon monoxide (CO) emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall not exceed 2.0 pounds per ton of steel produced and 1,004 pounds of CO per hour, based on a 3-hour block average.

(6) The total volatile organic compound (VOC) emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall not exceed 0.09 pound per ton of steel produced and 45.18 pounds of VOC per hour, based on a 3-hour block average.

(7) Filterable particulate matter (PM) emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall not exceed 0.0018 grains/dscf.

(8) Filterable and condensible PM_{10} emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall not exceed 0.0052 grains/dscf.

(9) The visible emissions from each Meltshop EAF Baghouse shall not exceed 3% opacity, based on a 6-minute average.

(10) Visible emissions from the Meltshop Roof Monitors shall not exceed 5% opacity, based on a 6-minute average.

(11) Fugitive emissions generated at each EAF (EAF #1 and EAF #2) during each complete cycle from tap to tap shall not exceed 3% opacity when emitted from any roof monitor or building opening, based on a 6-minute average.

(12) Good working practices shall be observed such as following various tapping, melting and refining practices.

(b) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), the Permittee shall comply with the following BACT requirements:

(1) The Argon-Oxygen Decarburization (AOD) Dryout and Preheat Burner shall be limited as follows: 100 percent of all PM/PM10 fugitive emissions generated during the operation of the AOD Dryout and Preheat burner shall be captured by the roof canopy in the North Furnace Bay or contained and collected within the North Furnace Bay.

(2) The AOD Dryout and Preheat Burner is limited solely to the use of natural gas and limited to 20.0 million Btu per hour heat input.

(3) That all equipment consuming natural gas as the fuel source shall be limited to the use of a propane-air mixture as the alternative backup source.

(4) NOx emissions shall be limited to 140 pounds per million cubic feet of natural gas burned, 2.8 pounds per hour, and 12.3 tons per year.

D.31.2 Operational Flexibility [326 IAC 2-2]

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

(a) Each or any combination of the Meltshop EAFs and AOD (EAF #1, EAF #2, and AODs) may independently produce the maximum capacity of 502 tons/hour of steel. Each

Meltshop EAF can operate concurrently or independently to achieve this maximum capacity.

(b) Only 1 AOD vessel (AODs) shall operate at a time.

(c) Each Meltshop Baghouse can sufficiently control emissions independently.

(d) The Meltshop EAF Baghouses (1 and 2) can serve as back up to the Meltshop LMF Baghouse.

(e) The Meltshop Continuous Casters (CC #1 and CC #2) can cast molten steel either from the Meltshop LMFs, Castrip Vacuum Degasser or Castrip LMS.

D.31.3 Meltshop EAF Baghouses PM and Opacity [40 CFR 60.272a]

(a) Pursuant to 40 CFR 60.272a(a)(1), the particulate matter (PM) emissions from the Meltshop EAFs and AOD vessel, exhausting through the Meltshop EAF Baghouses (1 and 2), shall not exceed 0.0052 gr/dscf. Compliance is determined by using methods specified in 40 CFR 60, Subpart AAa or other methods as approved by the Commissioner.

(b) Pursuant to 40 CFR 60.272a(a)(2), the visible emissions from the Meltshop EAFs and AOD vessel, exhausting through the Meltshop EAF Baghouses (1 and 2), shall not exceed 3% opacity, based on a 6-minute average.

The opacity standard applies to each baghouse.

(c) Pursuant to 40 CFR 60.272a(a)(3), the visible opacity from the Meltshop operations, due solely to the operations of the Meltshop EAFs and AOD that are not exhausting to the Meltshop EAF Baghouses (1 and 2) shall not exceed 6% opacity , based on a 6-minute average.

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

D.31.4 Meltshop EAF PSD BACT for Metals [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Permittee shall comply with the following BACT requirements:

(a) The Lead emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall be limited to 0.00048 pound per ton of steel produced and 0.24 pound per hour, based on a 3-hour block average.

(b) The Mercury emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall be limited to 0.04 pound per hour, based on a 3-hour block average.

(c) The Beryllium emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall be limited to 0.002 pound per hour, based on a 3-hour block average.

(d) The Fluorides emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall be limited to 0.01 pound per ton of steel produced and 5.02 pounds per hour, based on a 3-hour block average.

The fluorides emissions from the EAFs shall be minimized by using granular Fluorspar, to minimize fluorides emissions and it shall be applied at a rate of 250 pounds/heat at each EAFs.

(e) The emissions from lead and mercury shall be minimized in accordance with the Scrap Management Program (SMP) and

(f) The emissions from the Meltshop EAFs/AODs, desulfurization station and two (2) Continuous Casters shall be controlled by a baghouse.

D.31.5 Meltshop EAF Dust and Alloy Handling/Treatment System PM and Opacity PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), the Permittee shall comply with the following BACT requirements:

(a) Visible emissions from the EAF Dust Handling System and the Treatment System (DTF) shall each not exceed 10% opacity, based on a 6-minute average.

(b) The AOD vessel alloy handling system emissions shall be captured by the Meltshop Roof Canopy.

D.31.6 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

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

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

D.31.7 Meltshop EAF PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), the Permittee shall comply with the following BACT requirements:

(a) Each EAF (EAF #1 and EAF #2) shall be equipped and operated with oxy fuel burners.

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

(c) VOC emissions shall be controlled through an extensive scrap management program. The Permittee shall implement the scrap management plan (SMP) attached to this permit in Appendix B.

(1) All grades of scrap charged to the furnaces shall not contain observable non-ferrous metals or non-metallics.

(2) All grades of scrap shall be free of excessive dirt, oil, and grease.

(3) Heavily oiled scrap shall not be used.

(d) Good working practices shall be observed.

D.31.8 Meltshop EAF Dust Handling System and Dust Treatment System PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), the Permittee shall comply with the following BACT requirements:

(a) The EAF Dust Handling System (DTF) shall be equipped with bin vents on the silos.

(b) The Dust Treatment System shall be equipped with a scrubber on the dust system and shall incorporate baghouse(s) for evacuation on the truck loading buildings**.**

(c) Options for the dust transfer are:

(1) from silo to truck through a loading spout,

(2) from silo to railcar through a loading spout,

(3) from silo to truck through a loading spout to transfer to the existing Meltshop EAF Baghouses. Unloading from the truck at the existing Meltshop EAF Baghouses also occurs in the building, transferring the dust through augers and a bucket elevator to the existing silo. In this option, the existing EAF dust treatment will have a maximum capacity of 100,000 lb/hr.

(4) treating dust at the new silo and transferring to a truck. No loading spout is necessary because the material is no longer dusty, as treated.

(d) Dust transfer shall occur inside the building.

D.31.9 Particulate Control Equipment Operation [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2, either or both the Meltshop EAF Baghouses (1 and 2) for particulate control shall be in operation and control emissions at all times that one or all of the EAFs, AOD vessel, Desulfurization station, and Meltshop Continuous Casters (EAF #1, EAF #2, AODs, DS, CC#1, and CC#2) are in operation.

(b) Pursuant to 326 IAC 2-2, the following particulate control shall be in operation and control emissions at all times when its corresponding process is in operation:

(1) bin vents for the silos,

(2) scrubber for dust treatment, and

(3) baghouse for truck loading building evacuation.

(c) Pursuant to 326 IAC 2-2, fugitive emissions generated during EAFs and AOD vessel operations (EAF #1, EAF #2, and AODs) shall be captured by the Meltshop roof canopies or contained and collected within the Meltshop EAF building.

D.31.10 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11][40 CFR 60.275a]

(a) Within sixty (60) days but no later than one hundred and eighty (180) days after the initial start up of the modified EAFs and AODs permitted in this PSD/SSM NO. 107-24348-00038, the Permittee shall conduct a performance test on the Meltshop EAF Baghouses (stack and vent), controlling the EAFs, AODs, Desulfurization Station, Continuous Caster and LMF EU-13 (c) for the following:

(1) Lead,

(2) Mercury,

(3) Fluorides

(4) Beryllium

The 2 Meltshop EAFs shall be operating simultaneously during the tests.

(b) Pursuant to 40 CFR 60.13(i)(1), for the Meltshop EAF Baghouse 2 stack, the Permittee shall determine either:

(1) the control system fan motor amperes and all damper positions;

(2) the volumetric flow rate through each separately ducted hood; or,

(3) the volumetric flow rate at the control device inlet and all damper positions.

During all compliance demonstration testing.

(c) Pursuant to 40 CFR 60.275a and to demonstrate compliance with Conditions D.31.1 and D.31.3, the Permitee shall conduct performance test within sixty (60) days but no later than one hundred and eighty (180) days after the initial start up of the modified EAFs and AODs permitted in this PSD/SSM NO. 107-24348-00038 for opacity on the following emission points utilizing 40 CFR Part 60, Appendix A, Method 9, or other methods as approved by the Commissioner:

(1) Meltshop EAF Baghouse1 roof monitor and Baghouse2 stack,

(2) Meltshop Roof monitor, and

(3) EAF Dust Handling System,

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

(e) The particulate testing shall utilized 40 CFR Part 60, Appendix A, Method 5, Method 201 or 201A, Method 202 or other methods as approved by the Commissioner.

(f) PM10 includes filterable and condensible PM10.

(g) The PM, PM10, VOC, Mercury, Fluorides, Beryllium and Lead tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

(h) Any stack which has multiple processes which exhaust to the same stack shall operate all of the processes simultaneously in accordance with 326 IAC 3-6 (Source Sampling Procedures) and 40 CFR 60.275a(b).

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

(j) Testing shall be conducted in accordance with Section C - Performance Testing and 40 CFR Part 60.275a(a) to (j) (as applicable).

D.31.11 CO, SO_2, and NO_x Continuous Emission Rate Monitoring Requirement [326 IAC 2-2] [326 IAC 3-5]

(a) CO, SO2, and NOx CEMS:

(1) Pursuant to the consent decree in United States v. Nucor Corporation, No. 4-00-3945-24 (D.S.C.) and 326 IAC 2-2 (PSD), the Permittee shall install, calibrate, certify, operate, and maintain continuous emissions monitoring systems (CEMS) for measuring CO, SO2, and NOx emissions rates in pounds per hour from the Meltshop EAFs, in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

The Permittee shall comply with the PSD BACT SO2 and NOx hourly emission rates by averaging the CEMS readings based on the actual hours of operation in a 24-hour period.

(b) The Permittee shall prepare and submit to IDEM, OAQ a written report of the results of the calibration gas audits and relative accuracy test audits for each calendar quarter within thirty (30) calendar days after the end of each quarter. The report must contain the information required by 326 IAC 3-5-5(e)(2).

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

D.31.12 Visible Emissions [40 CFR 60.273a]

(a) Pursuant to 40 CFR 60.273a, 326 IAC 2-2, the Permittee shall have a certified visible emissions reader/observer to conduct, perform and record visible observations of the:

(1) EAF Baghouse 1 roof monitor and EAF Baghouse 2 stack, and

(2) Meltshop Roof Monitor,

once per day, when either one or both the Meltshop EAFs are operating in the melting and refining period, in accordance with 40 CFR 60, Appendix A, Method 9.

(b) Pursuant to 40 CFR 60.13(i)(1) and the Approved Alternate Monitoring System requirements for the Meltshop EAF Baghouse 2 stack, the Permittee shall have a certified visible emissions reader/observer to conduct, perform and record visible observations of the stack for at least three (3) six (6)-minute periods during furnace meltdown and refining operations, including periods of simultaneous furnace operation at least, once per day, when either one or both the Meltshop EAFs are operating in the melting and refining period, in accordance with 40 CFR 60, Appendix A, Method 9.

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

D.31.13 Total Hydrocarbon Continuous Emission Rate Monitoring Requirement

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

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

(c) When for any one reading of the pound per hour rate of the total hydrocarbons, based on a 3-hour block is higher than the total hydrocarbons concentration corresponding to the VOC emission rate specified in Condition D.31.1(f) using the data during the most recent valid compliance stack test, the Permittee shall take reasonable steps in accordance with Section C - Response to Excursions or Exceedances. A THC reading that is above the concentration is not a deviation from this permit.

Failure to take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

D.31.14 Maintenance of CEMS [326 IAC 2-7-5(3)(A)(iii)]

(a) In the event that a breakdown of the SO2, NOx, CO or total hydrocarbon (THC) continuous emission monitoring systems (CEMS) occurs, the Permittee shall maintain records of all CEMS malfunctions, out of control periods, calibration and adjustment activities, and repair or maintenance activities.

(b) The continuous emissions monitoring system (CEMS) shall be operated at all times the emissions unit or process is operating except for reasonable periods of monitor system downtime due to necessary calibration or maintenance activities or malfunctions. Calibration and maintenance activities shall be conducted pursuant to the standard operating procedures under 326 IAC 3-5-4(a).

(c) Except as otherwise provided by a rule or provided specifically in this permit, whenever a continuous emission monitor system (CEMS) is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, the Permittee shall perform supplemental monitoring by using calibrated handheld monitors to measure the SO2 , NOx , CO and THC emissions on a once per shift basis, unless the CEMS operation is restored prior to the end of the shift.

The handheld monitors shall be approved by the IDEM, OAQ.

(d) The Permittee shall keep records in accordance with 326 IAC 3-5-6(b) that includes the following:

(1) All documentation relating to:

(A) design, installation, and testing of all elements of the monitoring system; and

(B) required corrective action or compliance plan activities.

(2) All maintenance logs, calibration checks, and other required quality assurance activities.

(3) All records of corrective and preventive action.

(4) A log of plant operations, including the following:

(A) Date of facility downtime.

(B) Time of commencement and completion of each downtime.

(C) Reason for each downtime.

(e) The Permittee shall keep records that describe the supplemental monitoring implemented during the downtime to assure compliance with applicable emission limitations.

(f) In accordance with 326 IAC 3-5-7(5), the Permittee shall submit reports of continuous monitoring system instrument downtime, except for zero (0) and span checks, which shall be reported separately.

The reports shall include the following:

(1) Date of downtime.

(2) Time of commencement.

(3) Duration of each downtime.

(4) Reasons for each downtime.

(5) Nature of system repairs and adjustments.

(g) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous emission monitoring system pursuant to 326 IAC 3-5, 326 IAC 2-2, and 40 CFR Part 60.

D.31.15 Bag Leak Detection System (BLDS) [40 CFR 60.13(i)(1)]

(a) The Permittee shall install and operate a continuous bag leak detection system (BLDS) for each Meltshop EAF Baghouse (1 and 2). The BLDS for Meltshop EAF Baghouse1 (BLDS 1) shall be installed according to the provisions of Condition D.31.15(b) and operated according to the conditions in D.31.15(d). The BLDS for Meltshop EAF Baghouse2 (BLDS 2) shall be installed according to the provisions of Condition D.31.15 (c) and operated according to the conditions in D.31.15(d).

(b) The BLDS (BLDS 1) for Meltshop EAF Baghouse1 shall be installed according to the conditions in (i) through (vii) below.

(1) The bag leak detection system must be certified by the manufacturer to be capable of detecting particulate matter emissions at concentration of 0.018 grains per actual cubic foot or less.

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

(3) The bag leak detection system must be equipped with an alarm system that will alarm when an increase in relative particulate loading is detected over a preset alarm level.

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

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

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

(7) The Permittee shall develop and submit to IDEM, OAQ, for approval, a site-specific monitoring plan that addresses the items identified in paragraph (A) through (E) below. For each bag leak detection system that operates based on the triboelectric effect, the monitoring plan shall be consistent with the recommendations contained in the U.S. Environmental Protection Agency guidance document "Fabric Filter Bag Leak Detection Guidance" (EPA-454/R98-015). The Permittee shall operate and maintain the bag leak detection system according to the site-specific monitoring plan at all times. The plan shall describe the following:

(A) Installation of the bag leak detection system;

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

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

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

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

(c) The BLDS (BLDS 2) for Meltshop EAF Baghouse2 shall be installed according to the conditions in (i) through (iv) below.

(1) The bag leak detection system may be of the triboelectric, electrodynamic, light scattering or light transmittance type, and must be certified by the manufacturer to be capable of detecting particulate matter emissions at concentrations of 0.0044 grains per actual cubic foot or less.

(2) The bag leak detection system sensor must provide output of relative particulate matter loadings, which shall be continuously recorded.

(3) The bag leak detection system must be equipped with an alarm which shall sound and alert the operator when an increase of particulate loading exceeds a set point established in accordance with the monitoring plan required in Condition D.1.15(iv) below.

(4) The Permittee shall develop a monitoring plan for BLDS 2, and shall submit the plan to U.S. EPA Region 5 for review and approval, unless U.S. EPA transfers this responsibility to IDEM, OAQ and written notice of such transfer is provided to Permittee. If BLDS 2 is of the triboelectric type, the plan shall be consistent with the recommendations contained in the U.S. EPA guidance document "Fabric Filter Bag Leak Detection Guidance" (EPA-454/R-98-015). BLDS 2 shall be operated and maintained in accordance with the plan. The plan, at a minimum, must discuss the following:

(A) Installation details;

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

(C) Day to day operation including quality assurance operations;

(D) Maintenance procedures, including spare parts inventories.

(d) Each bag leak detection system (BLDS 1 and 2) shall be continuously operated except during periods when its baghouse is shut down. The system shall continuously monitor relative particulate matter loadings to detect bag leaks and other conditions that result in increases in particulate loadings. Each BLDS shall meet the following requirements:

(1) Following initial adjustment, the Permittee shall not adjust the averaging period, alarm set point, or alarm delay time without approval from IDEM, OAQ except as provided for in paragraphs (A) and (B) below.

(A) Once per quarter, the owner or operator may adjust the sensitivity of the bag leak detection system to account for seasonal effects including temperature and humidity.

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

(2) In the event of a bag leak detection system alarm:

(A) Within one hour of an alarm, the Permittee shall initiate procedures to determine the cause of the alarm.

(B) Except as provided under Condition D.1.15(d)(iii) below, the cause of the alarm must be alleviated within 3 hours of the time the alarm occurred by taking whatever corrective actions(s) are necessary. Corrective actions may include, but are not limited to the following:

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

(ii) Sealing off defective bags or filter media;

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

(iv) Sealing off a defective baghouse compartment;

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

(vi) Shutting down the process producing the particulate emissions; and

(vii) Determining that the alarm is a result of a malfunction in the BLDS equipment itself, in which case the compartment may be restored to operation and reasonable corrective action steps shall be taken to restore the BLDS to proper operation.

(3) IDEM, OAQ may allow Permittee more than 3 hours to alleviate specific conditions that cause an alarm if Permittee identifies the condition that led to an alarm, adequately explains why it was not feasible to alleviate the condition within 3 hours of the time the alarm occurred, and demonstrates that the requested additional time will ensure alleviation of the condition as expeditiously as practicable.

D.31.16 Monitoring of Operations [40 CFR 60.274a]

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

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

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

D.31.17 Scrubber Parametric Monitoring [326 IAC 2-7-5(3)(A)(iii)] [326 IAC 2-7-5(d)]

The Permittee shall continuously monitor the flow rate of the scrubbing liquid and record the flow rate as a 3-hour average when the EAF dust treatment facility is in operation. For the purposes of this condition, continuously means no less often than once per minute. When for any one reading, the flow rate is below the minimum of 40 gallons per minute, or a minimum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. A flow rate that is below the above mentioned minimum is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instruments used for determining the 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 annually.

D.31.18 Scrubber Detection [326 IAC 2-7-5] [326 IAC 2-7-6]

In the event that a scrubber malfunction has been observed:

Failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions). Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

D.31.19 Compliance Assurance Monitoring (CAM) [40 CFR Part 64]

Pursuant to 40 CFR Part 64, the Permittee shall comply with the following Compliance Assurance Monitoring requirements for the Meltshop baghouses controlling the EAFs, Argon Oxygen Decarburization vessels, desulfurization station and continuous casters:

(a) Monitoring Approach – For EAFs/AODs

EAFs/AODs				
PARAMETER	INDICATOR NO. 1	INDICATOR NO. 2	INDICATOR NO. 3	INDICATOR NO. 4
I. Indicator Measurement Approach	PM Concentration)	Opacity	Bag Leak Detection System (BLDS)	Bag Condition
	U.S. EPA Method 5, for PM or other Methods approved by the Commissioner – Baghouse1 and Baghouse2	Method 9 visual observations.	Continuous measurement of relative PM loading in the baghouse stack.	Visual inspection.
II. Indicator Range	PM emission limit of 0.0018 grain/dscf	An excursion is defined as an opacity measurement exceeding 3% on a 6-minute average.	Predetermined increases in PM loading sets off an alarm, which the operator will respond to.	An excursion is defined as failure to perform the monthly inspection.
III. Performance Criteria				
A. Data Representativeness	U.S. EPA Method 5, for PM or other Methods approved by the Commissioner	Procedures addressed in Method 9	Monthly operational status inspections of the equipment important to the total capture system.	Baghouse inspected visually for bag leaks.
B. Verification of Operational Status	Fans amps and damper position.	NA	NA	NA
C. QA/QC Practices and Criteria	U.S. EPA Method 5, for PM or other Methods approved by the Commissioner	Use of a certified visible emission observer.	Periodic maintenance of BLDS.	Trained personnel perform inspections and maintenance.
D. Monitoring Frequency	Once every 2.5 years.	Daily (when the EAF is operating unless inclement weather).	Continuous relative PM loading measurements.	Bi-Annual
IV. Data Collection Procedures	U.S. EPA Method 5, for PM or other Methods approved by the Commissioner	Daily visual observations of opacity are recorded on V.E. Form.	Record of alarm instances and maintenance activity.	Results of inspections and maintenance activities performed are recorded in baghouse maintenance log.
Averaging Period	Average of 3 test runs each 4 hours long	Six-minute average.	NA	NA

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

D.31.20 Record Keeping Requirements

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

(b) The Permittee shall maintain records of the amount of steel poured/tapped in each consecutive twelve (12) month period and make available upon request to IDEM, OAQ, and the US EPA.

(c) The Permittee shall maintain records of the readings of the SO_2, NO_x, CO and THC CEMS in pounds per hour.

(d) The Permittee shall maintain records of the visible emission readings required by Condition D.31.12(a).

(e) Pursuant to 40 CFR 60.274a and 40 CFR 60.276a(a), the Permittee shall maintain and make available upon request to IDEM, OAQ, and the US EPA records of the 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); shop opacity observations conducted at least once per day; and either:

(1) once-per-shift fan motor amperes and damper position,

(2) continuous volumetric flow rate through each separately ducted hood; or

(3) continuous volumetric flow rate at the control device inlet and once-per-shift damper positions.

The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result.

(f) The Permittee shall maintain records of the following for the EAF Dust Treatment scrubber and make available upon request to IDEM, OAQ, and the US EPA:

(1) The continuous flow rate records (on a 3-hour average basis) for the scrubber.

(2) Documentation of all reasonable response steps implemented for every flow rate reading that is outside of the range.

(g) The Permittee shall maintain records of the following for the BLDS and make available upon request to IDEM, OAQ, and the US EPA:

(1) Records of the system output.

(2) Records of system adjustments, including the date and time of each adjustment, and initial and final settings.

(3) Records of the date and time of each system alarm, including, but not limited to, the date and time that procedures to determine the cause of the alarm were initiated, if procedures to determine the cause of the alarm were initiated within one (1) hour, the cause of the alarm, an explanation of the actions taken, the date and time the cause of the alarm was alleviated, and if the alarm was alleviated within 3 hours of the alarm.

(4) Records of the calculations of the percent of time the alarm sounded during each six (6) month period.

(5) Records of the dates and times that the BLDS was not operational, and the reason(s) why it was not operational.

(h) Pursuant to 40 CFR 60.276a(a), records of the measurements required in 40 CFR 60.274a, must be retained for at least 2 years following the date of the measurement.

(i) To document compliance with Condition D.31.19 the Permittee shall maintain records of baghouse inspections. These records shall include as a minimum, dates, initials of the person performing the inspections, results, and corrective actions taken in response to excursions as required by the CAM for the EAFs/AOD (if any are required).

(j) To document compliance with Condition D.31.4(d), the Permittee shall maintain records of the amount of Fluorspar applied at the EAFs.

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

(l) All records shall be maintained in accordance with Section C - General Record.

D.31.21 Reporting Requirements [326 IAC 2-1.1-11] [40 CFR 60.276a]

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

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

(2) Opacity readings from the EAF Baghouse 1 roof monitor, EAF Baghouse 2 stack and Meltshop roof monitor; and

This reporting requirement also satisfies the semiannual exceedance reporting required under 40 CFR 60.276a(b) and (g).

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

(c) The Permittee shall submit a semi-annual report for each BLDS, the following information:

(1) The percent of time the alarm sounded during each six (6) month reporting period;

(2) All visible emission data where six minute averages exceeded 3 percent opacity;

(3) The dates and times when the alarm sounded and procedures to initiate corrective action were not initiated within one (1) hour, and the date and time when corrective actions were initiated;

(4) The dates and times when the alarm sounded and the cause of the alarm was not alleviated within three (3) hours, and the dates and times when the cause of the alarms was alleviated, and;

(5) The dates and times that the BLDS was not operational, and the reason(s) why it was not operational.

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

(1) Facility name and address;

(2) Plant representative;

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

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

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

(6) The following operating conditions:

(A) List of charge and tap weights and materials;
(B) Heat times and process log;
(C) Control device operation log; and
(D) Continuous monitor or Reference Method 9 data.

(7) Test dates and test times;

(8) Test company;

(9) Test company representative;

(10) Test observers from outside agency;

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

(12) Schematic of sampling location;

(13) Number of sampling points;

(14) Description of sampling equipment;

(15) Listing of sampling equipment calibrations and procedures;

(16) Field and Laboratory data sheets;

(17) Description of sample recovery procedures;

(18) Sampling equipment leak check results;

(19) Description of quality assurance procedures;

(20) Description of analytical procedures;

(21) Notation of sample blank corrections; and

(22) Sample emission calculations.

D.31.22 General Provisions Relating to NSPS [326 IAC 12-1-1] [40 CFR Part 60, Subpart A]

Pursuant to 40 CFR 60.460, the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1-1, for the two (2) Meltshop Electric Arc Furnaces (EAFs), identified as EAF #1 and EAF #2, the Argon oxygen decarburization (AOD) vessels, identified as AODs, and the EAF dust treatment facility, identified as DTF, as specified in Appendix A of 40 CFR Part 60, Subpart AAa in accordance with schedule in 40 CFR Part 60, Subpart AAa.

D.31.23 New Source Performance Standards for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels [40 CFR Part 60, Subpart AAa]

Pursuant to 40 CFR Part 60, Subpart AAa, the two (2) Meltshop Electric Arc Furnaces (EAFs), identified as EAF #1 and EAF #2, the Argon oxygen decarburization (AOD) vessels, identified as AODs, and the EAF dust treatment facility, identified as DTF, shall comply with the following provisions:

D.31.24 One Time Deadlines Relating to Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983

The Permittee must conduct the initial performance tests within 60 days after achieving maximum production rate, but no later than 180 days after start-up.

Subpart AAa—Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983

§ 60.270a Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to the following affected facilities in steel plants that produce carbon, alloy, or specialty steels: electric arc furnaces, argon-oxygen decarburization vessels, and dust-handling systems.

(b) The provisions of this subpart apply to each affected facility identified in paragraph (a) of this section that commences construction, modification, or reconstruction after August 17, 1983.

§ 60.271a Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

Argon-oxygen decarburization vessel (AOD vessel) means any closed-bottom, refractory-lined converter vessel with submerged tuyeres through which gaseous mixtures containing argon and oxygen or nitrogen may be blown into molten steel for further refining.

Bag leak detection system means a system that is capable of continuously monitoring relative particulate matter (dust) loadings in the exhaust of a baghouse to detect bag leaks and other conditions that result in increases in particulate loadings. A bag leak detection system includes, but is not limited to, an instrument that operates on triboelectric, electrodynamic, light scattering, light transmittance, or other effect to continuously monitor relative particulate matter loadings.

Capture system means the equipment (including ducts, hoods, fans, dampers, etc.) used to capture or transport particulate matter generated by an electric arc furnace or AOD vessel to the air pollution control device.

Charge means the addition of iron and steel scrap or other materials into the top of an electric arc furnace or the addition of molten steel or other materials into the top of an AOD vessel.

Control device means the air pollution control equipment used to remove particulate matter from the effluent gas stream generated by an electric arc furnace or AOD vessel.

Direct-shell evacuation control system (DEC system) means a system that maintains a negative pressure within the electric arc furnace above the slag or metal and ducts emissions to the control device.

Dust-handling system means equipment used to handle particulate matter collected by the control device for an electric arc furnace or AOD vessel subject to this subpart. For the purposes of this subpart, the dust-handling system shall consist of the control device dust hoppers, the dust-conveying equipment, any central dust storage equipment, the dust-treating equipment (e.g., pug mill, pelletizer), dust transfer equipment (from storage to truck), and any secondary control devices used with the dust transfer equipment.

Electric arc furnace (EAF) means a furnace that produces molten steel and heats the charge materials with electric arcs from carbon electrodes. For the purposes of this subpart, an EAF shall consist of the furnace shell and roof and the transformer. Furnaces that continuously feed direct-reduced iron ore pellets as the primary source of iron are not affected facilities within the scope of this definition.

Heat cycle means the period beginning when scrap is charged to an empty EAF and ending when the EAF tap is completed or beginning when molten steel is charged to an empty AOD vessel and ending when the AOD vessel tap is completed.

Meltdown and refining period means the time period commencing at the termination of the initial charging period and ending at the initiation of the tapping period, excluding any intermediate charging periods and times when power to the EAF is off.

Melting means that phase of steel production cycle during which the iron and steel scrap is heated to the molten state.

Negative-pressure fabric filter means a fabric filter with the fans on the downstream side of the filter bags.

Positive-pressure fabric filter means a fabric filter with the fans on the upstream side of the filter bags.

Refining means that phase of the steel production cycle during which undesirable elements are removed from the molten steel and alloys are added to reach the final metal chemistry.

Shop means the building which houses one or more EAF's or AOD vessels.

Shop opacity means the arithmetic average of 24 observations of the opacity of emissions from the shop taken in accordance with Method 9 of appendix A of this part.

Tap means the pouring of molten steel from an EAF or AOD vessel.

Tapping period means the time period commencing at the moment an EAF begins to pour molten steel and ending either three minutes after steel ceases to flow from an EAF, or six minutes after steel begins to flow, whichever is longer.

§ 60.272a Standard for particulate matter.

(a) On and after the date of which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from an EAF or an AOD vessel any gases which:

(1) Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf);

(2) Exit from a control device and exhibit 3 percent opacity or greater; and

(3) Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6 percent opacity or greater.

(b) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from the dust-handling system any gases that exhibit 10 percent opacity or greater.

§ 60.273a Emission monitoring.

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

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

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

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

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

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

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

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

(i) Installation of the bag leak detection system;

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

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

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

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

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

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

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

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

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

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

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

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

(2) Sealing off defective bags or filter media;

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

(4) Sealing off a defective baghouse compartment;

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

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

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

§ 60.274a Monitoring of operations.

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

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

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

(b) Except as provided under paragraph (e) of this section, the owner or operator subject to the provisions of this subpart shall check and record on a once-per-shift basis the furnace static pressure (if DEC system is in use, and a furnace static pressure gauge is installed according to paragraph (f) of this section) and either: check and record the control system fan motor amperes and damper position on a once-per-shift basis; install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood; or install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate at the control device inlet and check and record damper positions on a once-per-shift basis. The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device(s) shall have an accuracy of ±10 percent over its normal operating range and shall be calibrated according to the manufacturer's instructions. The Administrator may require the owner or operator to demonstrate the accuracy of the monitoring device(s) relative to Methods 1 and 2 of appendix A of this part.

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

(d) Except as provided under paragraph (e) of this section, the owner or operator shall perform monthly operational status inspections of the equipment that is important to the performance of the total capture system (*i.e.*, pressure sensors, dampers, and damper switches). This inspection shall include observations of the physical appearance of the equipment (e.g., presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion). Any deficiencies shall be noted and proper maintenance performed.

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

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

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

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

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

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

(3) Control device operation log; and

(4) Continuous opacity monitor or Method 9 data.

§ 60.275a Test methods and procedures.

(a) During performance tests required in §60.8, the owner or operator shall not add gaseous diluents to the effluent gas stream after the fabric in any pressurized fabric filter collector, unless the amount of dilution is separately determined and considered in the determination of emissions.

(b) When emissions from any EAF(s) or AOD vessel(s) are combined with emissions from facilities not subject to the provisions of this subpart but controlled by a common capture system and control device, the owner or operator shall use either or both of the following procedures during a performance test (see also §60.276a(e)):

(1) Determine compliance using the combined emissions.

(2) Use a method that is acceptable to the Administrator and that compensates for the emissions from the facilities not subject to the provisions of this subpart.

(c) When emission from any EAF(s) or AOD vessel(s) are combined with emissions from facilities not subject to the provisions of this subpart, the owner or operator shall demonstrate compliance with §60.272(a)(3) based on emissions from only the affected facility(ies).

(d) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b).

(e) The owner or operator shall determine compliance with the particulate matter standards in §60.272a as follows:

(1) Method 5 shall be used for negative-pressure fabric filters and other types of control devices and Method 5D shall be used for positive-pressure fabric filters to determine the particulate matter concentration and volumetric flow rate of the effluent gas. The sampling time and sample volume for each run shall be at least 4 hours and 4.50 dscm (160 dscf) and, when a single EAF or AOD vessel is sampled, the sampling time shall include an integral number of heats.

(2) When more than one control device serves the EAF(s) being tested, the concentration of particulate matter shall be determined using the following equation:

$$c_{st} = \left[\sum_{i=1}^{n} \left(c_{si}\, Q_{sdi} \right) \right] \Big/ \sum_{i=1}^{n} Q_{sdi}$$

where:

c_{st}=average concentration of particulate matter, mg/dscm (gr/dscf).

c_{si}=concentration of particulate matter from control device “i”, mg/dscm (gr/dscf).

n=total number of control devices tested.

Q_{sdi}=volumetric flow rate of stack gas from control device “i”, dscm/hr (dscf/hr).

(3) Method 9 and the procedures of §60.11 shall be used to determine opacity.

(4) To demonstrate compliance with §60.272a(a) (1), (2), and (3), the Method 9 test runs shall be conducted concurrently with the particulate matter test runs, unless inclement weather interferes.

(f) To comply with §60.274a (c), (f), (g), and (h), the owner or operator shall obtain the information required in these paragraphs during the particulate matter runs.

(g) Any control device subject to the provisions of the subpart shall be designed and constructed to allow measurement of emissions using applicable test methods and procedures.

(h) Where emissions from any EAF(s) or AOD vessel(s) are combined with emissions from facilities not subject to the provisions of this subpart but controlled by a common capture system and control device, the owner or operator may use any of the following procedures during a performance test:

(1) Base compliance on control of the combined emissions;

(2) Utilize a method acceptable to the Administrator that compensates for the emissions from the facilities not subject to the provisions of this subpart, or;

(3) Any combination of the criteria of paragraphs (h)(1) and (h)(2) of this section.

(i) Where emissions from any EAF(s) or AOD vessel(s) are combined with emissions from facilities not subject to the provisions of this subpart, determinations of compliance with §60.272a(a)(3) will only be based upon emissions originating from the affected facility(ies).

(j) Unless the presence of inclement weather makes concurrent testing infeasible, the owner or operator shall conduct concurrently the performance tests required under §60.8 to demonstrate compliance with §60.272a(a) (1), (2), and (3) of this subpart.

§ 60.276a Recordkeeping and reporting requirements.

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

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

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

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

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

(f) For the purpose of this subpart, the owner or operator shall conduct the demonstration of compliance with §60.272a(a) of this subpart and furnish the Administrator a written report of the results of the test. This report shall include the following information:

(1) Facility name and address;

(2) Plant representative;

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

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

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

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

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

(ii) Heat times and process log;

(iii) Control device operation log; and

(iv) Continuous opacity monitor or Method 9 data.

(7) Test dates and test times;

(8) Test company;

(9) Test company representative;

(10) Test observers from outside agency;

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

(12) Schematic of sampling location;

(13) Number of sampling points;

(14) Description of sampling equipment;

(15) Listing of sampling equipment calibrations and procedures;

(16) Field and laboratory data sheets;

(17) Description of sample recovery procedures;

(18) Sampling equipment leak check results;

(19) Description of quality assurance procedures;

(20) Description of analytical procedures;

(21) Notation of sample blank corrections; and

(22) Sample emission calculations.

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

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

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

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

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

D.31.24 One Time Deadlines Relating to Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983

The Permittee must conduct the initial performance tests within 60 days after achieving maximum production rate, but no later than 180 days after start-up.

SECTION D.32 FACILITY OPERATION CONDITIONS

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

MELTSHOP – LADLE METALLURGY FURNACES, PREHEATERS, AND DRYERS

(ss) Three (3) Meltshop Ladle Metallurgy Furnaces (LMFs)/Stirring Station, two (2) identified as EU-13 (a) and (b), constructed in 1988, and one (1) LMF identified as EU-13(c) approved for construction in 2007 with a maximum capacity of 502 tons/hour each and EU-13 (a) and (b) are controlled by a baghouse, identified as Meltshop LMF Baghouse, exhausting to stack S-13. The Meltshop LMF Baghouse has a design flow rate of 200,000 acf/min. The LMF baghouse was constructed in 1992. The LMF, EU-13(c) will be controlled by the EAFs baghouses which vent to stacks BH1 and BH2. In addition the LMFs have the following associated equipment:

(1a) Ladle Preheaters, identified as LP #1 - #5, uncontrolled and exhausting to stacks 7 and 8, consisting of:

(A) 3 units, identified as LP #1 - #3, constructed in 1989, each rated at 10 MMBtu per hour.

(B) 1 unit, identified as LP #4, constructed in 1994, rated at 7.5 MMBtu per hour.

(C) 1 unit, identified as LP #5, constructed in 1989, rated at 15 MMBtu per hour.

(1b) Ladle Preheaters, identified as LP #1a through LP #7a, consisting of:

(A) Three (3) natural gas-fired ladle preheaters, identified as LP #1a, LP #2a, and LP #3a, approved for construction in 2007, each with a heat input capacity of 10 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(B) One (1) natural gas-fired AOD ladle preheater, identified as LP #4a, approved for construction in 2007, with a heat input capacity of 10 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(C) One (1) natural gas-fired ladle preheater, identified as LP #5a, approved for construction in 2007, with a heat input capacity of 10 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(D) One (1) natural gas-fired ladle preheater, identified as LP #6, approved for construction in 2006, with a heat input capacity of 12 MMBtu/hour, utilizing low-NOx burners, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(E) One (1) natural gas-fired ladle preheater/dryer, identified as LP #7a, approved for construction in 2007, with a heat input capacity of 10 MMBtu/hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(2a) Ladle Dryer, identified as LDS #1, constructed in 1989, consisting of a low NO_x natural gas fired burner, with a heat input capacity of 5 MMBtu per hour. Emissions are uncontrolled and exhausting to stack 12.

(2b) One (1) natural gas-fired Ladle Dryer, identified as LDS #1a, approved for construction in 2007, with a heat input capacity of 5 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-12.

(3) Four (4) Tundish Preheaters, identified as TPH #1 - #4, constructed in 1995, consisting of 4 low NOx natural gas fired heaters, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10. Five (5) Tundish Preheaters, identified as TP1 - TP5, constructed in 1995, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel.

(4) Two (2) Tundish Dryout Stations, identified as TD #1 and TD #2. TD #1 was constructed in 1989, and TD#2 was constructed in 1990, each with a heat input capacity of 9 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(5) Four (4) Tundish Nozzle Preheaters, identified as TNP #1- #4, constructed in 1995, consisting of a low NOx natural gas fired Preheaters, each with a heat input capacity of 0.8 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(6) One (1) natural gas-fired tundish dryout station, identified as TD #3, approved for construction in 2007, with a maximum heat input capacity of 2.4 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(7) Two (2) natural gas-fired mandrel dryers, identified as MD #1 and MD #2, approved for construction in 2007, each with a heat input capacity of 1.5 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(8) Fifteen (15) belt conveyors and 20 weight hoppers, with a maximum throughput of 200 tons per hour, approved for construction in 2007. These conveyors will supply lime, carbon and alloys to the new LMF.

(9) Flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the LMFs, constructed in 1988 and approved for modification in 2007 with the addition of a three-sided building for bulk loading of material to the system.

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

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

D.32.1 Meltshop LMFs PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Permittee shall comply with the following BACT requirements:

(a) The Meltshop LMFs EU-13 (a), (b), shall be equipped with side draft hoods that evacuate to a baghouse (identified as Meltshop LMF Baghouse) capturing the particulate matter (PM). The Meltshop LMFs EU-13 (c) shall be controlled by the EAFs Baghouse1 and Baghouse2.

(b) The filterable PM emissions from the Meltshop LMF Baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall not exceed 0.0018 gr/dscf.

(c) The filterable and condensible PM_{10} emissions from the Meltshop LMF Baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall not exceed 0.0052 gr/dscf.

(d) The visible emissions from the Meltshop LMF Baghouse controlling the two (2) LMFs, identified as EU-13(a) and (b) shall not exceed 3% opacity, based on a 6-minute average.

(e) The NO_x emissions from the Meltshop LMF Baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall not exceed 0.0176 lb/ton of steel produced and 8.8

pounds of NO_x per hour, based on a 3-hour block average.

(f) The SO_2 emissions from the Meltshop LMF Baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall not exceed 210.84 pounds of SO_2 per hour averaged over a 24-hour block period.

(g) The CO emissions from the Meltshop LMF Baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b), shall not exceed 0.07125 lb/ton of steel produced and 35.77 pounds of CO per hour, based on a 3-hour block average.

(h) The VOC emissions from the Meltshop LMF Baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b), shall not exceed 0.0086 lb/ton of steel produced and 4.32 pounds of VOC per hour, based on a 3-hour block average.

D.32.2 Ladle Dryers PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Ladle Dryers (LDS #1 and LDS #1a) shall comply with the following BACT requirements:

(a) The Ladle Dryers (LDS #1 and LDS#1a) shall only burn natural gas, except as specified below, and shall be limited to 5.0 million Btu per hour heat input, each.

(b) PM/PM10 shall be limited to 7.6 pounds per million cubic feet of natural gas burned, 0.076 pounds per hour (total), and 0.33 tons per year (total).

(c) NOx emissions shall be limited to 100 pounds per million cubic feet of natural gas burned, 0 1.0 pounds per hour (total), and 4.38 tons per year (total).

(d) CO emissions shall be limited to 84 pounds per million cubic feet of natural gas burned, 0.84 pounds per hour (total), and 3.6 tons per year (total).

(e) VOC emissions from shall be limited to 5.5 pounds per million cubic feet of natural gas burned, 0.06 pounds per hour (total), and 0.24 tons per year (total).

(f) SO2 emission shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.006 pound per hour (total) and 0.026 ton per year (total).

(g) Visible emissions shall not exceed 5% opacity, based on a 6-minute average.

(h) The Ladle Dryer (LDS #1 and LDS #1a) shall only burn propane as a back-up fuel.

D.32.3 Ladle Preheaters PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the eleven Ladle Preheaters (LP #1- #5, LP#1a - #5a and #7a) shall comply with the following BACT requirements:

(1) The eleven Ladle Preheaters (LP #1- #5, LP#1a - #5a and #7a) shall only burn natural gas, except as specified below. The eleven preheaters (LP#1 - #5 LP#1a - #5a and #7a) shall each be limited to 10.0 million Btu per hour heat input

(2) PM/PM10 emissions from each of the eleven Ladle Preheaters (LP #1- #5, LP#1a - #5a and #7a) shall be limited to 7.6 pounds per million cubic feet of natural gas burned, 0.836 pounds per hour (total), and 3.7 tons per year (total).

(3) NOx emissions from each of the eleven Ladle Preheaters (LP #1- #5, LP#1a - #5a and #7a) shall be limited to 100 pounds per million cubic feet of natural gas burned, 11 pounds per hour (total), and 48.2 tons per year (total).

(4) CO emissions from each of the eleven Ladle Preheaters (LP #1- #5, LP#1a - #5a

and #7a) shall be limited to 84 pounds per million cubic feet of natural gas burned, 9.24 pounds per hour (total), and 40.5 tons per year (total).

(5) VOC emissions from each of the eleven Ladle Preheaters (LP #1- #5, LP#1a - #5a and #7a) shall be limited to 5.5 pounds per million cubic feet of natural gas burned, 0.605 pounds per hour (total), and 2.6 tons per year (total).

(6) SO2 emissions from each of the eleven Ladle Preheaters (LP #1-#5, LP#1a - #5a and #7a) shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.07 pounds per hour.

(7) The eleven Ladle Preheaters (LP #1- #5, LP#1a - #5a and #7a) shall only burn propane as a back-up fuel.

(8) Visible emissions from the eleven Ladle Preheaters (LP #1- #5, LP#1a - #5a and #7a) shall not exceed 5% opacity, based on a 6-minute average.

(b) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD SSM 107-21359-00038, issued on April 27, 2006, ladle preheater LP #6 shall comply with the following BACT requirements:

(1) The BACT for NOx shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a NOx emission rate of 0.05 pounds per MMBtu and 0.60 lbs per hour.

(2) The BACT for SO_2 shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a SO_2 emission rate of 0.0006 pounds per MMBtu and 0.007 lbs per hour.

(3) The BACT for CO shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a CO emission rate of 0.084 pounds per MMBtu and 1.01 lbs per hour.

(4) The BACT for PM/PM10 (filterable plus condensable) shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a PM/PM10 (filterable plus condensable) emission rate of 0.0076 pounds per MMBtu and 0.091 lbs per hour.

(5) The BACT for VOC shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a VOC emission rate of 0.0054 pounds per MMBtu and 0.065 lbs per hour.

(6) The opacity from stacks 7 and 8 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). Compliance with this limitation satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

(c) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Tundish Nozzle Preheaterss (TPH1 through TPH4) shall comply with the following BACT requirements:

(1) The Tundish Nozzle Preheaters (TPH1 through TPH4) shall only burn natural gas, except as specified below, and shall be limited to 0.8 million Btu per hour heat input each.

(2) PM/PM10 emissions from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 7.6 pounds per million cubic feet of natural gas burned, 0.02 pounds per hour (total).

(3) NOx emissions from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 100 pounds per million cubic feet of natural gas burned, 0.32 pounds per hour (total.

(4) CO emissions from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 84 pounds per million cubic feet of natural gas burned, 0.27 pounds per hour (total).

(5) VOC emissions from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 5.5 pounds per million cubic feet of natural gas burned, 0.02 pounds per hour (total).

(6) SO2 emission from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.002 pounds per hour (total).

(7) Visible emissions shall not exceed 5% opacity, based on a 6-minute average.

(8) The Tundish Nozzle Preheaters (TPH1 through TPH4) shall only burn propane as a back-up fuel.

(d) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Tundish Preheaterss (TP1 through TP5) shall comply with the following BACT requirements:

(1) The Tundish Preheaters (TP1 through TP5) shall only burn natural gas, except as specified below, and shall be limited to 6.0 million Btu per hour heat input each.

(2) PM/PM10 emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 7.6 pounds per million cubic feet of natural gas burned, 0.23 pounds per hour (total).

(3) NOx emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 100 pounds per million cubic feet of natural gas burned, 3.0 pounds per hour (total).

(4) CO emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 84 pounds per million cubic feet of natural gas burned, 2.5 pounds per hour (total).

(5) VOC emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 5.5 pounds per million cubic feet of natural gas burned, 0.165 pounds per hour (total).

(6) SO2 emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.02 pounds per hour (total).

(7) Visible emissions shall not exceed 5% opacity, based on a 6-minute average.

(8) The Tundish Preheaters (TP1 through TP5) shall only burn propane as a back-up fuel.

D.32.4 Tundish Dryout Station (TD #1) PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Tundish Dryout Stations (TD #1 and TD #2) shall comply with the following BACT requirements:

(a) The Tundish Dryout Station (TD #1 and TD #2) shall only burn natural gas, except as specified below, and shall be limited to 9.0 million Btu per hour heat input each.

(b) PM/PM10 shall be limited to 7.6 pounds per million cubic feet of natural gas burned, 0.14 pounds per hour (total), and 0.6 tons per year (total).

(c) NOx emissions shall be limited to 100 pounds per million cubic feet of natural gas burned, 1.8 pounds per hour (total), and 7.9 tons per year (total).

(d) CO emissions shall be limited to 84 pounds per million cubic feet of natural gas burned, 1.5 pounds per hour, and 6.6 tons per year (total).

(e) VOC emissions shall be limited to 5.5 pounds per million cubic feet of natural gas burned, 0.1 pounds per hour, 0.43 tons per year (total).

(f) SO2 emission shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.01 pounds per hour (total), and 0.05 tons per year (total).

(g) Visible emissions shall not exceed 5% opacity, based on a 6-minute average.

(h) The Tundish Dryout Stations (TD #1 and TD #2) shall only burn propane as a back-up fuel.

D.32.5 PSD Limit [326 IAC 2-2]

The combined input of propane to emission units TD #3, MD #1, and MD #2, combined with the input of propane to annealing furnace AN-19 (permitted in Section D.21) shall be limited to less than 1,089 thousand gallons of propane (LPG) per twelve consecutive month period, with compliance determined at the end of each month. NOx emissions shall not exceed 0.208 pounds per MMBtu when burning propane. Compliance with this limit will ensure that the potential to emit from the modification performed under SSM 107-23609-00038 is less than forty (40) tons of NOx per year and will render the requirements of 326 IAC 2-2 (PSD) not applicable.

D.32.6 Meltshop LMF PSD BACT for Metals [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), the Permittee shall comply with the following BACT requirements:

(a) The lead emissions from the LMF baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b), shall be limited to 0.00048 pound per ton of steel produced and 0.24 pound per hour, based on a 3-hour block average.

(b) The Mercury emissions from the LMF baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall be limited to 0.04 pound per hour, based on a 3-hour block average.

(c) The Beryllium emissions from the LMF baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall be limited to 0.002 pound per hour, based on a 3-hour block average.

(d) The Fluorides emissions from the LMF baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall be limited to 0.01 pound per ton of steel produced and 5.02 pounds per hour, based on a 3-hour block average.

The fluorides emissions from the LMFs shall be minimized by using granular Fluorspar, to minimize fluorides emissions and it shall be applied at a rate of 500 pounds/heat at the LMFs.

(e) The emissions from lead and mercury shall be minimized in accordance with the Scrap Management Program (SMP) and

(f) The emissions from the Meltshop LMFs shall be controlled by a baghouse.

D.32.7 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the LMFs (EU-13) and their control devices.

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

D.32.8 Meltshop LMFs PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), the Permittee shall comply with the following BACT requirements:

(a) The Meltshop LMF Baghouse shall operate at all times that at least one of the Meltshop LMFs (EU-13) is operating, except during the times that one of the Meltshop EAF Baghouses serves as a back up.

(b) Good working practices shall be observed.

D.32.9 Testing Requirements [326 IAC 2-7-6(1),(6)]

Within sixty (60) days but no later than one hundred and eighty (180) days after the initial start up of the modified LMFs EU-13 (a) and (b) permitted in this PSD/SSM No. 107-24348-00038, the Permittee shall perform a compliance test on the Meltshop LMFs baghouse stack (S-13), for the following pollutants utilizing methods as approved by the Commissioner:

(a) With the submission of the test protocol, at a minimum, the Permittee shall include estimates of the sulfur content of the raw materials to be used in testing and the sulfur content of the raw materials used from previous year.

(b) Any stack which has multiple processes which exhaust to the same stack shall operate shall of the processes simultaneously in accordance with 326 IAC 3-5 (Source Sampling Procedures).

(c) Lead, Mercury, Beryllium and Fluorides in order to comply with Condition 32.6.

(d) The PM, PM10, NOx, CO, VOC, Lead, Mercury, Beryllium and Fluorides tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

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

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

D.32.10 Sulfur Content [326 IAC 2-7-5(3)(A)(iii)][326 IAC 2-7-5(d)]

The Permittee shall monitor the sulfur content of the charge carbon and injection carbon added to the LMFs. Vendor certifications or analyses may verify the sulfur content of the charge carbon and injection carbon.

D.32.11 SO_2 Continuous Emission Rate Monitoring Requirement [326 IAC 2-2[[326 IAC 3-5]

(a) The Permittee shall install, calibrate, certify, operate, and maintain continuous emissions monitoring systems (CEMS) for measuring SO_2 emissions rates in pounds per hour from the Meltshop LMFs, EU-13 (a) and (b) in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

The Permittee shall comply with the PSD BACT SO_2 hourly emission rates by averaging the CEMS readings based on the actual hours of operation in a 24-hour period.

(1) The CEMS shall be calibrated within sixty (60) days but no later than one hundred eighty (180) days after the issuance of PSD/SSM NO. 107-24348-00038.

(2) The location of the CEMS to measure the Meltshop LMFs SO_2 emissions shall be approved by OAQ prior to their installation.

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

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

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

D.32.12 Visible Emissions Notations [326 IAC 2-7-5(3)(A)(iii)][326 IAC 2-7-5(d)]

(a) Visible emission notations of the Meltshop LMF Baghouse shall be performed once per day during normal daylight operations. 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 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.32.13 Baghouses Parametric Monitoring [326 IAC 2-7-5(3)(A)(iii)][326 IAC 2-7-5(d)]

The Permittee shall record the pressure drop across the Meltshop LMF Baghouse used in conjunction with the Meltshop LMFs EU-13 (a) and (b), at least once per day, when one or more of the Meltshop LMFs is in operation. When for any one reading, the pressure drop across the baghouse is outside the range of 1 and 10 inches of water or a range established during the latest stack test, the Permittee shall take reasonable steps in accordance with Section C - 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 reasonable response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

The instrument used for determining the pressure 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 annually.

The instrument used for determining the pressure shall have a range higher than 10 inches of water to accurately measure the range.

D.32.14 Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

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

D.32.15 Maintenance of CEMS [326 IAC 2-7-5(3)(A)(iii)]

(a) In the event that a breakdown for the LMFs EU-13 (a) and (b) SO_2 continuous emission monitoring system (CEMS) occurs, the Permittee shall maintain records of all CEMS malfunctions, out of control periods, calibration and adjustment activities, and repair or maintenance activities.

(b) The continuous emissions monitoring system (CEMS) shall be operated at all times the emissions unit or process is operating except for reasonable periods of monitor system downtime due to necessary calibration or maintenance activities or malfunctions. Calibration and maintenance activities shall be conducted pursuant to the standard operating procedures under 326 IAC 3-5-4(a).

(c) Except as otherwise provided by a rule or provided specifically in this permit, whenever a continuous emission monitor system (CEMS) is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, the Permittee shall perform supplemental monitoring by using calibrated handheld monitors to measure the SO_2 emissions on a once per shift basis, unless the CEMS operation is restored prior to the end of the shift.

The handheld monitors shall be approved by the IDEM, OAQ.

(d) The Permittee shall keep records in accordance with 326 IAC 3-5-6(b) that includes the following:

(1) All documentation relating to:

(A) design, installation, and testing of all elements of the monitoring system; and

(B) required corrective action or compliance plan activities.

(2) All maintenance logs, calibration checks, and other required quality assurance activities.

(3) All records of corrective and preventive action.

(4) A log of plant operations, including the following:

(A) Date of facility downtime.

(B) Time of commencement and completion of each downtime.

(D) Reason for each downtime.

(e) The Permittee shall keep records that describe the supplemental monitoring implemented during the downtime to assure compliance with applicable emission limitations.

(f) In accordance with 326 IAC 3-5-7(5), the Permittee shall submit reports of continuous monitoring system instrument downtime, except for zero (0) and span checks, which shall be reported separately.

The reports shall include the following:

(1) Date of downtime.

(2) Time of commencement.

(3) Duration of each downtime.

(4) Reasons for each downtime.

(5) Nature of system repairs and adjustments.

(g) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous emission monitoring system pursuant to 326 IAC 3-5, 326 IAC 2-2, and 40 CFR Part 60.

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

D.32.16 Record Keeping Requirements

(a) To document compliance with Condition D.32.12, the Permittee shall maintain once per day records of visible emission notation readings at the Meltshop LMF Baghouse stack exhaust and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(b) To document compliance with Condition D.32.13, the Permittee shall maintain records of once per day total static pressure drop during normal operation and the reason for the lack of pressure drop notation (e.g. the process did not operate that day).

(c) To document compliance with Condition D.32.5, the Permittee shall maintain records of the actual quantity of propane (LPG) used in the emission units identified as TD #3, MD #1, and MD #2. Records shall be taken monthly and shall be complete and sufficient to establish compliance with the limit established in Condition D.32.5. Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.

(d) To document compliance with Condition D.32.6(d), the Permittee shall maintain records of the amount of Fluorspar applied at the LMFs.

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

D.32.17 Reporting Requirements

A monthly summary of the information to document compliance with Condition D.32.5 shall be submitted quarterly to the addresses listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within 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.33 FACILITY OPERATION CONDITIONS

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

INSIGNIFICANT ACTIVITIES – MELTSHOP

(n) Activities with emissions equal to or less than the thresholds provided in 326 IAC 2-7-1(21):

(1) Ladle tap hole cleaning and repair.

(2) Ladle/tundish refractory application and curing.

(3) Tundish dumping.

(4) Ladle dumping.

(5) Ladle/tundish refractory loading and removal.

(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.33.1 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the particulate emissions from ladle tap hole cleaning and repair, ladle/tundish refractory application and curing, tundish dumping, and ladle dumping shall not exceed a pound per hour emission rate established as E in the following formula:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

or

Interpolation and extrapolation of the data for the process weight rate in excess of sixty thousand (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 is pounds per hour and
P = process weight rate in tons per hour

SECTION E.1 FACILITY OPERATION CONDITIONS

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

COLD MILL – COLD MILL BOILER (CMB#2)

(aa) One (1) natural gas fueled Cold Mill Boiler (CMB #2), identified as EU-19, with a heat input capacity of 40.0 MMBtu per hour, with emissions exhausting to stack S-23. Propane is used as a back-up fuel. The Cold Mill Boiler (CMB #2) is permitted to be installed in 2007

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

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

E.1.1 General Provisions Relating to NSPS [326 IAC 12-1-1] [40 CFR Part 60, Subpart A]

The Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1-1, for the Cold Mill Boiler (CMB #2) rated at 40.0 MMBtu/hr, as specified in Appendix A of 40 CFR Part 60, Subpart Dc in accordance with schedule in 40 CFR Part 60, Subpart Dc.

E.1.2 Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units [40 CFR Part 60, Subpart Dc]

Pursuant to 40 CFR Part 60, Subpart Dc, the Cold Mill Boiler (CMB #2) rated at 40.0 MMBtu/hr shall comply with the following provisions:

Subpart Dc— Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

§ 60.40c Applicability and delegation of authority.

(a) Except as provided in paragraph (d) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million Btu per hour (Btu/hr)) or less, but greater than or equal to 2.9 MW (10 million Btu/hr).

(b) In delegating implementation and enforcement authority to a State under section 111(c) of the Clean Air Act, §60.48c(a)(4) shall be retained by the Administrator and not transferred to a State.

(f) Any facility covered by subpart AAAA of this part is not covered by this subpart.

(g) Any facility covered by an EPA approved State or Federal section 111(d)/129 plan implementing subpart BBBB of this part is not covered by this subpart.

§ 60.41c Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Clean Air Act and in subpart A of this part.

Annual capacity factor means the ratio between the actual heat input to a steam generating unit from an individual fuel or combination of fuels during a period of 12 consecutive calendar months and the potential heat input to the steam generating unit from all fuels had the steam generating unit been operated for 8,760 hours during that 12-month period at the maximum design heat input capacity. In the case of steam generating units that are rented or leased, the actual heat input shall be determined based on the combined heat input from all operations of the affected facility during a period of 12 consecutive calendar months.

Coal means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite by the American Society of Testing and Materials in ASTM D388–77, 90, 91, 95, or 98a, Standard Specification for Classification of Coals by Rank (IBR—see §60.17), coal refuse, and petroleum coke. Coal-derived synthetic fuels derived from coal for the purposes of creating useful heat, including but not limited to solvent refined coal, gasified coal, coal-oil mixtures, and coal-water mixtures, are also included in this definition for the purposes of this subpart.

Coal refuse means any by-product of coal mining or coal cleaning operations with an ash content greater than 50 percent (by weight) and a heating value less than 13,900 kilojoules per kilogram (kJ/kg) (6,000 Btu per pound (Btu/lb) on a dry basis.

Cogeneration steam generating unit means a steam generating unit that simultaneously produces both electrical (or mechanical) and thermal energy from the same primary energy source.

Combined cycle system means a system in which a separate source (such as a stationary gas turbine, internal combustion engine, or kiln) provides exhaust gas to a steam generating unit.

Combustion research means the experimental firing of any fuel or combination of fuels in a steam generating unit for the purpose of conducting research and development of more efficient combustion or more effective prevention or control of air pollutant emissions from combustion, provided that, during these periods of research and development, the heat generated is not used for any purpose other than preheating combustion air for use by that steam generating unit (i.e., the heat generated is released to the atmosphere without being used for space heating, process heating, driving pumps, preheating combustion air for other units, generating electricity, or any other purpose).

Conventional technology means wet flue gas desulfurization technology, dry flue gas desulfurization technology, atmospheric fluidized bed combustion technology, and oil hydrodesulfurization technology.

Distillate oil means fuel oil that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials in ASTM D396–78, 89, 90, 92, 96, or 98, “Standard Specification for Fuel Oils” (incorporated by reference—see §60.17).

Dry flue gas desulfurization technology means a sulfur dioxide (SO_2) control system that is located between the steam generating unit and the exhaust vent or stack, and that removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gases with an alkaline slurry or solution and forming a dry powder material. This definition includes devices where the dry powder material is subsequently converted to another form. Alkaline reagents used in dry flue gas desulfurization systems include, but are not limited to, lime and sodium compounds.

Duct burner means a device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

Emerging technology means any SO_2 control system that is not defined as a conventional technology under this section, and for which the owner or operator of the affected facility has received approval from the Administrator to operate as an emerging technology under §60.48c(a)(4).

Federally enforceable means all limitations and conditions that are enforceable by the Administrator, including the requirements of 40 CFR Parts 60 and 61, requirements within any applicable State implementation plan, and any permit requirements established under 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24.

Fluidized bed combustion technology means a device wherein fuel is distributed onto a bed (or series of beds) of limestone aggregate (or other sorbent materials) for combustion; and these materials are forced upward in the device by the flow of combustion air and the gaseous products of combustion. Fluidized bed combustion technology includes, but is not limited to, bubbling bed units and circulating bed units.

Fuel pretreatment means a process that removes a portion of the sulfur in a fuel before combustion of the fuel in a steam generating unit.

Heat input means heat derived from combustion of fuel in a steam generating unit and does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust gases from other sources (such as stationary gas turbines, internal combustion engines, and kilns).

Heat transfer medium means any material that is used to transfer heat from one point to another point.

Maximum design heat input capacity means the ability of a steam generating unit to combust a stated maximum amount of fuel (or combination of fuels) on a steady state basis as determined by the physical design and characteristics of the steam generating unit.

Natural gas means (1) a naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal constituent is methane, or (2) liquefied petroleum (LP) gas, as defined by the American Society for Testing and Materials in ASTM D1835–86, 87, 91, or 97, “Standard Specification for Liquefied Petroleum Gases” (incorporated by reference—see §60.17).

Noncontinental area means the State of Hawaii, the Virgin Islands, Guam, American Samoa, the Commonwealth of Puerto Rico, or the Northern Mariana Islands.

Oil means crude oil or petroleum, or a liquid fuel derived from crude oil or petroleum, including distillate oil and residual oil.

Potential sulfur dioxide emission rate means the theoretical SO_2 emissions (nanograms per joule [ng/J], or pounds per million Btu [lb/million Btu] heat input) that would result from combusting fuel in an uncleaned state and without using emission control systems.

Process heater means a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst.

Residual oil means crude oil, fuel oil that does not comply with the specifications under the definition of distillate oil, and all fuel oil numbers 4, 5, and 6, as defined by the American Society for Testing and Materials in ASTM D396–78, 89, 90, 92, 96, or 98, “Standard Specification for Fuel Oils” (incorporated by reference—see §60.17).

Steam generating unit means a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. This term includes any duct burner that combusts fuel and is part of a combined cycle system. This term does not include process heaters as defined in this subpart.

Steam generating unit operating day means a 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time in the steam generating unit. It is not necessary for fuel to be combusted continuously for the entire 24-hour period.

Wet flue gas desulfurization technology means an SO_2 control system that is located between the steam generating unit and the exhaust vent or stack, and that removes sulfur oxides from the combustion gases of the steam generating unit by contacting the combustion gases with an alkaline slurry or solution and forming a liquid material. This definition includes devices where the liquid material is subsequently converted to another form. Alkaline reagents used in wet flue gas desulfurization systems include, but are not limited to, lime, limestone, and sodium compounds.

Wet scrubber system means any emission control device that mixes an aqueous stream or slurry with the exhaust gases from a steam generating unit to control emissions of particulate matter (PM) or SO_2.

Wood means wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including but not limited to sawdust, sanderdust, wood chips, scraps, slabs, millings, shavings, and processed pellets made from wood or other forest residues.

§ 60.43c Standard for particulate matter.

(e)(1) On or after the date on which the initial performance test is completed or is required to be completed under §60.8, whichever date comes first, no owner or operator of an affected facility that commences construction, reconstruction, or modification after February 28, 2005, and that combusts coal, oil, gas, wood, a mixture of these fuels, or a mixture of these fuels with any other fuels and has a heat input capacity of 8.7 MW (30 MMBtu/h) or greater shall cause to be discharged into the atmosphere from that affected facility any gases that contain particulate matter emissions in excess of 13 ng/J (0.030 lb/MMBtu) heat input, except as provided in paragraphs (e)(2) and (e)(3) of this section. Affected facilities subject to this paragraph, are also subject to the requirements of paragraphs (c) and (d) of this section.

(2) As an alternative to meeting the requirements of paragraph (e)(1) of this section, the owner or operator of an affected facility for which modification commenced after February 28, 2005, may elect to meet the requirements of this paragraph. On and after the date on which the performance test required to be conducted under §60.8 is completed, the owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any affected facility for which modification commenced after February 28, 2005, any gases that contain particulate matter in excess of:

(i) 22 ng/J (0.051 lb/MMBtu) heat input derived from the combustion of coal, oil, gas, wood, a mixture of these fuels, or a mixture of these fuels with any other fuels, and

(ii) 0.2 percent of the combustion concentration (99.8 percent reduction) when combusting coal, oil, gas, wood, a mixture of these fuels, or a mixture of these fuels with any other fuels.

§ 60.45c Compliance and performance test methods and procedures for particulate matter.

(a) The owner or operator of an affected facility subject to the PM and/or opacity standards under §60.43c shall conduct an initial performance test as required under §60.8, and shall conduct subsequent performance tests as requested by the Administrator, to determine compliance with the standards using the following procedures and reference methods, except as specified in paragraph (c) and (d) of this section.

(1) Method 1 shall be used to select the sampling site and the number of traverse sampling points.

(2) Method 3 shall be used for gas analysis when applying Method 5, Method 5B, or Method 17.

(3) Method 5, Method 5B, or Method 17 shall be used to measure the concentration of PM as follows:

(i) Method 5 may be used only at affected facilities without wet scrubber systems.

(ii) Method 17 may be used at affected facilities with or without wet scrubber systems provided the stack gas temperature does not exceed a temperature of 160 °C (320 °F). The procedures of Sections 8.1 and 11.1 of Method 5B may be used in Method 17 only if Method 17 is used in conjunction with a wet scrubber system. Method 17 shall not be used in conjunction with a wet scrubber system if the effluent is saturated or laden with water droplets.

(iii) Method 5B may be used in conjunction with a wet scrubber system.

(4) The sampling time for each run shall be at least 120 minutes and the minimum sampling volume shall be 1.7 dry standard cubic meters (dscm) [60 dry standard cubic feet (dscf)] except that smaller sampling times or volumes may be approved by the Administrator when necessitated by process variables or other factors.

(5) For Method 5 or Method 5B, the temperature of the sample gas in the probe and filter holder shall be monitored and maintained at 160 ±14 °C (320 ±25 °F).

(6) For determination of PM emissions, an oxygen or carbon dioxide measurement shall be obtained simultaneously with each run of Method 5, Method 5B, or Method 17 by traversing the duct at the same sampling location.

(7) For each run using Method 5, Method 5B, or Method 17, the emission rates expressed in ng/J (lb/million Btu) heat input shall be determined using:

(i) The oxygen or carbon dioxide measurements and PM measurements obtained under this section,

(ii) The dry basis F-factor, and

(iii) The dry basis emission rate calculation procedure contained in Method 19 (appendix A).

(c) Units that burn only oil containing no more than 0.5 weight percent sulfur or liquid or gaseous fuels with potential sulfur dioxide emission rates of 230 ng/J (0.54 lb/MMBtu) heat input or less are not required to conduct emissions monitoring if they maintain fuel supplier certifications of the sulfur content of the fuels burned.

(d) In place of particulate matter testing with EPA Reference Method 5, 5B, or 17, an owner or operator may elect to install, calibrate, maintain, and operate a continuous emission monitoring system for monitoring particulate matter emissions discharged to the atmosphere and record the output of the system. The owner or operator of an affected facility who elects to continuously monitor particulate matter emissions instead of conducting performance testing using EPA Method 5, 5B, or 17 shall install, calibrate, maintain, and operate a continuous emission monitoring system and shall comply with the requirements specified in paragraphs (d)(1) through (d)(13) of this section.

(1) Notify the Administrator 1 month before starting use of the system.

(2) Notify the Administrator 1 month before stopping use of the system.

(3) The monitor shall be installed, evaluated, and operated in accordance with §60.13 of subpart A of this part.

(4) The initial performance evaluation shall be completed no later than 180 days after the date of initial startup of the affected facility, as specified under §60.8 of subpart A of this part or within 180 days of notification to the Administrator of use of the continuous monitoring system if the owner or operator was previously determining compliance by Method 5, 5B, or 17 performance tests, whichever is later.

(5) The owner or operator of an affected facility shall conduct an initial performance test for particulate matter emissions as required under §60.8 of subpart A of this part. Compliance with the particulate matter emission limit shall be determined by using the continuous emission monitoring system specified in paragraph (d) of this section to measure particulate matter and calculating a 24-hour block arithmetic average emission concentration using EPA Reference Method 19, section 4.1.

(6) Compliance with the particulate matter emission limit shall be determined based on the 24-hour daily (block) average of the hourly arithmetic average emission concentrations using continuous emission monitoring system outlet data.

(7) At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraph (d)(7)(i) of this section for 75 percent of the total operating hours per 30-day rolling average.

(i) At least two data points per hour shall be used to calculate each 1-hour arithmetic average.

(ii) [Reserved]

(8) The 1-hour arithmetic averages required under paragraph (d)(7) of this section shall be expressed in ng/J or lb/MMBtu heat input and shall be used to calculate the boiler operating day daily arithmetic average emission concentrations. The 1-hour arithmetic averages shall be calculated using the data points required under §60.13(e)(2) of subpart A of this part.

(9) All valid continuous emission monitoring system data shall be used in calculating average emission concentrations even if the minimum continuous emission monitoring system data requirements of paragraph (d)(7) of this section are not met.

(10) The continuous emission monitoring system shall be operated according to Performance Specification 11 in appendix B of this part.

(11) During the correlation testing runs of the continuous emission monitoring system required by Performance Specification 11 in appendix B of this part, particulate matter and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the continuous emission monitors and the test methods specified in paragraph (d)(7)(i) of this section.

(i) For particulate matter, EPA Reference Method 5, 5B, or 17 shall be used.

(ii) For oxygen (or carbon dioxide), EPA reference Method 3, 3A, or 3B, as applicable shall be used.

(12) Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with procedure 2 in appendix F of this part. Relative Response Audit's must be performed annually and Response Correlation Audits must be performed every 3 years.

(13) When particulate matter emissions data are not obtained because of continuous emission monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained by using other monitoring systems as approved by the Administrator or EPA Reference Method 19 to provide, as necessary, valid emissions data for a minimum of 75 percent of total operating hours on a 30-day rolling average.

§ 60.47c Emission monitoring for particulate matter.

(c) Units that burn only oil that contains no more than 0.5 weight percent sulfur or liquid or gaseous fuels with potential sulfur dioxide emission rates of 230 ng/J (0.54 lb/MMBtu) heat input or less are not required to conduct PM emissions monitoring if they maintain fuel supplier certifications of the sulfur content of the fuels burned.

§ 60.48c Reporting and recordkeeping requirements.

(a) The owner or operator of each affected facility shall submit notification of the date of construction or reconstruction, anticipated startup, and actual startup, as provided by §60.7 of this part. This notification shall include:

(1) The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.

(2) If applicable, a copy of any Federally enforceable requirement that limits the annual capacity factor for any fuel or mixture of fuels under §60.42c, or §60.43c.

(3) The annual capacity factor at which the owner or operator anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.

(b) The owner or operator of each affected facility subject to the SO_2 emission limits of §60.42c, or the PM or opacity limits of §60.43c, shall submit to the Administrator the performance test data from the initial and any subsequent performance tests and, if applicable, the performance evaluation of the CEMS and/or COMS using the applicable performance specifications in appendix B.

(g) The owner or operator of each affected facility shall record and maintain records of the amounts of each fuel combusted during each day. The owner or operator of an affected facility that only burns very low sulfur fuel oil or other liquid or gaseous fuels with potential sulfur dioxide emissions rate of 140 ng/J (0.32 lb/MMBtu) heat input or less shall record and maintain records of the fuels combusted during each calendar month.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY

PART 70 OPERATING PERMIT CERTIFICATION

Source Name:	Nucor Steel
Source Address:	4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address:	4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.:	T107-7172-00038

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

Please check what document is being certified:

☐ Annual Compliance Certification Letter

☐ Test Result (specify)

☐ Report (specify)

☐ Notification (specify)

☐ Affidavit (specify)

☐ 40 CFR 63, Subpart DDDDD

☐ Other (specify)

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
Signature:
Printed Name:
Title/Position:
Phone:
Date:

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
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PART 70 OPERATING PERMIT
EMERGENCY OCCURRENCE REPORT

Source Name: Nucor Steel
Source Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.: T107-7172-00038

This form consists of 2 pages **Page 1 of 2**

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

X The Permittee must notify the Office of Air Quality (OAQ), within four (**4**) business hours (1-800-451-6027 or 317-233-0178, ask for Compliance Section); and

X The Permittee must submit notice in writing or by facsimile within two (**2**) working days (Facsimile Number: 317-233-6865), and follow the other requirements of 326 IAC 2-7-16.

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

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency:
Describe the cause of the Emergency:

If any of the following are not applicable, mark N/A **Page 2 of 2**

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

Form Completed by:______________________________________

Title / Position: ______________________________________

Date: ______________________________________

Phone: ______________________________________

A certification is not required for this report.

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

PART 70 OPERATING PERMIT
SEMI-ANNUAL NATURAL GAS FIRED BOILER CERTIFICATION

(Applicable for boilers > or = 10 MMBtu per hour that can burn both natural gas and other fuels . The natural gas fired boiler certification is not required for boilers that can physically only burn natural gas.)

Source Name:	Nucor Steel
Source Address:	4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address:	4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.:	T107-7172-00038

☐ Natural Gas Only
☐ Alternate Fuel burned
From:_________ To:_

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Signature:
Printed Name:
Title/Position:
Phone:
Date:

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

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

Part 70 Quarterly Report

Source Name: Nucor Steel
Source Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.: T107-7172-00038
Facility: The steel mill service screen and conveyor system
Parameter: Steel Mill related material throughput
Limit: Less than 1,092,000 tons per 12 consecutive month period.

YEAR:

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

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

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: Nucor Steel
Source Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.: T107-7172-00038
Facility: Meltshop Electric Arc Furnaces
Parameter: Steel Production – tons of steel poured/tapped per twelve (12) consecutive month period
Limit: 4,397,520 tons of steel

YEAR:

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

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

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: Nucor Steel
Source Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.: T107-7172-00038
Facility: Strip Caster Line
Parameter: Steel Throughput/Production Limitation
Limit: 2,365,200 tons steel processing per year, based on a twelve (12) consecutive month period

YEAR:

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

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

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: Nucor Steel
Source Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.: T107-7172-00038
Facility: Cold Reversing Mill 1
Parameter: Mill steel throughput
Limit: 2,190,000 tons per 12 consecutive month period.

YEAR:

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

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

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: Nucor Steel
Source Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.: T107-7172-00038
Facility: Reversing and Tempering (R/T) Mill (a.k.a Cold Reversing Mill 2)
Parameter: Mill steel throughput
Limit: 2,190,000 tons per twelve (12) consecutive month period.

YEAR:

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

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

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: Nucor Steel
Source Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.: T107-7172-00038
Facility: Four (4) annealing furnaces identified as HM #1-HM #4
Parameter: Total Natural Gas Equivalent Usage
Limit: 484 million cubic feet of natural gas per twelve (12) consecutive month period.

NG equivalent conversion factor:
1 million cubic feet of natural gas = 5.42 thousand gallons propane

YEAR:

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Natural Gas Usage			
Propane Usage			
Natural Gas Equivalent Usage			
Month 2			
Natural Gas Usage			
Propane Usage			
Natural Gas Equivalent Usage			
Month 3			
Natural Gas Usage			
Propane Usage			
Natural Gas Equivalent Usage			

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

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 - KELLY

Source Name: Nucor Steel
Source Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.: T107-7172-00038
Facility: AN-19, TD #3, MD #1, and MD #2
Parameter: Propane combusted
Limit: 1,089 thousand gallons per twelve consecutive month period.

QUARTER : YEAR:

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

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

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 OPERATING PERMIT
QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT

Source Name: Nucor Steel
Source Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Mailing Address: 4537 South Nucor Road, Crawfordsville, Indiana 47933
Part 70 Permit No.: T107-7172-00038

Months: ______ to ______ Year: ________

Page 1 of 2

This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. A deviation required to be reported pursuant to an applicable requirement that exists independent of the permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. Additional pages may be attached if necessary. If no deviations occurred, please specify in the box marked "No deviations occurred this reporting period".
☐ NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.
☐ THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD

Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Form Completed by:____________________________________

Title / Position: ____________________________________

Date:____

Phone: ____

Attach a signed certification to complete this report.

Attachment A

Fugitive Dust Control Plan
Approved March 28, 1999

NUCOR Steel
4537 South Nucor Road
Crawfordsville, Indiana 47842

SECTION 1 — INTRODUCTION

The following control plan, when implemented is designed to reduce uncontrolled fugitive dust, based on a PM10 mass emission rate basis. From paved roadways and parking lots by at least 50 percent and down to 16.8 pounds of silt per mile, unpaved roadways and traveled open areas by at least 90 percent instantaneous control, and storage piles and slag processing operations by 97 percent.

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

The person on site who is responsible for implementing the plan is:

NUCOR Steel
Environmental Manager
4537 South Nucor Road
Crawfordsville, Indiana 47933-9450
Telephone: (765) 361-2659

Whitesville Mill Service (Slag Processing)
Plant Manager
4537 South Nucor Road
Crawfordsville, Indiana 47933-9450
Telephone: (765) 364-9251

SECTION 2 — PAVED ROADS AND PARKING LOTS

Paved roads and parking lots are indicated on the attached site plan. Dust from these sources shall be controlled by the use of a vehicular sweeper and shall be performed at least once every 14 days to achieve the limit of 16.8 pounds of silt per mile. The average daily traffic on these roads is anticipated up to 350 trucks per day and 400 automobiles per day.

On request of the Assistant Commissioner, NUCOR shall sample and provide to IDEM surface material silt content and surface dust loadings in accordance with field and laboratory procedures given in Reference 1. IDEM will have the right to specify road segments to be sampled. NUCOR shall provide supplemental cleaning of paved road sections found to exceed the controlled silt surface loading of 16.8 pounds of silt per mile.

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

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

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

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

SECTION 3 — UNPAVED ROADS

Unpaved roads at the slag processing facility shall be treated with an asphaltic emulsion petroleum resin, chemical dust suppressant, or water application. Unpaved roads outside of the slag processing area are maintenance roads that will be tarred-and-chipped, treated with asphaltic emulsion, petroleum resin chemical dust suppressant, or watered as needed for dust control due to moderate or light usage.

Control Requirements

1. Slag Processing Facility Unpaved Roads - All roads in the slag processing facility shall be unpaved and treated with an asphaltic emulsion, petroleum resin, chemical dust suppressant, or watered as needed. The program shall be implemented at the following rate:

Table 3-1

Material	Rate	Frequency
Asphalatic Emulsion	0.14 gal/yd^2	Once/Month (see below)
Petroleum Resin	0.14 gal/yd^2	Once/Month (see below)
Chemical Dust Suppressant	As Specified	Once/Month
Water	As Necessary	As Necessary

As an alternative, NUCOR may pave previously unpaved road sections and apply paved road cleaning measures to these newly paved roads at frequencies similar to existing paved roads in the immediate area.

2. Moderate Use of Roads - Fugitive dust emissions from unpaved roads receiving moderate usage shall be controlled to at least 90 percent instantaneous control, based on a PM10 mass emission basis, by tarring-and-chipping, treatment with an asphaltic emulsion, petroleum resin, chemical dust suppressant, or water application as specified below:

Table 3-2

Material	Rate	Frequency
Tarring-and-Chipping	As Necessary	Once/Month
Asphaltic Emulsion	0.14 gal/yd^2	Once/Month (see below)
Petroleum Resin	0.14 gal/yd^2 initial 0.14 gal/yd^2 subsequent	Once/Month (see below)
Chemical Dust Suppressant	As Specified	Once/Month (see below)
Water	As Necessary	As Necessary

As an alternative, NUCOR may pave previously unpaved road sections and apply paved road cleaning measures to these newly paved roads at frequencies similar to existing paved roads in the immediate area.

3. Light Use Maintenance Roads - Fugitive dust emissions from unpaved roads receiving light usage shall be controlled by an asphaltic emulsion, petroleum resin, chemical dust suppressant, or water as necessary to prevent excessive visible fugitive emissions.

Exceptions - Treating of unpaved road segments may be delayed by one day when:

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

(b) The road segments are saturated with water such that the asphaltic emulsion, petroleum resin, or chemical dust suppressant cannot be accepted by the surface.

(c) The road segments are frozen or covered by ice, snow, or standing water.

(d) The road segment or area is closed or abandoned. Abandoned roads shall be barricaded.

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

Approved Control Methods

The asphaltic emulsion, petroleum resin, and chemical dust suppressant products currently approved by IDEM for the use at NUCOR are as follows:

(a) Soil Cement

(b) Calcium Chloride

(c) Road Pro

(d) Petrotac

(e) Coherex

(f) Hydro_Pine

Application rates and frequencies of the approved product, approved equivalent or water shall be sufficient to provide at least 90 percent instantaneous dust control.

2. Tarring-and-Chipping —Tarring-and-chipping shall be applied once to any road segment consistent with good engineering practice and maintained as necessary to ensure fugitive dust control.

3. Asphaltic Emulsion — An asphalt emulsion product shall be applied at the frequency stated in Tables 3-1 or 3-2 from April through October, unless conditions require increase frequency or as required by IDEM or EPA to ensure fugitive dust control. Asphalt emulsion products shall be applied at a rate of 0.14 gallons per square yard per treatment.

4. Petroleum Resin — Petroleum resin products shall be applied at the frequency stated in Tables 3-1 or 3-2 from April through October, unless conditions require increased frequency or as required by IDEM or EPA to ensure fugitive dust control. Petroleum resin products shall be applied at a rate of 0.14 gallons per square yard for the initial treatment and 0.12 gallons per square yard for all subsequent treatments, with the second treatment immediately following the initial treatment.

5. Chemical Dust Suppressant — Commercially produced chemical dust suppressants specifically manufactured for that purpose and approved for use, in writing, by IDEM shall be applied at the rate and frequency specified in the manufacturer's instructions or the IDEM written approval from April through October.

6. Approved Equivalents — No asphaltic emulsion product, petroleum resin product, or chemical dust suppressant shall be used as an equivalent to those listed above without the prior written approval of IDEM.

SECTION 4 – UNPAVED AREAS

Unpaved areas traveled about stockpiles shall be treated with chemical dust suppressant, asphaltic emulsion, or watered. Fugitive dust emissions shall be reduced by at least 90 percent instantaneous control on a PM10 mass emission basis.

Material	Rate	Avg. Daily Travel	Frequency
Asphaltic Emulsion	0.14 gal/yd^2	25-35 Vehicles	Once/Month (see below)
Chemical Dust Suppression	--		
Water	As Necessary		As Necessary

Exceptions — Treatment of unpaved areas may be delayed by one day when:

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

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

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

(d) The area is closed or abandoned.

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

SECTION 5 - OPEN AGGREGATE PILES

Open aggregate piles consist of slag in various stages of processing. To maintain product quality and chemical stability, watering the stockpiles shall be the primary means of dust control. Water must be limited so as to keep the moisture content of the product within standards. The total acres of piled material is 10 acres.

Pile Material	Moisture %	Silt %
Raw	2-5	1
Plus 4 inches	1-5	<1
5/8” x 2”	1-5	<1
0’ x ½”	1-5	<1
Mill Scale	1-5	1-3
Debris	2-5	4-6
AOD Slag	1-5	5-10
Refractory	0-1	1-3

Wind Erosion — Visible emissions from the storage piles shall be controlled by the application of water. Water added to the product during processing provides added control. Visible emissions shall be determined in accordance with the procedure specified in Method 9. These limitations may not apply during periods when application of fugitive particulate control measures are either ineffective orunreasonable due to sustained very high wind speeds. During such periods, the Permittee must continue to implement all reasonable fugitive particulate control measures.

SECTION 6 — SLAG PROCESSING

The following individual operations make up the slag processing operations:

1. Transfer of Cushion Material to Slag Pot — Visible emissions shall be controlled by minimizing the drop height of the bucket and by dumping the bucket slowly.

2. Transfer of Liquid Slag from EAF to Slag Pot — Visible emissions shall be controlled by the EAF shop building. The visible emissions associated with the slag that is dug out of the slag pits located beneath each EAF shall be controlled by minimizing the drop height of the bucket and by dumping the bucket slowly.

3. Transfer of Liquid Slag to Slag Pit — Visible emissions shall be controlled by limiting the rate of pouring and by applying water to the slag pit after the molten slag has been completely dumped from the slag pot to the slag pit.

4. Slag Pit Transfer Activities — Visible emissions shall be controlled by watering of the slag pit.

5. Skull Pit Activities — Application of water to the skull pit activities, including removal of skull and transfer of skull, is prohibitive due to safety reasons because the materials are reused.

6. Screening and Crushing Operation — Visible emissions shall be controlled through the application of water via spray bars.

7. Processed Slag Transfer Activities — Visible emissions shall be controlled by limiting the drop height and rate the material is dumped, and controlling the rate at which the material is picked up.

8. Material Transportation Activities — Visible emissions from the material during inplant transportation shall be controlled by limiting the speed of the hauling equipment, covering the material if necessary, and limiting the bucket height during transport of the material if necessary.

SECTION 7 — VEHICLE SPEED CONTROL

Speed limits on paved roads shall be posted to be 20 miles per hour. Speed limits on unpaved roads shall be 10 miles per hour.

Compliance with these speed limits shall be monitored by plant guards and safety department. Upon violation, employees shall receive written warning, followed by a one-day suspension if continued violations occur. Visitors to the plant shall be denied access if repeated violations occur.

SECTION 8 — MATERIAL SPILL CONTROL

Incidents of material spillage on plant property shall be investigated by the person responsible for implementing the plan. That person shall arrange for prompt cleanup and shall contact the party responsible for the spill to insure that corrective action has been taken.

SECTION 9 - MONITORING AND RECORD KEEPING

Records shall be kept within a journal which will e updated on a regular basis by the environmental engineer of his/her designs. The journals shall include sweeping and spill control activities, and dust suppressant application frequency. Also, the journal shall contain the total amount of water sprayed on the aggregate piles, and the slag processing spray bars. The journals shall be kept in storage for a minimum of three (3) years and shall be available for inspection or copying upon reasonable prior notice.

SECTION 10 - COMPLIANCE SCHEDULE

This plan shall be fully implemented when construction is completed. Until that time, the plan shall be implemented within portions of the site where construction is considered complete. Where construction is incomplete, appropriate control measures shall be implemented, but cannot be comprehensively addressed. These activities shall be included in the engineering journal.

SECTION 11 - UNPAVED ROADWAY AND UNPAVED AREA OPACITY LIMITS

Visible emissions from any unpaved road segment or unpaved area shall not exceed 5 percent opacity as averaged over any consecutive 3-minute period. All visible emission observations shall be determined in accordance with 40 CFR 60, Appendix A, Method 9, except as otherwise provided below:

1. In viewing fugitive emissions generated by vehicular traffic, the observer shall be positioned in accordance with the provisions of paragraph 2.1 of Method 9 except that if it is an overcast day the observer need not position himself with his back to the sun.

2. The observer shall begin reading when a vehicle crosses his line of sight which shall be approximately perpendicular to the trajectory of that vehicle. The observer shall continue to observe and record visible emission opacities at 15-second intervals along that same line of sight until no less than twelve consecutive opacity readings have been obtained. If, during the 3-minute evaluation period, another vehicle passes the observers line of sight on the roadway being evaluated, the observer shall terminate the evaluation for that 3-minute period and disregard the incomplete set of readings.

3. If IDEM inspectors note opacity readings greater than 3 percent, NUCOR shall provide supplemental dust suppressant treatment of unpaved roads and parking lots within 24 hours except as provided for in Sections 3 and 4.

SECTION 12 - REFERENCES

1. C. Cowherd, Jr., et al., Iron and Steel Plant Open Dust Source Fugitive Emission Evaluation, EPA 600/2-79-103, U.S. Environmental Protection Agency Cincinnati. OH, May 1979.

Appendix B

NUCOR Steel
4537 South Nucor Road
Crawfordsville, Indiana 47842

Crawfordsville, Indiana Scrap Management Plan

Scrap Specifications

These are the specifications, exhibits, and requirements for purchased ferrous scrap. In addition to these descriptions, Nucor Crawfordsville will not accept the following:

1. **Radioactivity Scrap must be free of radioactivity**. Scrap will be screened by detection equipment at the entrance of the plant. Scrap that does not pass this screening will be quarantined awaiting disposition by the NRC.

2. **Closed Cylinders** Scrap may not contain closed cylinders of any type including tanks, shocks, gas cylinders, etc.

3. **Excessive Moisture** Scrap is to be free of excessive moisture.

4. **Excessive Oil** Scrap cannot contain excessive oil. Cutting fluids must be held to a minimum.

5. **Non-Metallics** Scrap is to be free of non-metallic items such as wood, paper, plastic, etc.

6. **Non-ferrous** Scrap is to be free of non-ferrous items such as copper, aluminum, brass, bronze, chrome, etc., unless otherwise specified.

7. **Debris** Garbage and other debris are not permissible.

Scrap must be shipped pursuant to the purchase order. Scrap delivered by truck will be received between **6:30 AM to 4:00 PM** EST. All scrap will be inspected when received. Scrap that does not conform to the specification will be rejected. If rejectable scrap is found after dumping, the scrap will be reloaded and removed from the plant.

Indiana Department of Environmental Management
Office of Air Quality

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

Source Name:	Nucor Steel
Source Location:	4537 South Nucor Road, Crawfordsville, Indiana 47933
County:	Montgomery
SIC Code:	3312
Operation Permit No.:	107-7172-00038
Operation Permit Issuance Date:	December 29, 2006
PSD/Significant Source Modification No.:	107-24348-00038
Significant Permit Modification No.:	107-24699-00038
Permit Reviewer:	Aida De Guzman

On October 15, 2007, the Office of Air Quality (OAQ) had a notice published in the Journal Review, Crawfordsville, Indiana, stating that Nucor Steel applied for applications regarding modification of the existing steel mini-mill and Part 70 Operating permit. The notice also stated that OAQ proposed to issue permits for this source and provided information on how the public could review the proposed permits and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not these permits should be issued as proposed.

On October 25, 2007, October 26, 2007 and October 30, 2007, the Permittee submitted the following comments to the proposed PSD/Significant Source Modification and Significant Permit Modification:

Comment 1:

Nucor is involved in an ongoing appeal before the Office of Environmental Adjudication (OEA) of several conditions of previous PSD permits, its Part 70 Operating Permit, and modifications of the Part 70 Operating Permit. The appealed conditions appear in PSD/SSM 107-24348-00038 and SPM 107-24699-00038. Nucor wants to ensure that it preserves its right to appeal the contested conditions and, as a result, incorporates by reference its Petition for Administrative Review of the Part 70 Operating Permit T107-7172-00038 as comments to PSD/SSM 107-24348-00038 and SPM 107-24699-00038. The Petition for Administrative review is before the OEA under cause number 03-A-J-3253.

Response 1:

The proposed PSD/SSM 107-24348-00038 and SPM 107-24699-00038 will not affect the appealed conditions filed under Petition for Administrative Review Number 03-A-J-3253 because these conditions were not amended in the proposed PSD and permit modifications to resolve the issues in the appeal.

Comment 2:

Section A.3 - Emission Units and Pollution Control Equipment Summary - A.3.D.32(ss)(1a) - This facility description may be eliminated because Nucor no longer has ladle preheaters LP#1 through LP#5 onsite. At this time, Nucor is permitted to operate seven ladle preheaters in the Meltshop. Prior to April 20, 2007, Nucor was permitted to operate five ladle preheaters in the

Meltshop. These preheaters were designated LP#1 through LP#5. On September 15, 2006, Nucor submitted a PSD permit application that included replacing LP#1 through LP#5 with like-kind units, moving a previously permitted ladle preheater from the Castrip to the Meltshop, and constructing a new ladle preheater/dryer. IDEM, OAQ designated the ladle preheaters that would replace LP#1 through LP#5 as LP#1a through LP#5a. The ladle preheater that was moved from the Castrip to the Meltshop was designated LP#6 and the new ladle preheater/dryer was designated LP#7a. Older permits included descriptions of both the "old" ladle preheaters (LP#1-#5) and the "new" ladle preheaters (LP#1a-LP#5a and LP#7a) because Nucor was in the process of replacing the ladle preheaters. Because these ladle preheaters have been replaced, references to them as "old" and "new" should be removed.

Comment 3:

A.3 and D.32(ss)(3) Nucor has five tundish preheaters. It appears that IDEM, OAQ intended to specify in this emission unit equipment summary that Nucor has five, rather than four tundish preheaters, but the text describing the four preheaters was not removed. Thus, the first sentence, describing the four preheaters should be removed.

Responses 2 and 3:

Since these preheaters LP#1 through LP#5 have been removed, they have been deleted from the permits.

In addition, the reference to four (4) Tundish Preheaters, identified as TPH #1 - #4 has been deleted from the permit, since the source has only five preheaters (TP1 through TP5).

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

This stationary source consists of the following emission units and pollution control devices:

D.32 – MELTSHOP – LADLE METALLURGY FURNACES, PREHEATERS, AND DRYERS

(ss) Three (3) Meltshop Ladle Metallurgy Furnaces (LMFs)/Stirring Station, two (2) identified as EU-13 (a) and (b), constructed in 1988, and one (1) LMF identified as EU-13(c) approved for construction in 2007 with a maximum capacity of 502 tons/hour each and EU-13 (a) and (b) are controlled by a baghouse, identified as Meltshop LMF Baghouse, exhausting to stack S-13. The Meltshop LMF Baghouse has a design flow rate of 200,000 acf/min. The LMF baghouse was constructed in 1992. The LMF, EU-13(c) will be controlled by the EAFs baghouses which vent to stacks BH1 and BH2. In addition the LMFs have the following associated equipment:

~~(1a) Ladle Preheaters, identified as LP #1 - #5, uncontrolled and exhausting to stacks 7 and 8, consisting of:~~

~~(A) 3 units, identified as LP #1 - #3, constructed in 1989, each rated at 10 MMBtu per hour.~~

~~(B) 1 unit, identified as LP #4, constructed in 1994, rated at 7.5 MMBtu per hour.~~

~~(C) 1 unit, identified as LP #5, constructed in 1989, rated at 15 MMBtu per hour.~~

(1~~b~~) Ladle Preheaters, identified as LP #1a through LP #7a, consisting of:

(3) ~~Four (4) Tundish Preheaters, identified as TPH #1 - #4, constructed in 1995, consisting of 4 low NOx natural gas fired heaters, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.~~ . Five (5) Tundish Preheaters, identified as TP1 - TP5, constructed in 1995, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel.

SECTION D.32 FACILITY OPERATION CONDITIONS

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

MELTSHOP – LADLE METALLURGY FURNACES, PREHEATERS, AND DRYERS

(ss) Three (3) Meltshop Ladle Metallurgy Furnaces (LMFs)/Stirring Station, two (2) identified as EU-13 (a) and (b), constructed in 1988, and one (1) LMF identified as EU-13(c) approved for construction in 2007 with a maximum capacity of 502 tons/hour each and EU-13 (a) and (b) are controlled by a baghouse, identified as Meltshop LMF Baghouse, exhausting to stack S-13. The Meltshop LMF Baghouse has a design flow rate of 200,000 acf/min. The LMF baghouse was constructed in 1992. The LMF, EU-13(c) will be controlled by the EAFs baghouses which vent to stacks BH1 and BH2. In addition the LMFs have the following associated equipment:

~~(1a) Ladle Preheaters, identified as LP #1 - #5, uncontrolled and exhausting to stacks 7 and 8, consisting of:~~

~~(A) 3 units, identified as LP #1 - #3, constructed in 1989, each rated at 10 MMBtu per hour.~~

~~(B) 1 unit, identified as LP #4, constructed in 1994, rated at 7.5 MMBtu per hour.~~

~~(C) 1 unit, identified as LP #5, constructed in 1989, rated at 15 MMBtu per hour.~~

(1~~b~~) Ladle Preheaters, identified as LP #1a through LP #7a, consisting of:

(3) ~~Four (4) Tundish Preheaters, identified as TPH #1 - #4, constructed in 1995, consisting of 4 low NOx natural gas fired heaters, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.~~ Five (5) Tundish Preheaters, identified as TP1 - TP5, constructed in 1995, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel.

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

Comment 4:

Section D.4 – Castrip – LMS, Tundish, and Continuous Strip Caster -D.4.5(a), (b), (c), (d) - Each of these conditions should be revised to specify that the limits apply to emissions from the Castrip LMS-2 baghouse. Consequently, in each condition “from the Castrip, CS-1” should be replaced with “from the Castrip LMS-2 baghouse stack (S-20)”.

D.4.5(f) - This condition should be revised to reflect that, in addition to the Castrip, the Castrip LMS-2 baghouse and tundish T-1 must be controlled by a baghouse. Thus, Nucor proposes revising this condition to read: “The emissions from the Castrip LMS-2, Tundish T-1, and continuous strip caster CS-1 shall be controlled by a baghouse.”

Response 4:

Condition D.4.5 has been revised to apply the limits to the emissions from the "Castrip LMS-2 baghouse stack (S-20)” only.

D.4.5 PSD BACT for Metals [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), and PSD SSM 107-24348-00038, the Permittee shall comply with the following BACT requirements:

(a) The Lead emissions from the ~~Castrip, CS-1~~ **Castrip LMS-2 baghouse** shall be limited to 0.00048 pound per ton of steel produced and 0.13 pound per hour, based on a 3-hour block average.

(b) The Mercury emissions from the ~~Castrip, CS-1~~ **Castrip LMS-2 baghouse** shall be limited to 0.02 pound per hour, based on a 3-hour block average.

(c) The Beryllium emissions from the ~~Castrip, CS-1~~ **Castrip LMS-2 baghouse** shall be limited to 0.002 pound per hour, based on a 3-hour block average.

(d) The Fluorides emissions from the ~~Castrip, CS-1~~ **Castrip LMS-2 baghouse** shall be limited to 0.01 pound per ton of steel produced and 2.7 pounds per hour, based on a 3-hour block average.

The fluorides emissions from the Castrip shall be minimized by using granular Fluorspar, to minimize fluorides emissions and it shall be applied at a rate of 250 pounds/heat at the Castrip.

(e) The emissions from the lead and mercury shall be minimized in accordance with the Scrap Management Program (SMP) and

(f) The emissions from the Castrip **LMS-2, Tundish T-1, and continuous strip caster CS-1** shall be controlled by a baghouse.

Comment 5:

Section D.18 – Cold Mill – Cold Mill Boiler (CMB#2) - D.18.2 This Condition has an incorrect emission limit in pounds per MMBtu heat input. According to the equation in 326 IAC 6-2-4, reprinted in D.18.2, a unit with a heat input of 40.0 MMBtu/hr is limited to 0.418 pounds per MMBtu heat input and not 0.283 lb/MMBtu.

Response 5:

The 40.0 MMBtu/hr Cold Mill Boiler (CMB #2) PM emission limit of 0.283 as required in Condition D.18.2 is correct. This emission limit was calculated based on the sourcewide heat input rate of 179.02 million British thermal units per hour (mmBtu/hr) instead of considering only the heat input of the Cold Mill Boiler (CMB #2). Please see the detailed calculations on pages 15 and 16 of the Technical Support Document of these proposed permits. Therefore, no changes have been made to Condition D.18.2 as a result of this comment.

Comment 6:

D.18.5 Nucor proposes that IDEM, OAQ eliminate this condition because it is unnecessary. This condition requires Nucor to conduct performance tests on Cold Mill Boiler number 2. CMB#2 is a natural gas fired unit and thus there are well established emission factors that demonstrate proper operation of this equipment will ensure that Nucor is well within the emission limits. Nucor proposes that IDEM, OAQ adopt the same compliance monitoring provisions for CMB#2 that Nucor must use for CMB#1. That is, Nucor should only be required to "keep daily records of the fuel used by boiler CMB # 2." At the very least, because this is a natural gas fired unit, Nucor should only be required to test for NOx and CO.

Response 6:

It is appropriate to require stack testing for the proposed CMB #2 Boiler to demonstrate compliance with the PSD BACT limits. Therefore, no changes have been made to the proposed permit.

Comment 7:

Section D.31 – Meltshop – Electric Arc Furnaces, Argon Oxygen Decarburization (AOD) Vessels, Desulfurization, Continuous Casters, EAF Dust Treatment Facility - D.31.1(a)(7) & (8) and D.31.3(a) - Nucor proposes that IDEM, OAQ add "each" to the end of each of these conditions to clarify that the particulate matter emissions limit is a limit for each individual baghouse rather than a combined limit for the two Meltshop EAF baghouses.

Response 7:

Conditions D.31.1(a)(7) and (8), and D.31.3(a) have been revised to clarify these conditions.

D.31.1 Meltshop EAF Baghouses PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Permittee shall comply with the following BACT requirements:

(7) Filterable particulate matter (PM) emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall not exceed 0.0018 grains/dscf **from each baghouse**.

(8) Filterable and condensible PM_{10} emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall not exceed 0.0052 grains/dscf **from each baghouse**.

D.31.3 Meltshop EAF Baghouses PM and Opacity [40 CFR 60.272a]

(a) Pursuant to 40 CFR 60.272a(a)(1), the particulate matter (PM) emissions from the Meltshop EAFs and AOD vessel, exhausting through the Meltshop EAF Baghouses (1 and 2), shall not exceed 0.0052 gr/dscf **from each baghouse**. Compliance is determined by using methods specified in 40 CFR 60, Subpart AAa or other methods as approved by the Commissioner.

Comment 8:

D.31.10(b) -This condition should be revised to also include the Meltshop EAF Baghouse 1 stack.

Response 8:

Condition D.31.10(b) has been revised to include the EAF baghouse 1 stack.

D.31.10 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11][40 CFR 60.275a]

(b) Pursuant to 40 CFR 60.13(i)(1), for the Meltshop EAF**s Baghouse 1 and** Baghouse 2 stack**s**, the Permittee shall determine either:

(1) the control system fan motor amperes and all damper positions;

(2) the volumetric flow rate through each separately ducted hood; or,

(3) the volumetric flow rate at the control device inlet and all damper positions.

During all compliance demonstration testing.

Comment 9:

D.32.3(a) - This Condition inaccurately states that Nucor is permitted to operate eleven ladle preheaters in the Meltshop. As discussed in the comments to the Emission Unit and Pollution Control Equipment Summary section A.3.D.32(ss)(1a), Nucor is permitted to operate seven ladle preheaters in the Meltshop (one of the units, LP#7a, is a ladle preheater/dryer). One of these ladle preheaters, LP#6, is governed by Condition D.32.3(b). The remainder of the ladle preheaters, LP#1a through LP#5a, as well as the ladle preheater/dryer, LP#7a, is governed by Condition D.32.3a. Thus, Condition D.32.3(a) should be revised to change all references to "eleven" ladle preheaters to "six" ladle preheaters and to eliminate reference to LP#1 through LP#5.

Response 9:

For the associated change in Section A.3, please see the related Response 2. Condition D.32.3(a) has been revised as follows:

D.32.3 Ladle Preheaters PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5~~, LP#1a - #5a and #7a) shall comply with the following BACT requirements:

(1) The ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5,~~ LP#1a - #5a and #7a) shall only burn natural gas, except as specified below. The ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5,~~ LP#1a - #5a and #7a) shall each be limited to 10.0 million Btu per hour heat input

(2) PM/PM10 emissions from each of the ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5,~~ LP#1a - #5a and #7a) shall be limited to 7.6 pounds per million cubic feet of natural gas burned, ~~0.836~~ **0.456** pounds per hour (total), and ~~3.7~~ **2.0** tons per year (total).

(3) NOx emissions from each of the ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5,~~ LP#1a - #5a and #7a) shall be limited to 100 pounds per million cubic feet of natural gas burned, ~~11~~ **6.0** pounds per hour (total), and ~~48.2~~ **26.3** tons per year (total).

(4) CO emissions from each of the ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5,~~ LP#1a - #5a and #7a) shall be limited to 84 pounds per million cubic feet of natural gas burned, ~~9.24~~ **5.04** pounds per hour (total), and ~~40.5~~ **22.0** tons per year (total).

(5) VOC emissions from each of the ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5,~~ LP#1a - #5a and #7a) shall be limited to 5.5 pounds per million cubic feet of natural gas burned, ~~0.605~~ **0.33** pounds per hour (total), and ~~2.6~~ **1.44** tons per year (total).

(6) SO_2 emissions from each of the ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5,~~ LP#1a - #5a and #7a) shall be limited to 0.6 lb per million cubic feet of natural gas burned, ~~0.07~~ **0.036** pounds per hour.

(7) The ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5,~~ LP#1a - #5a and #7a) shall only burn propane as a back-up fuel.

(8) Visible emissions from the ~~eleven~~ **six (6)** Ladle Preheaters (~~LP #1- #5,~~ LP#1a - #5a and #7a) shall not exceed 5% opacity, based on a 6-minute average.

Comment 10:

D.32.3(b)(1) - The emission limit for ladle preheater number six should be revised to 0.10 pounds per MMBtu and 1.2 pounds per hour. Page 43 of the Technical Support Document shows that this emission limit was changed to 0.10 lb/MMBtu and 1.20 lb/hr but the limits were not changed in the actual permit.

Response 10:

The typographical errors in Condition D.32.3(b)(1) have been corrected as follows:

D.32.3 Ladle Preheaters PSD BACT [326 IAC 2-2]

(b) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD SSM 107-21359-00038, issued on April 27, 2006, ladle preheater LP #6 shall comply with the following BACT requirements:

(1) The BACT for NOx shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a NOx emission rate of ~~0.05~~ **0.10** pounds per MMBtu and ~~0.60~~ **1.2** lbs per hour.

Comment 11:

D.32.9(a) - Nucor proposes that IDEM, OAQ eliminate this condition requiring Nucor to submit estimates of the sulfur content of raw materials because it is no longer necessary. This condition was originally drafted as a means to monitor sulfur emissions from the Meltshop LMF baghouse stack. This permit, however, requires Nucor to install and operate a CEMS to measure SO_2 emissions from the Meltshop LMF. See Condition D.32.11. Thus, monitoring the sulfur content of raw materials is no longer necessary. In addition, IDEM, OAQ eliminated the recordkeeping requirement associated with this condition. The elimination of the recordkeeping requirement may be seen on page 50 of the TSD.

Response 11:

IDEM agrees that it is no longer necessary to keep track of the sulfur content of the raw materials being charged into the Meltshop LMF since Nucor is now required to install and operate a CEMS to measure SO_2 emissions from the Meltshop LMF. Therefore, Condition D.32.9(a) has been deleted. In addition, IDEM has deleted Condition D.3.10 which also pertains to the monitoring of the sulfur content of the charged materials. Subsequent conditions have been re-numbered accordingly.

D.32.9 Testing Requirements [326 IAC 2-7-6(1),(6)]

Within sixty (60) days but no later than one hundred and eighty (180) days after the initial start up of the modified LMFs EU-13 (a) and (b) permitted in this PSD/SSM No. 107-24348-00038, the Permittee shall perform a compliance test on the Meltshop LMFs baghouse stack (S-13), for the following pollutants utilizing methods as approved by the Commissioner:

~~(a)~~ ~~With the submission of the test protocol, at a minimum, the Permittee shall include estimates of the sulfur content of the raw materials to be used in testing and the sulfur content of the raw materials used from previous year.~~

~~(b)~~ **(a)** Any stack which has multiple processes which exhaust to the same stack shall operate shall of the processes simultaneously in accordance with 326 IAC 3-5 (Source Sampling Procedures).

~~(c)~~ **(b)** Lead, Mercury, Beryllium and Fluorides in order to comply with Condition 32.6.

~~(d)~~ **(c)** The PM, PM10, NOx, CO, VOC, Lead, Mercury, Beryllium and Fluorides tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

~~(e)~~ **(d)** These tests shall be performed using methods as approved by the Commissioner.

~~(f)~~ **(e)** Testing shall be conducted in accordance with Section C - Performance Testing.

~~D.32.10 Sulfur Content [326 IAC 2-7-5(3)(A)(iii)][326 IAC 2-7-5(d)]~~

~~The Permittee shall monitor the sulfur content of the charge carbon and injection carbon added to the LMFs. Vendor certifications or analyses may verify the sulfur content of the charge carbon and injection carbon.~~

Technical Support Document

Comment 1:

Page 16 - Nucor proposes that IDEM, OAQ remove Part (a) of the section discussing Cold Mill Boiler #2. As fully discussed in the comments to Condition D.18.5, performance testing on this unit is unnecessary because it is a natural gas-fired unit.

Response 1:

This TSD Addendum is part of the TSD. It serves to address the changes made in the permits as a result of the submitted comments. IDEM, OAQ prefers not to change the TSD in order to preserve the original information from the issued permits. It is appropriate to require stack testing for the proposed CMB #2 Boiler to demonstrate compliance with the PSD BACT limits. Therefore no changes to this section of the TSD will be documented in this TSD Addendum.

Comment 2:

Page 17 - Nucor proposes that IDEM, OAQ revise Part (a) of the section discussing the Meltshop EAFs and AOD to remove reference to the oxy fuel burners. These burners are not a control device and are unrelated to any monitoring or compliance determination from the EAF.

Response 2:

326 IAC 2-2-3 (PSD Control Technology Review Requirements) applicability determination for the EAFs has been revised as follows:

Meltshop EAFs and AOD

(a) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) each EAF (EAF #1 and EAF #2) ~~shall be equipped and operated with oxy fuel burners. Each EAF~~ shall be controlled by a direct shell evacuation (DSE) system and canopy hoods.

VOC emissions shall be controlled through an extensive slip management program.

Comment 3:

Page 18.- Nucor proposes that IDEM, OAQ revise Part (c) of the section discussing the Meltshop LMF to incorporate applicable language. Condition D.32.14 governs actions that Nucor must take in the event a broken or failed bag is detected at a single compartment baghouse. As written, the explanation in the TSD only incorporates a small subset of those actions that Nucor must undertake. To ensure that there is no confusion as to Nucor's obligations, Nucor requests that IDEM, OAQ include the language of Condition D.32.14 in Part (c) of the section discussing the Meltshop LMF.

Response 3:

The Compliance Determination and Monitoring Requirements Section in the TSD is a summary of the compliance determination and monitoring requirements for each subject emission unit. This section is not intended to incorporate verbatim the conditions in the permit. Therefore, no changes have been made to the TSD.

Comment 4:

Appendix C: BACT Analysis Pages 49-50 - This VOC BACT section inaccurately states that Nucor proposed a VOC BACT limit from the Meltshop EAF's and AOD of 0.088 lb/ton in its permit application. Instead, Nucor proposed a BACT limit of 0.09 lb/ton. The 0.09 lb/ton limit was correctly used in Condition D.31.1(a)(6) of Nucor's permit.

Response 4:

The Permittee submitted an e-mail on September 26, 2007, stating that Nucor's proposed VOC BACT limit of 0.09 lb/ton for Meltshop EAF's and AOD was the result of rounding up 0.088 lb/ton. Since Nucor Steel - Hickman, Arkansas has the most stringent BACT of 0.088 lb/ton, Nucor - Crawfordsville, Indiana was required to have the same stringent BACT of 0.088 lb/ton. Therefore, no changes have been made to the BACT Analysis. However, Conditions D.31.1(a)(6) has been revised as follows:

D.31.1 Meltshop EAF Baghouses PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Permittee shall comply with the following BACT requirements:

(6) The total volatile organic compound (VOC) emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c)

shall not exceed ~~0.09~~ **0.088** pound per ton of steel produced and ~~45.18~~ **44.18** pounds of VOC per hour, based on a 3-hour block average.

Comment 5:

The TSD Section titled "Permit Level Determination – Part 70" contains three tables. Each of these tables include "fluorides" and the first and third tables each list fluoride as the "worst single HAP" or hazardous air pollutant. Fluorides, however, are not a HAP. See 42 U.S.C. § 7412. While hydrogen fluoride (hydrofluoric acid) is a HAP, this chemical is distinct from the fluorides that are emitted in Nucor's operation. For this reason, fluorides should be removed from each table as the "single worst HAP" and the PTE for fluorides should not be included in calculating the total HAP PTE. The "single worst HAP" is lead with an uncontrolled PTE of 703.6 tons per year and the combined uncontrolled PTE for all HAPs is 933.7 tons per year. Any additional references to fluorides as a HAP should be removed.

Moreover, Nucor disagrees with the "Permit Level Determination – Part 70" found on pages 5 and 6 of the Technical Support Document. The LMF, EAF and AOD equipment addressed in this modification is already subject to controls and hence use of the uncontrolled potential to emit for these units is both erroneous and misleading.

Finally, the uncontrolled potential to emit for mercury is substantially overestimated. While some mercury is caught by the baghouse, the majority of the emissions pass through the baghouse. Hence, 0.40 tpy mercury (derived from the combined total of stack emissions plus mercury captured in dust, adjusted to a 502 tons per hour production rate) is much closer to the uncontrolled potential to emit than IDEM's back-calculation derived from baghouse efficiency.

Based on 40 CFR Part 63, Subpart YYYYY- National Emission Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace Steelmaking Facilities, data indicate that over 99 percent of the mercury emissions are in the gaseous form, and about 93 percent of the gaseous mercury is elemental mercury. Although baghouses are highly efficient at removing HAP metals that are in the particulate phase, the baghouses do not control gaseous or vapor phase mercury and thus (for practical purposes) do not control mercury emissions from EAFs.
72 Fed. Reg. 53813, 53821 (Sept. 20, 2007) (copy attached). For this reason, a backcalculation assuming control at 99.5% is generally inappropriate. Therefore, to determine its potential to emit mercury, Nucor used mercury emissions data from its electric arc furnace baghouses and data detailing the amount of mercury in the dusts collected by its baghouses and other operations. Using this information, Nucor determined if it operated at its maximum permitted rate, 502 tons per hour, for the maximum number of hours in a year, 8760 hours, it would have the potential to emit 233.12 pounds of mercury. An explanation of Nucor's calculations is presented below.

1. **EAF Baghouse PTE.**

Nucor has stack test data from 2007 measuring actual mercury emissions from each EAF baghouse.

2007 stack test from EAF baghouse 1: 0.0058 lb Hg/hr
2007 stack test from EAF baghouse 2: 0.0052 lb Hg/hr

Nucor produced steel at a rate of 398.6 tons per hour in the stack test. Thus, at its actual operating rate, the mercury per ton of steel equals 1.46 x 10-5 lb Hg/ton steel in baghouse 1 (0.0058 lb Hg/hr ÷ 396.8 tons/hour) and 1.30 x 10-5 in baghouse 2. Nucor is permitted to operate at a maximum rate of 502 tons of steel per hour and thus at Nucor's maximum steel production rate, mercury is emitted at a rate of 7.33 x 10-3 lb Hg/hr from baghouse 1 (1.38 x 10-5 lb Hg/tons steel x 502 tons/hour) and 6.53 x 10-3 from baghouse 2. If Nucor were to operate for 8760 hours a year at the maximum production rate, it would emit 64.21 pounds of mercury from baghouse 1 (7.33 x 10-3 lb Hg/hr x 8760 hours/yr) and 57.20 pounds of mercury from baghouse 2 based upon the stack test results. Thus, total potential emissions from the EAF baghouses is 121.41 pounds of mercury/yr.

2. LMF and Castrip Baghouse PTE.

Nucor does not have any mercury stack test data from either the LMF or Castrip baghouses. However, based on engineering judgment, actual measurement of the dust generated, and the mercury concentration ratio of the EAF dust verses the LMF dust, Nucor estimates that the mercury emissions from the LMF and Castrip baghouses are each approximately one fourth that from the EAF baghouses. Thus, mercury emissions from each of these baghouses are estimated at 3.45 x 10-6 lb Hg/ton steel. Also, all the steel from the EAF either is sent to the LMF or the Castrip. Because the mercury emission rate is the same for these two units, and all steel moves through one of the units (but not both), mercury emissions may be calculated as if the LMF and Castrip baghouses were a single unit. Mercury emissions from the LMF and Castrip baghouses combined are calculated using the same method as for the EAF baghouses above. The mercury PTE for these units is 15.45 pounds of mercury per year. The calculation is as follows:

3.45 x 10-6 lb Hg/ton steel x 502 tons/hour x 8760 hours/yr = 15.45 pounds Hg/yr

3. Mercury Collected in Baghouse and other Dust.

During production, there is also mercury that is captured in the control system and is retained in the dust (e.g., in K061 dust). The mercury is captured in EAF baghouse dust, LMF baghouse dust, Castrip baghouse dust, drop out box (DOB) materials, the spark arrestor, and the mini-drop out box. Nucor has measured the mercury concentration in each of these dusts. Using the mercury concentration, along with the tons of dust and steel produced in a year, Nucor calculated the potential mercury emissions by dividing the tons of dust produced in a year by the tons of steel produced in a year and multiplying the product by the mercury concentration in the dust. This number was multiplied by the maximum production rate and the number of hours in a year to determine the PTE. Mathematically the calculation is as follows:

tons dust/yr ÷ 2,256,000 tons steel/yr x lb Hg/ton dust x 502 tons/hour x 8760 hours/yr

As an example, in 2007 Nucor generated 45,841 tons of EAF dust and produced 2,256,000 tons of steel. Thus, Nucor produced 0.020 tons of dust per ton of steel (45,841 tons/yr ÷ 2,256,000 tons of steel/yr). The mercury concentration in the EAF dust was measured at 1.020 x 10-3 pounds of mercury/ton dust and thus the mercury content per ton of steel produced is 2.073 x 10-5 (0.0203 tons of dust/ton of steel x 1.020 x 10-3 lb Hg/ton dust). Nucor is permitted to produce steel at a maximum rate of 502 tons per hour. Thus, at its maximum production rate, Nucor produces mercury in the EAF dust at a rate of 0.0104 pounds of mercury/hr (2.073 x 10-5 lb Hg/ton steel x 502 tons/hour max rate).

The PTE over 8760 hours is 91.14 pounds of mercury. The amount of dust produced in a year, the mercury concentration of that dust, and the PTE for each location is presented in the following table.

Location	Tons dust/yr	Lb Hg/ton dust	PTE (lb Hg/yr)
EAF	45,841	1.020×10^{-3}	91.14
LMF & Castrip	1,794	1.672×10^{-5}	0.058
DOB	13,367	1.401×10^{-4}	3.65
Spark Arrestor	628	7.403×10^{-5}	0.091
Mini DOB	167	2.001×10^{-4}	0.065
Total in dust			**95.00**

4. Fugitive Emissions.

The fugitive emissions from the EAF operation was calculated assuming a total capture efficiency of 99.5 percent, 0.5 percent of the EAF emissions goes through the baghouse. Another 0.5 percent of EAFs emission is not captured or sucked into the baghouse and is released as fugitive emissions. In addition to the EAF baghouse emissions, EAF operations consist of the dust collected in the EAF baghouse, the DOB, the spark arrestor, and the mini DOB. Combined, the EAF operation has the potential to emit 216.36 pounds of mercury (121.41 + 91.14 + 3.65 + 0.091 + 0.065). If this value represents the 99.5% that is captured, there is 217.45 pounds of mercury produced (216.36 lb Hg ÷ 0.995). As a result, there is a potential of 1.10 pounds of mercury that can escape as fugitive emissions from the EAF operation (217.45 lb Hg – 216.36 lb Hg). The fugitive emissions from the LMF and Castrip operations are calculated in the same manner. The LMF and Castrip operations were calculated assuming a total capture efficiency of 99 percent. Combined, they have the potential to emit 15.51 pounds of mercury (15.45 + 0.058). If this value represents the 99% that is captured, there is 15.67 pounds of mercury produced (15.51 ÷ 0.99). As a result, there is a potential of 0.16 pounds of mercury that can escape as fugitive emissions from the LMF and Castrip operations (15.67 lb Hg - 15.51 lb Hg).

5. Total PTE for Nucor Steel.

Based on the above calculations the total potential mercury emission is 233.12 pounds of mercury per year (0.12 tons/year).

Response 5:

This TSD Addendum is part of the TSD. It serves to document the changes being made to the permit and the TSD. IDEM, OAQ prefers not to change the TSD in order to preserve the original information from the issued permit.

The Part 70 Permitting Level Section is based on uncontrolled PTE for each Part 70 regulated pollutant.

For the Mercury uncontrolled potential to emit - Since the controlled actual mercury emissions was the only information provided at the time of review, this information was utilized in estimating the uncontrolled potential to emit, using the baghouse efficiency for controlling particulate emissions. The efficiency of the baghouse in controlling mercury was unknown. The mercury potential to emit calculations Nucor submitted on November 20, 2007, which were based on the guidance from NESHAP YYYYY were reviewed by IDEM, OAQ and they were determined to be acceptable. Therefore, the corrections to the Permit Level Determination Section of the TSD are documented here, are as follows:

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 of the modification before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

New Emission Units				
Pollutant	**Cold Mill Boiler Potential To Emit (tons/year)**	**LMF Potential To Emit (tons/year)**	**LMF Conveyors Potential To Emit (tons/year)**	**TOTAL Potential To Emit (tons/year)**
PM	1.3	8,700	56.4	8757.7
PM10	1.3	48,333	56.4	48,390.7
SO_2	0.1	923.5	-	923.60
VOC	1.0	18.9	-	19.9
CO	14.7	156.7	-	171.4
NO_x	17.5	38.7	-	56.2
Benzene	3.679E-04	-	-	3.679E-04
Dichlorobenzene	2.102E-04	-	-	2.102E-04
Formaldehyde	1.314E-02	-	-	1.314E-02
Hexane	3.15E-01	-	-	3.15E-01
Toluene	5.957E-04	-	-	5.957E-04
Cadmium	1.927E-04	-	-	1.927E-04
Chromium	2.453E-04	-	-	2.453E-04
Manganese	6.65E-05	-	-	6.65E-05
Nickel	3.679E-04	-	-	3.679E-04
Lead	8.76E-05	703.6	-	7.036E+02
Mercury		~~109.9~~ **0.12**	-	~~1.099E+02~~ **0.12**
Beryllium		120.2	-	1.202E+02
Fluorides		9,380	-	9.38E+03
worst Single HAP ~~(Fluorides~~ **Lead)**				~~9,380~~ **703.60**
Combined HAPs				~~10,313.7~~ **824.25**

Modified Existing Emission Units			
Pollutant	**EAFs/AOD Modification**		
	PTE Before Modification (tons/year)	**PTE After Modification (tons/year)**	**Net Increase (tons/year)**
PM	265,733.30	265,733.30	0.0
PM10	91,984.60	91,984.60	0.0
SO_2	549.70	549.70	0.0
VOC	197.90	197.90	0.0
CO	4,397.50	4,397.50	0.0
NO_X	769.60	769.60	0.0
Lead	703.6	703.6	0.0
Mercury	~~109.9~~ **0.12**	~~109.9~~ **0.12**	0.0
Beryllium	120.2	120.2	0.0
Fluorides	5,277	5,277	0.0

Modified Existing Emission Units			
Pollutant	**EAFs/AOD Modification**		
	PTE Before Modification (tons/year)	**PTE After Modification (tons/year)**	**Net Increase (tons/year)**
Pollutant	**LMFs Modification**		
	PTE Before Modification (tons/year)	**PTE After Modification (tons/year)**	**Net Increase (tons/year)**
PM	8,700	8,700	0.0
PM10	48,333.3	48,333.3	0.0
SO_2	923.5	923.5	0.0
VOC	18.90	18.90	0.0
CO	156.7	156.7	0.0
NO_X	38.7	38.7	0.0
Lead	703.6	703.6	0.0
Mercury	~~109.9~~ **0.12**	~~109.9~~ **0.12**	0.0
Beryllium	120.2	120.2	0.0
Fluorides	9,380	9,380	0.0

Pollutant	**PTE New Emission Units (tons/year)**	**Net Increase to PTE of Modified Emission Units (tons/year)**	**Total PTE for New and Modified Units (tons/year)**
PM	8,757.7	0.0	8,757.7
PM10	48,391	0.0	48,391
SO_2	923.5	0.0	923.5
VOC	19.9	0.0	19.9
CO	171.4	0.0	156.7
NO_X	56.2	0.0	38.7
Benzene	3.679E-04	0.0	3.679E-04
Dichlorobenzene	2.102E-04	0.0	2.102E-04
Formaldehyde	1.314E-02	0.0	1.314E-02
Hexane	3.15E-01	0.0	3.15E-01
Toluene	5.957E-04	0.0	5.957E-04
Cadmium	1.927E-04	0.0	1.927E-04
Chromium	2.453E-04	0.0	2.453E-04
Manganese	6.65E-05	0.0	6.65E-05
Nickel	3.679E-04	0.0	3.679E-04
Lead	703.6	0.0	7.036E+02
Mercury	~~109.9~~ **0.12**	0.0	~~109.9~~ **0.12**
beryllium	120.2	0.0	1.202E+02
Fluorides	9,380	0.0	9.38E+03
Worst Single HAP (~~Fluorides~~ **Lead)**			~~9,380~~ **703.60**
Combined HAPs			~~10,313.7~~ **824.25**

Process/Emission Unit	**PM**	**PM10**	**SO_2**	**VOC**	**CO**	**NO_X**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**
Total Emission Change from Increase Utilization (Actual to PTE Test)	42.27	42.27	253.21	96.36	342.1	394.03	0.53	0.08	0.09	10.53
Total Controlled/Limited PTE from New Emission Units	15.7	75.1	923.60	19.4	167.4	44.8	1.06	~~0.16~~ **0.12**	0.18	14.07
Total Emission Change from Modified Emission Units	162.0	64.05	742.6	109.3	2,295.8	407.5	1.08	~~0.16~~ **0.12**	0.18	11.08
TOTAL Emission Change from the Project	219.97	181.42	1,919.41	225.06	2,805.3	846.33	2.67	~~0.40~~ **0.32**	0.45	35.68
PSD Significant Levels	25	15	40	40	100	40				
Major PSD Threshold Levels							0.60	0.10	0.0004	3.0

The corrections made to the emissions in the above tables will not result in any change to the final permits.

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a PSD/Significant Source Modification to a Part 70 Source and a Significant Permit Modification to a Part 70 Operating Permit

Source Description and Location

Source Name:	Nucor Steel
Source Location:	4537 South Nucor Road, Crawfordsville, Indiana 47933
County:	Montgomery
SIC Code:	3312
Operation Permit No.:	107-7172-00038
Operation Permit Issuance Date:	December 29, 2006
PSD/Significant Source Modification No.:	107-24348-00038
Significant Permit Modification No.:	107-24699-00038
Permit Reviewer:	Aida De Guzman

Source Definition

This steel mini-mill consists of a source with on-site contractors:

(a) Nucor Steel, the primary operation, is located at 4537 South Nucor Road, Crawfordsville, Indiana 47933;

(b) Whitesville Mill Service Company, the supporting operation, is located at 4537 South Nucor Road, Crawfordsville, Indiana, 47933;

(c) BOC Gases, the supporting operation, is located at 4537 South Nucor Road, Crawfordsville, Indiana, 47933; and

(d) Heritage Environmental Services, the supporting operation, is located at 4537 South Nucor Road, Crawfordsville, Indiana, 47933.

Existing Approvals

The source was issued Part 70 Operating Permit No. T107-7172-00038 on December 29, 2006. The source has since received the following approvals:

(a) Administrative Amendment No. 107-24009-00038, issued on January 26, 2007;

(b) First Significant Permit Modification No. 107-24022-00038, issued April 20, 2007, and

(c) Second Significant Permit Modification No. 107-24284-00038, issued August 8, 2007.

County Attainment Status

The source is located in Montgomery County.

Pollutant	Status
PM10	Attainment
PM2.5	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 emissions and NOx are considered when evaluating the rule applicability relating to ozone. Montgomery County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions and NOx were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability – 326 IAC 2-2 section of this document for more information.

(b) Montgomery County has been classified as attainment for PM2.5. 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 PM2.5 emissions, it has directed states to regulate PM10 emissions as a surrogate for PM2.5 emissions.

(c) Montgomery County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)).

(d) Fugitive Emissions
Since this type of operation is in one of the twenty-eight (28) listed source categories under 326 IAC 2-2 or 326 IAC 2-3, fugitive emissions are counted toward the determination of PSD and Emission Offset 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	Potential to Emit (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

(a) 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).

(b) These emissions are based upon previous approvals issued to this source.

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)
Single HAP	greater than 10
Total HAPs	greater than 25

This existing source is a major source of HAPs, as defined in 40 CFR 63.41, because HAP emissions are greater than ten (10) tons per year for a single HAP and greater than twenty-five (25) tons per year for a combination of HAPs. Therefore, this source is a major 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 2005 OAQ emission data.

Pollutant	Actual Emissions (tons/year)
PM	212
PM10	212
PM2.5	212
SO_2	199
VOC	19
CO	1,443
NO_x	316
Pb	0.40

Description of Proposed Modification

The Office of Air Quality (OAQ) has reviewed a PSD/Significant Source Modification application, submitted by Nucor Steel on February 23, 2007, relating to the following modifications to its steel mini-mill:

(a) Meltshop - Electric Arc Furnaces (EAFs), Argon Oxygen Decarburization (AOD) modification, which involves the following:

(1) Installation of one (1) co-jet oxyfuel burner/lance for each EAF, with a rated capacity of 10 megawatt, using oxygen, natural gas and propane as backup fuels.

(2) Install three (3) new large charge buckets that will allow single furnace charges on both EAFs.

(3) Two (2) additional small charge buckets for the existing EAFs.

(4) Four (4) additional ladles for the EAFs.

(5) Replace EAF furnace bottoms with ones that are deeper on both furnaces.

(6) Installation of one (1) rebricking station and one (1) additional AOD vessel, identified as AOD vessel #2 with a rated capacity of 160 tons with one (1) top lance for both AODs, rated at 300,000 cubic feet/hour of oxygen. The additional AOD vessel will be used as a spare when one AOD is being rebricked.

(7) Modify existing EAF charge handling with the addition of two (2) new scrap cranes with magnetics, enhancement of existing cranes and/or magnetics, use of rail and/or truck dump and loader operations and the use of mobile cranes to load charge buckets in the scrap yard.

(8) Modify the existing flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the EAFs, including the addition of bulk loading of material to the system in a three-sided building.

(b) Meltshop - Ladle Metallurgical Furnaces (LMFs) modification, which involves the following:

(1) Installation of 15 belt conveyors, and 20 weight hoppers with a maximum throughput of 200 tons per hour. The proposed belt conveyors will replace existing screw conveyors. These conveyors will supply lime, carbon and alloys to the LMF process.

(2) Installation of one (1) additional LMF and associated auxiliary equipment to be controlled by the existing Meltshop EAF baghouses, exhausting to stacks BH1 and BH2. The steel production will remain at 502 tons per hour and 4,397,520 tons per year.

(3) Modify the existing flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the LMFs, including the addition of bulk loading of material to the system in a three-sided building.

(c) Cold Mill:

(1) Installation of one (1) new natural gas-fired Cold Mill boiler (CMB#2) (propane as back up), with a maximum heat input capacity of 40 Million British thermal units per hour (MMBtu/hr).

The steel production capability of the source will remain the same at 502 tons per hour and 4,397,520 tons per year. Currently, on occasion, the molten steel in the ladle cools down while waiting for the LMF station to open up. The third ladle metallurgy furnace (LMF) is being proposed to minimize these cases.

(d) Request to modify the BACT limits from the following natural gas combustion units to reflect the new U.S. EPA AP-42 emission factors (AP-42, July 1998). None of these natural gas-fired combustion units is being physically modified:

Emission Units/ID	Heat Input Rate (MMBtu/hr)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each
1 Acid Regeneration	5.6
2 Tundish Dryout Station (TD1 and TD2)	9.0 each
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each
5 Tundish Preheaters (TP1 - TP5)	6.0 each
1 Ladle Dryer	5.0

Enforcement Issues

There are no pending enforcement actions related to this modification.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
23	LMF baghouse	175	8.5	3,448	165
98	Meltshop baghouse	93.5	22.3	12,765	250
99	Meltshop baghouse	93.5	22.3	12,765	250
200	Baghouse	156	28.2	19,978	222
300	Cold mill Boiler (CMB#2)	75	2.7	249.8	410

Emission Calculations

(a) Proposed modification - See TSD Appendix A (Pages 1, 2 and 5 of 5) of this document for detailed emission calculations.

(b) Existing natural gas-fired combustion units - See TSD Appendix A (Pages 3 and 4 of 5) of this document for detailed emission calculations.

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 of the modification before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

New Emission Units				
Pollutant	Cold Mill Boiler Potential To Emit (tons/year)	LMF Potential To Emit (tons/year)	LMF Conveyors Potential To Emit (tons/year)	TOTAL Potential To Emit (tons/year)
PM	1.3	8,700	56.4	8757.7
PM10	1.3	48,333	56.4	48,390.7
SO_2	0.1	923.5	-	923.60
VOC	1.0	18.9	-	19.9
CO	14.7	156.7	-	171.4
NO_x	17.5	38.7	-	56.2
Benzene	3.679E-04	-	-	3.679E-04
Dichlorobenzene	2.102E-04	-	-	2.102E-04
Formaldehyde	1.314E-02	-	-	1.314E-02
Hexane	3.15E-01	-	-	3.15E-01
Toluene	5.957E-04	-	-	5.957E-04

New Emission Units				
Pollutant	**Cold Mill Boiler Potential To Emit (tons/year)**	**LMF Potential To Emit (tons/year)**	**LMF Conveyors Potential To Emit (tons/year)**	**TOTAL Potential To Emit (tons/year)**
Cadmium	1.927E-04	-	-	1.927E-04
Chromium	2.453E-04	-	-	2.453E-04
Manganese	6.65E-05	-	-	6.65E-05
Nickel	3.679E-04	-	-	3.679E-04
Lead	8.76E-05	703.6	-	7.036E+02
Mercury		109.9	-	1.099E+02
Beryllium		120.2	-	1.202E+02
Fluorides		9,380	-	9.38E+03
worst Single HAP (Fluorides)				9,380
Combined HAPs				10,313.7

Modified Existing Emission Units			
Pollutant	**EAFs/AOD Modification**		
	PTE Before Modification (tons/year)	**PTE After Modification (tons/year)**	**Net Increase (tons/year)**
PM	265,733.30	265,733.30	0.0
PM10	91,984.60	91,984.60	0.0
SO_2	549.70	549.70	0.0
VOC	197.90	197.90	0.0
CO	4,397.50	4,397.50	0.0
NO_X	769.60	769.60	0.0
Lead	703.6	703.6	0.0
Mercury	109.9	109.9	0.0
Beryllium	120.2	120.2	0.0
Fluorides	5,277	5,277	0.0
Pollutant	**LMFs Modification**		
	PTE Before Modification (tons/year)	**PTE After Modification (tons/year)**	**Net Increase (tons/year)**
PM	8,700	8,700	0.0
PM10	48,333.3	48,333.3	0.0
SO_2	923.5	923.5	0.0
VOC	18.90	18.90	0.0
CO	156.7	156.7	0.0
NO_X	38.7	38.7	0.0
Lead	703.6	703.6	0.0
Mercury	109.9	109.9	0.0
Beryllium	120.2	120.2	0.0
Fluorides	9,380	9,380	0.0

Pollutant	PTE New Emission Units (tons/year)	Net Increase to PTE of Modified Emission Units (tons/year)	Total PTE for New and Modified Units (tons/year)
PM	8,757.7	0.0	8,757.7
PM10	48,391	0.0	48,391
SO_2	923.5	0.0	923.5
VOC	19.9	0.0	19.9
CO	171.4	0.0	156.7
NO_X	56.2	0.0	38.7
Benzene	3.679E-04	0.0	3.679E-04
Dichlorobenzene	2.102E-04	0.0	2.102E-04
Formaldehyde	1.314E-02	0.0	1.314E-02
Hexane	3.15E-01	0.0	3.15E-01
Toluene	5.957E-04	0.0	5.957E-04
Cadmium	1.927E-04	0.0	1.927E-04
Chromium	2.453E-04	0.0	2.453E-04
Manganese	6.65E-05	0.0	6.65E-05
Nickel	3.679E-04	0.0	3.679E-04
Lead	703.6	0.0	7.036E+02
Mercury	109.9	0.0	1.099E+02
beryllium	120.2	0.0	1.202E+02
Fluorides	9,380	0.0	9.38E+03
Worst Single HAP (Fluorides)			9,380
Combined HAPs			10,313.7

(a) The proposed modification has an uncontrolled potential to emit from at least one of the pollutants (PM, PM10, SO2, NOx and fluorides) equal to or greater than 25 tons per year, or 100 tons per year of CO, or equal to or greater than 5 tons per year of lead. Therefore, the source is subject to the Significant Source Modification provisions of 326 IAC 2-7-10.5(f).

(b) The modification will be incorporated into the Part 70 Operating Permit through a significant permit modification issued pursuant to 326 IAC 2-7-12(d), since the modification requires new compliance monitoring, compliance testing and recordkeeping.

Permit Level Determination – PSD

The table below summarizes the potential to emit, reflecting all limits, of the emission units added in this source 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.

Controlled/ Limited Potential to Emit (tons/year)										
NEW EMISSION UNITS										
Process/Emission Unit	**PM**	**PM10**	**SO_2**	**VOC**	**CO**	**NO_X**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**
Cold Mill Boiler (CMB#2)	1.3	1.3	0.10	0.5	10.7	6.1	0.0	-	-	-
New LMF	13.1	72.5	923.5	18.9	156.7	38.7	1.06	0.16	0.18	14.07

Controlled/ Limited Potential to Emit (tons/year)										
NEW EMISSION UNITS										
Process/Emission Unit	**PM**	**PM10**	**SO_2**	**VOC**	**CO**	**NO_X**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**
LMF Conveyors	1.3	1.3	-	-	-	-	-	-	-	-
TOTAL controlled/Limited PTE from new Emission Units	**15.7**	**75.1**	**923.60**	**19.4**	**167.4**	**44.8**	**1.06**	**0.16**	**0.18**	**14.07**
MODIFIED EXISTING EMISSION UNITS										
Process/Emission Unit	**PM**	**PM10**	**SO_2**	**VOC**	**CO**	**NO_X**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**
Controlled PTE of Modified Emission Units (EAF/AOD & LMF Operations)	411.7	210.5	1,473.2	216.8	4,554.2	808.3	2.12	0.32	0.36	21.99
Baseline Actual Emissions of Modified Emission Units (EAF/AOD & LMF Operations)	309.10	87.05	730.6	107.5	2,258.4	400.8	1.04	0.16	0.18	10.91
Emission Change from Modified Emission Units (Actual to PTE Test)	**102.6**	**123.45**	**742.6**	**109.3**	**2,295.8**	**407.5**	**1.08**	**0.16**	**0.18**	**11.08**

Although Nucor is limited to a production rate of 502 tons/hour, it is only operating at approximately 300 tons/hour. Therefore, the installation of the new emission units and modification of the existing units mentioned above also increase utilization from downstream emission units.

Increase Utilization from Upstream and Downstream Processes										
Process/Emission Unit	**PM**	**PM10**	**SO_2**	**VOC**	**CO**	**NO_X**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**
Pickle Line 1 PTE	4.51	4.51	-	-	-	-	-	-	-	-
Pickle Line 1 Baseline Actual	4.01	4.01	-	-	-	-	-	-	-	-
Emission Change (Actual to PTE Test)	**0.5**	**0.5**	-	-	-	-	-	-	-	-
Pickle Line 2 PTE	3.38	3.38	-	-	-	-	-	-	-	-
Pickle Line 2 Baseline Actual	1.21	1.21	-	-	-	-	-	-	-	-
Emission Change (Actual to PTE Test)	**2.18**	**2.18**	-	-	-	-	-	-	-	-
CRM 1 PTE	31.5	31.5	-	-	-	-	-	-	-	
CRM 1 Baseline Actual	27.5	27.5	-	-	-	-	-	-	-	
Emission Change (Actual to PTE Test)	**4.0**	**4.0**	-	-	-	-	-	-	-	-
CRM 2 PTE	31.5	31.5	-	-	-	-	-	-	-	-
CRM 2 Baseline Actual	15.9	15.9	-	-	-	-	-	-	-	-
Emission Change (Actual to PTE Test)	**15.6**	**15.6**	**-**	-	-	**-**	**-**	**-**	**-**	**-**
Slag processing PTE	10	10	-	-	-	-	-	-	-	
Slag processing Baseline Actual	5	5	-	-	-	-	-	-	-	

Increase Utilization from Upstream and Downstream Processes

Process/Emission Unit	PM	PM10	SO_2	VOC	CO	NO_X	LEAD	Mercury	Beryllium	Fluorides
Emission Change (Actual to PTE Test)	**5.0**	**5.0**								
Hot Rolling Mill PTE	-	-	-	131.9	-	-	-	-	-	-
Hot Rolling Mill Baseline Actual	-	-	-	57.3	-	-	-	-	-	-
Emission Change (Actual to PTE Test)	-	-	-	**74.6**	-	-	-	-	-	-
Pickle Line Boiler PTE	0.45	0.45	0.089	0.39	5.21	29.78	-	-	-	-
Pickle Line Boiler Baseline Actual	0.27	0.27	0.054	0.24	3.34	18	-	-	-	-
Emission Change (Actual to PTE Test)	**0.18**	**0.18**	**0.04**	**0.15**	**1.86**	**11.8**	-	-	-	-
Annealing Furnaces PTE	1.2	1.2	0.24	2.12	33.6	39.9	-	-	-	-
Annealing Furnaces Baseline Actual	0.29	0.29	0.06	0.51	8.07	9.6	-	-	-	-
Emission Change (Actual to PTE Test)	**0.91**	**0.91**	**0.18**	**1.61**	**25.53**	**30.3**	-	-	-	-
Acid Regeneration PTE	9.63	9.63	0.029	0.26	0.98	4.90	-	-	-	-
Acid Regeneration Baseline Actual	9.34	9.34	0.015	0.14	0.52	2.58	-	-	-	-
Emission Change (Actual to PTE Test)	**0.30**	**0.30**	**0.014**	**0.12**	**0.46**	**2.32**	-	-	-	-
Galvanizing line PTE	2.68	2.68	0.21	1.94	29.6	35.2	-	-	-	-
Galvanizing line Baseline Actual	1.45	1.45	0.11	1.05	16.0	19.1	-	-	-	-
Emission Change (Actual to PTE Test)	**1.23**	**1.23**	**0.10**	**0.89**	**13.6**	**16.1**	-	--	-	-
BOC Gases Boilers PTE	0.80	0.80	0.063	0.58	8.83	10.51	-	-	-	-
BOC Gases Baseline Actual	0.07	0.07	0.005	0.05	0.75	0.90	-	-	-	-
Emission Change (Actual to PTE Test)	**0.73**	**0.73**	**0.058**	**0.53**	**8.05**	**9.61**	-	-	-	-
HM Strip Anneal PTE	0.48	0.48	0.038	0.35	5.34	6.35	-	-	-	-
HM Strip Anneal Baseline Actual	0.11	0.11	0.009	0.08	1.24	1.47	-	-	-	-
Emission Change (Actual to PTE Test)	**0.37**	**0.37**	**0.03**	**0.27**	**4.10**	**4.88**	-	-	-	-
VTD Boiler PTE	2.36	2.36	0.19	0.81	19.0	10.89	-	-	-	-
VTD Boiler Baseline Actual	0.25	0.25	0.02	0.09	2.0	1.15	-	-	-	-
Emission Change (Actual to PTE Test)	**2.12**	**2.12**	**0.17**	**0.72**	**17.0**	**9.74**	-	-	-	-
Castrip Ancillary Equipment PTE	2.81	2.81	0.22	2.03	31.0	36.92	-	-	-	-
Castrip Ancillary Equipment Baseline Actual	0.94	0.94	0.07	0.68	10.4	12.43	-	-	-	-

Increase Utilization from Upstream and Downstream Processes										
Process/Emission Unit	**PM**	**PM10**	**SO_2**	**VOC**	**CO**	**NO_X**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**
Emission Change (Actual to PTE Test)	**1.87**	**1.87**	**0.15**	**1.35**	**20.6**	**24.5**	-	-	-	-
Castrip LMS PTE	39.0	39.0	248.3	10.17	166.7	224.7-	0.57	0.09	0.10	11.35
Castrip LMS Baseline Actual	39.0	39.0	18.0	0.74	12.1	16.3	0.04	0.01	0.01	0.82
Emission Change (Actual to PTE Test)	**0.0**	**0.0**	**230.3**	**9.43**	**154.6**	**208.4**	**0.53**	**0.08**	**0.09**	**10.53**
VTD PTE	1.97	1.97	23.65	5.91	88.7	5.91	-	-	-	-
VTD Baseline Actual	0.14	0.14	1.72	0.43	6.44	0.43	-	-	-	-
Emission Change (Actual to PTE Test)	**1.83**	**1.83**	**21.93**	**5.48**	**82.3**	**5.48**	-	-	-	-
Tunnel Furnaces PTE	12.0	12.0	0.53	2.45	30.7	156.2	-	-	-	-
Tunnel Furnaces Baseline Actual	6.55	6.55	0.29	1.34	16.7	85.3	-	-	-	-
Emission Change (Actual to PTE Test)	**5.45**	**5.45**	**0.24**	**1.11**	**14.0**	**70.9**				
Total Emission Change from Increase Utilization (Actual to PTE Test)	42.27	42.27	253.21	96.36	342.1	394.03	0.53	0.08	0.09	10.53
Total Controlled/Limited PTE from New Emission Units	15.7	75.1	923.60	19.4	167.4	44.8	1.06	0.16	0.18	14.07
Total Emission Change from Modified Emission Units	162.0	64.05	742.6	109.3	2,295.8	407.5	1.08	0.16	0.18	11.08
TOTAL Emission Change from the Project	219.97	181.42	1,919.41	225.06	2,805.3	846.33	2.67	0.40	0.45	35.68
PSD Significant Levels	25	15	40	40	100	40				
Major PSD Threshold Levels							0.60	0.10	0.0004	3.0

Note: In lieu of using the projected actual emissions, the source elected to use the potential to emit in calculating the project's emissions increases under 326 IAC 2-2-1(rr)(B).

(a) This modification to an existing major stationary source is major for PSD review, because at least one criteria pollutant is emitted at or above the PSD significant level. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do apply.

Federal Rule Applicability Determination

(a) New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60)

(1) 40 CFR 60.40c, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million Btu per hour (Btu/hr)) or less, but greater than or equal to 2.9 MW (10 million Btu/hr).

326 IAC 12, 40 CFR 60.40c, Subpart Dc, is applicable to the proposed Cold Mill boiler (CMB#2), with a heat input capacity of 40 million British thermal units per hour.

Nonapplicable portions of the NSPS will not be included in the permit. The following requirements shall apply to this boiler:

40 CFR§ 60.40c
40 CFR§ 60.41c
40 CFR§ 60.43c(e)(1)
40 CFR§ 60.45c(a),(c) (d)
40 CFR§ 60.47c(c)
40 CFR§ 60.48c(a)(1), (2), (3), (b), (g)

(b) National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63

There are no NESHAPs applicable to the modification.

(c) There are no changes to the other federal rules as a result of this modification.

(d) Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is applicable to new or modified emission units that involve a pollutant-specific emission unit and meet the following criteria:

(1) has a potential to emit before controls equal to or greater than the major source threshold for the pollutant involved;

(2) is subject to an emission limitation or standard for that pollutant; and

(3) uses a control device, as defined in 40 CFR 64.1, to comply with that emission limitation or standard.

The following table is used to identify the applicability of each of the criteria, under 40 CFR 64.1, to each new or modified emission unit involved:

Emission Unit	Control Device Used	Emission Limitation (Y/N)	Uncontrolled PTE (tons/year)	Controlled PTE (tons/year)	Major Source Threshold (tons/year)	CAM Applicable (Y/N)	Large Unit (Y/N)
Meltshop - EAF/AOD	baghouse	Y	4,5992.3 PM10 each EAF/AOD combination	69 PM10 each EAF/AOD combination	100	Y	N
			132,866.6 PM each EAF/AOD combination	199.3 PM each EAF/AOD combination	100	Y	Y
			703.6 Lead each EAF/AOD	1.06 Lead each EAF/AOD	10	Y	N
			109.9 Mercury each EAF/AOD	0.16 Mercury each EAF/AOD	10	Y	N
			120.2 Beryllium each EAF/AOD	0.18 Beryllium each EAF/AOD	10	Y	N
Meltshop - LMF	baghouse	Y	2,900 PM10 each LMF	50.4 PM10 each LMF	100	Y	N
			16,111 PM each LMF	24.16 PM each LMF	100	Y	N
			703.6 lead each LMF	1.06 Lead each LMF	10	Y	N
			109.9 Mercury each LMF	0.16 ton/yr Mercury each LMF	10	Y	N

Emission Unit	Control Device Used	Emission Limitation (Y/N)	Uncontrolled PTE (tons/year)	Controlled PTE (tons/year)	Major Source Threshold (tons/year)	CAM Applicable (Y/N)	Large Unit (Y/N)
			120.2 Beryllium each LMF	0.18 Beryllium each LMF	10	Y	N
One Castrip	baghouse	Y	378.4 Lead	0.57 Lead	10	Y	N
			60 Mercury	0.09 Mercury	10	Y	N
			66.7 Beryllium	0.10 Beryllium	10	Y	N

Note: NOx is the primary pollutant emitted by the boiler.

(1) The LMF operation is subject to CAM, because PM10, lead, mercury, and beryllium are each emitted at a rate which exceeds the major source threshold.

The LMFs are not large units for PM10, PM, lead mercury, and beryllium, because for each pollutant post control emissions are below the major source threshold. Therefore, a CAM Plan for PM10, PM emissions, lead, mercury and beryllium from the LMFs must be submitted as part of the renewal application.

(2) The EAF/AOD operation is subject to CAM, because PM10, lead, mercury, and beryllium are each emitted at a rate which exceeds the major source threshold.

The EAFs/AODs are not large units for PM10 emissions, lead, mercury and beryllium. However, they are large units for PM because post control emissions of PM is greater than the major source threshold. Therefore, a CAM Plan for PM10, lead, mercury and beryllium from the EAFs/AODs must be submitted as part of the renewal application. A CAM Plan has been submitted with this application for PM.

(3) The Castrip is subject to CAM, because lead, mercury, beryllium are emitted at a rate which exceeds the major source threshold.

The Castrip is not a large unit for lead, mercury, and beryllium emissions, because for each pollutant post control emissions are below the major source threshold. Therefore, a CAM Plan for lead, mercury and beryllium from the Castrip must be submitted as part of the renewal application.

The Permittee submitted the following CAM Plan for PM emissions for the EAFs/AODs, which are controlled by baghouses 1 and 2.

EAFs/AODs:

(a) Monitoring Approach – For EAFs/AODs

EAFs/AODs				
PARAMETER	INDICATOR NO. 1	INDICATOR NO. 2	INDICATOR NO. 3	INDICATOR NO. 4
I. Indicator Measurement Approach	PM Concentration	Opacity	Bag Leak Detection System (BLDS)	Bag Condition
	U.S. EPA Method 5, for PM or other Methods approved by the Commissioner – Baghouse1 and Baghouse2	Method 9 visual observations.	Continuous measurement of relative PM loading in the baghouse stack.	Visual inspection.
II. Indicator Range	PM emission limit of 0.0018 grain/dscf	An excursion is defined as an opacity measurement exceeding 3% on a 6-minute average.	Predetermined increases in PM loading sets off an alarm, which the operator will respond to.	An excursion is defined as failure to perform the monthly inspection.

EAFs/AODs				
PARAMETER	INDICATOR NO. 1	INDICATOR NO. 2	INDICATOR NO. 3	INDICATOR NO. 4
III. Performance Criteria				
A. Data Representativeness	U.S. EPA Method 5, or for PM or other Methods approved by the Commissioner	Procedures addressed in Method 9	Monthly operational status inspections of the equipment important to the total capture system.	Baghouse inspected visually for bag leaks.
B. Verification of Operational Status	Fans amps and damper position.	NA	NA	NA
C. QA/QC Practices and Criteria	U.S. EPA Method 5 for PM or other Methods approved by the Commissioner	Use of a certified visible emission observer.	Periodic maintenance of BLDS.	Trained personnel perform inspections and maintenance.
D. Monitoring Frequency	Once every 2.5 years.	Daily (when the EAF is operating unless inclement weather).	Continuous relative PM loading measurements.	Bi-Annual
IV. Data Collection Procedures	U.S. EPA Method 5, for PM or other Methods approved by the Commissioner	Daily visual observations of opacity are recorded on V.E. Form.	Record of alarm instances and maintenance activity.	Results of inspections and maintenance activities performed are recorded in baghouse maintenance log.
Averaging Period	Average of 3 test runs each 4 hours long	Six-minute average.	NA	NA

(b) Rationale for Selection of Performance Indicators

The performance indicators are PM stack tests (once every 2.5 years); daily visual observations using reference method 9; a bag leak detection system; and a preventative maintenance schedule of monthly inspection of the equipment important to the total capture system and inspection of the baghouse and bag filters.

(c) Rationale for Selection of Indicator Ranges

The PM is 0.0018 grain/dscf. The baghouse is tested for PM emissions once every 2.5 years. Other indicators which represent the proper operation of the baghouse are the visual opacity observations (reference method 9), a bag leak detection system and a monthly inspection of the baghouse and capture system which ensures the continued proper operation of the melt shop baghouse. Opacity greater than 3% would indicate a potential problem with the operation of the baghouse and would require inspection and maintenance (potential replacement of bags).

State Rule Applicability Determination

(a) 326 IAC 2-2 (Prevention of Significant Deterioration)
Nucor Steel began operation in 1989. Nucor Steel belongs to one of the twenty-eight (28) listed source categories with a PSD major source threshold of 100 tons per year. Nucor Steel is a major PSD source. This modification to a major PSD source is major for PSD since the project is a modification to existing emission units subject to PSD BACT for PM, PM10, VOC, CO, NOx and SO2. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do apply to the modification.

(b) 326 IAC 2-2-3 (PSD Rule: Control Technology Review Requirements)
Pursuant to 326 IAC 2-2-3(3), a major modification shall apply Best Available Control Technology (BACT) for each regulated NSR pollutant for which the modification would result in a significant net emissions increase at the source. This requirement applies to each proposed emission unit at which net emissions increase of the pollutant would occur as a result of the change in the method of operation in this unit.

Nucor Steel will be subject to 326 IAC 2-2-3(3) for volatile organic compounds (VOC), PM, PM10, NOx, SO2 and CO, since each of these pollutants is emitted at or above the significant levels; and Lead, Mercury, Beryllium and Fluorides since each pollutant is emitted at or above the PSD major threshold. See Appendix C for the detailed BACT Analysis.

(c) 326 IAC 2-2-4 (Air Quality Analysis Requirements)
Section (4)(a) of this rule, requires that the PSD application shall contain an analysis of ambient air quality in the area that the major stationary source would affect for pollutants that are emitted at major levels or significant amount. Nucor Steel has submitted an air quality analysis, which has been evaluated by IDEM's Technical Support and Modeling Section. See details in Appendix D.

(d) 326 IAC 2-2-5 (Air Quality Impact Requirements)
326 IAC 2-2-5(e)(1) of this rule, requires that the air quality impact analysis required by this section shall be conducted in accordance with the following provisions:

(1) Any estimates of ambient air concentrations used in the demonstration processes required by this section shall be based upon the applicable air quality models, data bases, and other requirements specified in 40 CFR Part 51, Appendix W (Requirements for Preparation, Adoption, and Submittal of Implementation Plans, Guideline on Air Quality Models)*.

(2) Where an air quality impact model specified in the guidelines cited in subdivision (1) is inappropriate, a model may be modified or another model substituted provided that all applicable guidelines are satisfied.

(3) Modifications or substitution of any model may only be done in accordance with guideline documents and with written approval from U.S. EPA and shall be subject to public comment procedures set forth in 326 IAC 2-1.1-6.

(e) 326 IAC 2-2-6 (Increment Consumption Requirements)
326 IAC 2-2-6(a) requires that any demonstration under section 5 of this rule shall demonstrate that increased emissions caused by the proposed major modification will not exceed eighty percent (80%) of the available maximum allowable increases (MAI) over the baseline concentration of sulfur dioxide, particulate matter, and nitrogen dioxide indicated in subsection (b)(1) of this rule.

(f) 326 IAC 2-2-7 (Additional Analysis, Requirements)
326 IAC 2-2-7(a) requires an analysis of the impairment to visibility, soils and vegetation. An analysis of the air quality impact projected for the area as a result of general commercial, residential, industrial, and other growth associated with the source. See detailed air quality analysis in Appendix D.

(g) 326 IAC 2-2-8 (Source Obligation)

(1) Pursuant to 2-2-8(1), approval to construct, shall become invalid if construction is not commenced within eighteen (18) months after receipt of the approval, if construction is discontinued for a period of eighteen (18) months or more, or if construction is not completed within a reasonable time.

(2) Approval for construction shall not relieve the Permittee of the responsibility to comply fully with applicable provisions of the state implementation plan and any other requirements under local, state, or federal law.

(h) 326 IAC 2-2-10 (Source Information)
The Permittee has submitted all information necessary to perform an analysis or make the determination required under this rule.

(i) 326 IAC 2-2-12 (Permit Rescission)
The permit issued under this rule shall remain in effect unless and until it is rescinded, modified, revoked, or it expires in accordance with 326 IAC 2-1.1-9.5 or section 8 of this rule.

(j) 326 IAC 2-4.1 (New Source Toxics Control)

(1) The proposed Cold Mill boiler (CMB#2) in this modification does not have the potential to emit greater than ten (10) tons per year of a single HAP and greater than 25 tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply to this boiler.

(2) The modification to the Meltshop which includes the argon oxygen decarburization (AOD) vessels, ladle metallurgical furnaces (LMFs), and electric arc furnaces (EAFs) does not constitute a reconstruction of these emission units. Therefore, 326 IAC 2-4.1 does not apply.

(k) 326 IAC 2-6 (Emission Reporting)
This source is subject to 326 IAC 2-6 (Emission Reporting) because it is required to have an operating permit under 326 IAC 2-7, Part 70 program. Pursuant to this rule, the Permittee shall submit an emission statement certified pursuant to the requirements of 326 IAC 2-6. In accordance with the compliance schedule in 326 IAC 2-6-3, an emission statement must be submitted by July 1 of each year. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4.

(l) 326 IAC 5-1 (Opacity Limitations)

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

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

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

(m) 326 IAC 9 (CO Emission Rules)
Nucor Steel has been determined to be subject to this rule because it is a source of CO emissions and commenced operation after March 21, 1972. This rule determination will not change as a result of this modification.

(n) 326 IAC 10 (NOx Rules)
This rule is not applicable to Nucor Steel because it is not located in Clark or Floyd Counties. This determination will not change as a result of this modification.

State Rule Applicability - Proposed Cold Mill Boiler

(a) 326 IAC 6-2-4 (Particulate Emission Limitations for Sources of Indirect Heating)
This rule applies to indirect heating facilities constructed after September 21, 1983.

Pursuant to this rule the particulate emissions from the proposed Cold Mill Boiler (CMB#2) are limited using the following equation:

$$Pt = (1.09)/Q^{0.26}$$
$$= 0.283 \text{ lb/MMBtu}$$

where: Q = total source maximum operating capacity rating in million British thermal units per hour (MMBtu/hr)

Existing Boilers:

1 Cold Mill Boiler (CMB #1)	=	34 MMBtu/hr
BOC Gases Boiler (ID No. 1)	=	9 MMBtu/hr
BOC Gases Boiler (ID No. 2)	=	15 MMBtu/hr
Hydrogen Plant Boiler	=	9.98 MMBtu/hr
Boiler ID No.501	=	71.04 MMBtu/hr
Existing source heat input rate (Q)	=	139.02 MMBtu/hr
Proposed Cold Mill Boiler (CMB#2)	=	40 MMBtu/hr
Total source heat input rate (Q)	=	179.02 MMBtu/hr

(b) 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-1(c)(1), the EAFs, AOD and LMFs, are not subject to this rule, since they are subject to 326 IAC 2-2-3 PSD BACT.

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 determination and monitoring requirements applicable to this modification are as follows:

Cold Mill Boiler (CMB #2)

(a) NOx, CO, VOC, SO2, PM and PM10 emissions testing shall be performed for the Cold Mill Boiler (CMB #2) to demonstrate compliance with the PSD limits required under 326 IAC 2-2-3, the Best Available Control Technology (PSD BACT).

(b) Pursuant to 326 IAC 2-2-3, the Permittee shall use pipeline natural gas that is a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions, and which is provided by the supplier through a pipeline.

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

The above requirements are required to comply with 326 IAC 2-2-3 (PSD BACT).

Meltshop EAFs and AOD

(a) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) each EAF (EAF #1 and EAF #2) shall be equipped and operated with oxy fuel burners. Each EAF shall be controlled by a direct shell evacuation (DSE) system and canopy hoods.

VOC emissions shall be controlled through an extensive scrap management program.

(b) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), either or both the Meltshop EAF Baghouses (1 and 2) for particulate control shall be in operation and control emissions at all times that one or all of the EAFs, AOD vessel, Desulfurization station, and Meltshop Continuous Casters (EAF #1, EAF #2, AODs, DS, CC#1, and CC#2) are in operation.

(c) Stack testing shall be performed for the EAFs and AOD permitted in this PSD/SSM No. 107-24348-00038, the Permittee shall conduct a performance test on the Meltshop EAF Baghouses (stack and vent) for the following:

(1) VOC,

(2) Lead,

(3) Mercury,

(4) Beryllium

(5) Fluorides

(6) Filterable PM, and

(7) Filterable and condensible PM10.

(d) The Permittee shall install, calibrate, certify, operate, and maintain continuous emissions monitoring systems (CEMS) for measuring CO, SO2, and NOx emissions rates in pounds per hour from the Meltshop EAFs, in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

The Permittee shall comply with the PSD BACT for SO2 and NOx hourly emission rates by averaging the CEMS readings based on the actual hours of operation in a 24-hour period.

(e) The Permittee shall install, calibrate, certify, operate, and maintain a continuous emissions monitoring system (CEMS) for measuring total hydrocarbons emissions rates in pounds per hour from the Meltshop EAFs, in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

(f) In the event that a breakdown of the SO2, NOx, CO or total hydrocarbon (THC) continuous emission monitoring systems (CEMS) occurs, the Permittee shall maintain records of all CEMS malfunctions, out of control periods, calibration and adjustment activities, and repair or maintenance activities.

The continuous emissions monitoring system (CEMS) shall be operated at all times the emissions unit or process is operating except for reasonable periods of monitor system downtime due to necessary calibration or maintenance activities or malfunctions. Calibration and maintenance activities shall be conducted pursuant to the standard operating procedures under 326 IAC 3-5-4(a).

The Permittee shall keep records that describe the supplemental monitoring implemented during the downtime to assure compliance with applicable emission limitations.

(g) The Permittee shall install and operate a continuous bag leak detection system (BLDS) for each Meltshop EAF Baghouse (1 and 2).

Each bag leak detection system (BLDS 1 and 2) shall be continuously operated except during periods when its baghouse is shut down. The system shall continuously monitor relative particulate matter loadings to detect bag leaks and other conditions that result in increases in particulate loadings.

(h) The Permittee shall continuously monitor the flow rate of the scrubbing liquid and record the flow rate as a 3-hour average when the EAF dust treatment facility is in operation

(i) In the event that a scrubber malfunction has been observed; failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. .

(j) The Permittee shall comply with the Compliance Assurance Monitoring (CAM) requirements for the Meltshop baghouses controlling the EAFs, Argon Oxygen Decarburization vessel and continuous casters.

The above requirements are required to comply with 326 IAC 2-2-3 (Control Technology Review Requirements) and CAM.

Meltshop LMFs

(a) PM, PM10, Lead, Mercury, Beryllium, Fluoride, VOC, NOx and CO stack testing shall be performed for the Meltshop LMFs baghouse stack (S-13) to verify compliance with 326 IAC 2-2-3 (Control Technology Review Requirements).

(b) The Permittee agreed to install a CEMS for SO_2 at the LMFs.

(1) The Permittee shall install, calibrate, certify, operate, and maintain continuous emissions monitoring systems (CEMS) for measuring SO_2 emissions rates in pounds per hour from the LMFs, in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

The Permittee shall comply with the PSD BACT for SO_2 hourly emission rates by averaging the CEMS readings based on the actual hours of operation in a 24-hour period.

(2) In the event that a breakdown of the SO_2 continuous emission monitoring systems (CEMS) occurs, the Permittee shall maintain records of all CEMS malfunctions, out of control periods, calibration and adjustment activities, and repair or maintenance activities.

The continuous emissions monitoring system (CEMS) shall be operated at all times the emissions unit or process is operating except for reasonable periods of monitor system downtime due to necessary calibration or maintenance activities or malfunctions. Calibration and maintenance activities shall be conducted pursuant to the standard operating procedures under 326 IAC 3-5-4(a).

The Permittee shall keep records that describe the supplemental monitoring implemented during the downtime to assure compliance with applicable emission limitations.

(c) The Permittee shall shutdown the failed unit in a single compartment baghouse and the associated process immediately until the failed unit has been repaired or replaced.

These testing and monitoring conditions for the Cold Mill Boiler (CMB #2, EAFs, AOD, and LMFs are necessary to demonstrate compliance with 326 IAC 2-2-3 (Control Technology Review Requirements).

Proposed Changes

The changes listed below have been made to Part 70 Operating Permit No. 107-7172-00038. Deleted language appears as ~~strikethroughs~~ and new language appears in **bold**.

The description and requirements for the source modification permitted in PSD/SSM No. 107-24348-00038 have been incorporated in Section A.3 and D.18, D.31 and D.32 as follows:

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

This stationary source consists of the following emission units and pollution control devices:

D.18 – COLD MILL – COLD MILL BOILER (CMB#2)

(aa) One (1) natural gas fueled Cold Mill Boiler (CMB #2), identified as EU-19, with a heat input capacity of ~~34~~ **40** MMBtu per hour, with emissions exhausting to stack S-23. Propane is used as a back-up fuel. The Cold Mill Boiler (CMB #2) is ~~not yet installed~~ **approved for construction in 2007**.

~~Under 40 CFR Part 63, Subpart DDDDD, this unit is considered a new boiler in the large gaseous fuel subcategory.~~

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

D.31 – MELTSHOP– ELECTRIC ARC FURNACES, ARGON OXYGEN DECARBURIZATION (AOD) VESSELS, DESULFURIZATION, CONTINUOUS CASTERS, EAF DUST TREATMENT FACILITY

MELTSHOP– ELECTRIC ARC FURNACES, ARGON OXYGEN DECARBURIZATION (AOD) VESSELS, DESULFURIZATION, CONTINUOUS CASTERS, EAF DUST TREATMENT FACILITY

(nn) Two (2) Meltshop Electric Arc Furnaces (EAFs), identified as EAF #1 and EAF #2, **constructed in 1989 and approved for modification in 2007 to replace the furnace bottoms. EAF #1 consists of three (3) co-jet oxyfuel burner/lance, each has a rated capacity of 6 megawatt** constructed in 1989, **and one (1) co-jet oxyfuel burner/lance, with rated capacity of 10 megawatt using oxygen, natural gas and propane as backup fuels, approved for construction in 2007**. **EAF #2 consists of three (3) co-jet oxyfuel burner/lance, each has a rated capacity of 6 megawatt** constructed in 1989, **and one (1) co-jet oxyfuel burner/lance, with rated capacity of 10 megawatt using oxygen, natural gas and propane as backup fuels, approved for construction in 2007. EAF #1 consists of three (3) carbon injectors with total maximum rated capacity of 1000 pounds per minute and EAF #2 consists of three (3) carbon injectors with total maximum rated capacity of 1000 pounds per minute constructed in 1989. T**~~t~~ogether ~~with~~ the **EAFs and the** Argon Oxygen Decarburization (AOD) have a maximum capacity of 502 tons/hour, with emissions controlled by multi compartment reverse air type baghouses (identified as Meltshop EAF Baghouse1 and Meltshop EAF Baghouse2). **In addition the EAFs have the following associated equipment:**

(1) Seven (7) small charge buckets, five (5) buckets constructed in 1989 and two (2) charge buckets approved for construction in 2007.

(2) Three (3) additional large charge buckets used for single furnace charges on both EAFs, approved for construction in 2007.

(3) Twenty-five (25) EAFs ladles, twenty-one (21) constructed in 1989, four (4) ladles approved for construction in 2007.

(4) EAF charge handling currently utilizing two (2) overhead cranes with magnets and a conveyor to load charge buckets constructed in 1989 and approved for modification in 2007 with the addition of 2 new scrap cranes with magnetics, enhancement of existing cranes and/or magnetics, use of rail and/or truck dump and loader operations and the use of mobile cranes to load charge buckets in the scrap yard.

(5) Flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the EAFs constructed in 1989 and approved for modification in 2007 with the addition of bulk loading of material to the system in a three-sided building.

A continuous emission monitor (CEM) is used to monitor NOx, CO, and SO_2 emissions from the EAFs.

Under 40 CFR Part 60, Subpart AAa, these units are considered electric arc furnaces.

(1) The EAFs also utilize the following technologies:

(A) A direct shell evacuation (DSE) control system ("a fourth hole duct"),

(B) An overhead roof exhaust system consisting of canopy hoods,

(C) Oxy fuel burners, and

(2) Each or any combination of the Meltshop EAFs and AOD can independently produce the maximum capacity of 502 tons/hour of steel. Each Meltshop EAF can operate concurrently or independently to achieve this maximum capacity.

(3) Both the Meltshop EAF Baghouse1 and Meltshop EAF Baghouse2 capture the emissions from the Meltshop EAFs, AOD vessel, Desulfurization, Meltshop Continuous Casters and other miscellaneous sources.

Each Meltshop Baghouse can sufficiently control emissions independently.

Each Meltshop EAF Baghouse serves as a back up control to the Meltshop LMFs.

(A) The Meltshop EAF Baghouse1 is a multi compartment positive pressure baghouse, has a design air flow rate of 1,527,960 actual cubic foot/min (acf/min) and an outlet PM loading of 0.0018 grains/dry standard cubic foot (gr/dscf).

This Meltshop EAF Baghouse1 exhausts to a roof vent/monitor identified as vent BH1.

(B) The Meltshop EAF Baghouse2 is a multi compartment positive pressure baghouse, has a design flow rate of 915,000 dscf/min and 1,200,000 acf/min and an outlet PM loading of 0.0018 gr/dscf.

This Meltshop EAF Baghouse2 exhausts to a stack identified as BH2.

(4) The fugitive emissions generated during the furnace operations are captured by the Meltshop Roof Canopies or contained within the Meltshop Building.

(5) The Meltshop roof monitors include exhausts from the ladle preheaters, ladle dryers, tundish preheaters, tundish dryers, ladle lancing station, tundish dumping, fugitive emissions from the LMFs, fugitive emissions from the Meltshop Casters and other Meltshop operations.

(oo) **One (1)** Argon oxygen decarburization (AOD) vessel~~s~~, identified as AOD~~s~~**1**, constructed in 1995, **and approved for modification in 2007 with the addition of one (1) AOD vessel, identified as AOD2 with a capacity of 160 tons/hour, one (1) top lance for both AODs, rated at 300,000 cubic feet/hour of oxygen, and one (1) rebricking station**. **T**~~t~~ogether ~~with~~ the **AODs and the** Meltshop EAFs have a total maximum capacity of 502 tons/hour, with emissions controlled by the Meltshop EAF Baghouse1 which exhausts to a roof vent/monitor identified as vent BH1, and Meltshop EAF Baghouse2 which exhausts to stack BH2. Only one (1) AOD vessel can operate at a time.

Under 40 CFR Part 60, Subpart AAa, these units are considered argon-oxygen decarburization vessels.

(pp) Desulfurization (DS) is an additional step in the Meltshop operations that remove sulfur. It has a maximum capacity of 502 tons of metal per hour.

D.32 – MELTSHOP – LADLE METALLURGY FURNACES, PREHEATERS, AND DRYERS

(ss) ~~Two (2)~~ **Three (3)** Meltshop Ladle Metallurgy Furnaces (LMFs)/Stirring Station, **two (2) identified as EU-13 (a) and (b)**, constructed in 1988, **and one (1) LMF identified as EU-13(c) approved for construction in 2007** with a maximum capacity of 502 tons/hour each and **EU-13 (a) and (b) are** controlled by a baghouse, identified as Meltshop LMF Baghouse, exhausting to stack S-13. The Meltshop LMF Baghouse has a design flow rate of 200,000 acf/min. The LMF baghouse was constructed in 1992. **The LMF, EU-13(c) will be controlled by the EAFs baghouses which vent to stacks BH1 and BH2. In addition the LMFs have the following associated equipment:**

(3) Four (4) Tundish Preheaters, identified as TPH #1 - #4, constructed in 1995, consisting of 4 low NOx natural gas fired heaters, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10. **Five (5) Tundish Preheaters, identified as TP1 - TP5, constructed in 1995, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel.**

(8) Fifteen (15) belt conveyors and 20 weight hoppers, with a maximum throughput of 200 tons per hour, approved for construction in 2007. These conveyors will supply lime, carbon and alloys to the new LMF.

(9) Flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the LMFs, constructed in 1988 and approved for modification in 2007 with the addition of a three-sided building for bulk loading of material to the system.

Condition D.3.1 has been revised to reflect the new NOx BACT based on the new EPA emission factors for natural gas combustion units:

D.3.1 Nitrogen Oxides (NO_X) Emission Limitations

(a) Pursuant to 326 IAC 2-2 and PSD SSM 107-21359-00038, issued April 27, 2006, the small combustion units consisting of ladle preheaters LP-1, LP-2, and LP-3, tundish dryers TD-1, TD-2, and TD-3, and the transition piece dryers TPD-1 and TPD-2, shall comply with the following requirements:

(1) Each combustion facility shall utilize “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel; and

(2) The following combustion facilities shall vent to S-21 roof monitor:

Combustion Facility	No. Units	Each Unit's Max Heat Input Rate (MMBtu/hr)	Burner Type (or equivalent)	Stack
Ladle Preheaters LP-1, LP-2, and LP-3	4	12	Low-NOx	S-21
Tundish Dryer TD-1	1	4	Low-NOx	S-21
Tundish Dryer TD-2	1	3	Low-NOx	S-21
Tundish Dryer TD-3	1	1	Low-NOx	S-21
Transition Piece Dryers TPD-1 and TPD-2	2	0.15	Low-NOx	S-21

(b) Pursuant to 326 IAC 2-2-3 (PSD BACT) and PSD SSM 107-21359-00038, issued April 27, 2006, the BACT for NOx from the tundish dryers identified as TD-1, TD-2, TD-3, and each transition piece dryer identified as TPD-1 and TPD-2 shall be proper equipment operation, the use of low NOx burners, and NOx emission rate shall not exceed an emission rate of 0.10 pounds per MMBtu. Further, the hourly NOx emission rate shall not exceed 0.40, 0.30, and 0.10 lbs per hour for emission units TD-1, TD-2, and TD-3, respectively, and the hourly NOx emission rate shall not exceed 0.015 lbs per hour for each transition piece dryer identified as TPD-1 and TPD-2.

(c) Pursuant to 326 IAC 2-2-3 (PSD BACT) and PSD SSM 107-21359-00038, issued April 27, 2006, the BACT for NOx from each ladle preheater identified as LP-1, LP-2, and LP-3 shall be proper operation and shall not exceed a NOx emission rate of ~~0.05~~ **0.10** pounds per MMBtu and ~~0.60~~ **1.2** lbs per hour.

Section D.4 has been revised to incorporate the metals (Lead, Mercury, Beryllium, Fluorides) PSD BACT for the Castrip.

SECTION D.4 FACILITY OPERATION CONDITIONS

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

CASTRIP – LMS, TUNDISH, AND CONTINUOUS STRIP CASTER

(k) A strip caster line rated at a maximum steel production rate of 270 tons per hour consisting of:

(1) One (1) ladle metallurgy station, identified as LMS-2, constructed in 2002, to be modified in 2006, and maximum production capacity of 270 tons of steel per hour, and emissions captured by a side draft hood that has a PM capture efficiency of 99 percent and controlled by the LMS-2 baghouse, and exhausting to the LMS-2 baghouse stack identified as S-20. The remaining uncontrolled emissions shall be exhausted through the LMS-2 roof monitor identified as S-21. The LMS-2 baghouse has an enclosed dust handling system or equivalent for material recovery and particulate matter control.

(2) Tundishes, identified as T-1, constructed in 2002, to be modified in 2006, with a maximum production capacity of 270 tons of steel per hour. The two (2) natural gas-fired tundish preheaters, identified as TP-1 and TP-2 and the three (3) natural gas-fired tundish dryers, identified as TD-1, TD-2 and TD-3, supply heat to the tundish. Only one (1) tundish may be operated at a given time. The tundish in operation feeds the molten metal from the LMS-2 ladle to one (1) continuous strip caster identified as CS-1.

(3) One (1) continuous strip caster, identified as CS-1, constructed in 2002, to be modified in 2006, a maximum capacity of 270 tons of steel per hour, and emissions captured by a canopy hood that has a PM capture efficiency of 98 percent. The captured PM in the gas stream shall be controlled by the LMS-2 baghouse and the gas stream shall be exhausted though the LMS-2 baghouse stack identified as S-20. The remaining uncontrolled emissions shall be exhausted through the LMS-2 roof monitor identified as S-21.

(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.4.1 Particulate PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** and PSD SSM 107-21359-00038, issued April 27, 2006, the strip caster line (consisting of units LMS-2, T-1 and CS-1) shall comply with the following BACT requirements.

(a) The ladles associated with strip caster CS-1 shall be covered with lids which shall be closed at all times when transporting molten metal in the ladles, in order to minimize uncontrolled emissions.

(b) Ladle Metallurgy Station LMS-2 shall be equipped with a side draft hood that evacuates particulate fumes from the LMS-2 to the LMS-2 baghouse. The side draft hood shall have a minimum capture efficiency of 99 percent.

(c) Tundish T-1 and continuous strip caster CS-1 shall be controlled by a canopy hood that evacuates particulate fumes to the LMS-2 baghouse. The hood shall have a minimum capture efficiency of at least 98 percent.

(d) The filterable PM**/**PM_{10} emissions from the LMS-2 baghouse shall not exceed 0.0117 pounds of filterable PM/PM_{10} per ton of steel processed at the LMS-2 and 0.0018 grains per dry standard cubic feet (gr/dscf) at a maximum volumetric air flow rate of 200,000 dry standard cubic feet per minute.

(e) The filterable and condensable PM/PM_{10} emissions from the LMS-2 baghouse shall not exceed 0.0338 pounds of filterable and condensable PM/PM_{10} per ton of steel processed at the LMS-2 and 0.0052 gr/dscf at a maximum volumetric air flow rate of 200,000 dry standard cubic feet per minute.

(f) The opacity from the LMS-2 baghouse stack (S-20) 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) when emitted from any baghouse, roof monitor or building opening. This limitation satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

(g) Except as otherwise provided by statute, rule, or this permit, the baghouses for PM control shall be in operation and control emissions at all times the associated equipment controlled by the baghouse are in operation.

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

D.4.2 Nitrogen Oxide (NOx) PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** and PSD SSM 107-21359-00038, issued April 27, 2006, the total emissions from the Castrip LMS-2 baghouse stack (S-20) shall not exceed 0.19 pounds of NOx per ton of steel processed at the LMS-2.

D.4.3 Carbon Monoxide (CO) PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** and PSD SSM 107-21359-00038, issued April 27, 2006, the total emissions from the Castrip LMS-2 baghouse stack (S-20) shall not exceed 0.141 pound of CO per ton of steel processed at the LMS-2.

D.4.4 Sulfur Dioxide (SO2) PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** and PSD SSM 107-21359-00038, issued April 27, 2006, the total emissions from the Castrip LMS-2 baghouse stack (S-20) shall not exceed 0.210 pounds SO_2 per ton of steel processed at the LMS-2.

~~D.4.5 Lead (Pb) PSD Minor Limit [326 IAC 2-2]~~

~~Pursuant to PSD SSM 107-21359-00038, issued April 27, 2006, in order to render the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable, the total emissions from the Castrip LMS-2 Baghouse stack (S-20) shall not exceed 3.30×10^{-4} pounds of Pb per ton of steel processed at the LMS-2.~~

D.4.5 PSD BACT for Metals [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD SSM 107-24348-00038, the Permittee shall comply with the following BACT requirements:

(a) The Lead emissions from the Castrip, CS-1 shall be limited to 0.00048 pound per ton of steel produced and 0.13 pound per hour, based on a 3-hour block average.

(b) The Mercury emissions from the Castrip, CS-1 shall be limited to 0.02 pound per hour, based on a 3-hour block average.

(c) The Beryllium emissions from the Castrip, CS-1 shall be limited to 0.002 pound per hour, based on a 3-hour block average.

(d) The Fluorides emissions from the Castrip, CS-1 shall be limited to 0.01 pound per ton of steel produced and 2.7 pounds per hour, based on a 3-hour block average.

The fluorides emissions from the Castrip shall be minimized by using granular Fluorspar, to minimize fluorides emissions and it shall be applied at a maximum rate of 250 pounds/heat at the Castrip.

(e) The emissions from the lead and mercury shall be minimized in accordance with the Scrap Management Program (SMP) and

(f) The emissions from the Castrip shall be controlled by a baghouse.

D.4.6 Operation Limitations [326 IAC 2-2]

Pursuant to 326 IAC 2-2-**3 (Control Technology Review Requirements),** and PSD SSM 107-21359-00038, issued April 27, 2006, the strip caster line shall not exceed a maximum steel throughput of 2,365,200 tons per twelve (12) consecutive month period. The Permittee shall demonstrate compliance with these steel processing limits based on a consecutive twelve (12) month period.

D.4.7 Preventive Maintenance Plan

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the LMS-2 and continuous strip caster CS-1 and the particulate capture and control systems associated with LMS-2 and CS-1.

Compliance Determination and Monitoring

D.4.8 Performance Testing [326 IAC 2-2] [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) Pursuant to 326 IAC 2-1.1-11, 326 IAC 2-2, and PSD SSM 107-21359-00038, issued April 27, 2006, the Permittee shall perform PM/PM_{10} (filterable and condensable), NOx, CO, **and** SO_2, ~~and Pb~~ compliance stack tests for the LMS-2 baghouse stack (S-20) within one hundred eighty (180) days of April 27, 2006.

(b) Pursuant to 326 IAC 2-1.1-11 and 326 IAC 2-2, the Permittee shall perform opacity compliance stack tests for the LMS-2 baghouse stack (S-20) within one hundred eighty (180) days of April 27, 2006.

(c) Opacity tests shall be performed concurrently with the particulate compliance stack test for the LMS-2 baghouse stack, unless meteorological conditions require rescheduling the opacity tests to another date.

(d) **Within sixty (60) days but no later than one hundred and eighty (180) days after the initial start up of the modified EAF operation in Section D.31 and the new LMF in Section D.32 in this PSD/SSM NO. 107-24348-00038, the Permittee shall perform a compliance test on the LMS-2 baghouse controlling the Castrip for Lead, Mercury, Beryllium and Fluorides, in order to comply with Condition D.4.5.**

~~(d)~~**(e)** All compliance stack tests shall be repeated at least ~~annually until such time that the Part 70 permit for this source is in effect.~~ **once every 2.5 years from the date of a valid compliance demonstration.**

IDEM, OAQ retains the authority under 326 IAC 2-1-4(f) to require the Permittee to perform additional and future compliance testing as necessary. Testing shall be conducted in accordance with Section C – Performance Testing requirements.

D.4.9 Visible Emissions Notations

(a) Visible emission notations of the LMS-2 baghouse stack exhaust shall be performed once per day during normal daylight operations. 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 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.4.10 Baghouse Parametric Monitoring

(a) The Permittee shall record the pressure drop across the LMS-2 baghouse used in conjunction with LMS-2 or CS-1, at least once per day when the process is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 2.0 and 8.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C - 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 - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instrument used for determining the pressure 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 annually.

(b) The Permittee shall record the fan amperes of LMS baghouse fan at least once per day when the associated LMS or continuous strip caster is in operation. Unless operated under conditions for which Section C - Response to Excursions or Exceedances specifies otherwise, the fan amperes of the capture and control system shall be maintained within plus or minus 15% of the rate established during the most recent compliant stack test. Section C - Response to Excursions or Exceedances for this unit shall contain troubleshooting contingency and response steps for when the fan amperes are more than 15% above or below the above-mentioned rate for any one reading. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation of this permit.

The instrument used for determining the fan amperes 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 annually.

D.4.11 Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

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

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

D.4.12 Record Keeping Requirements

(a) To document compliance with Condition D.4.9, the Permittee shall maintain records of visible emission notations of the LMS baghouse stack exhaust once per day. **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).**

(b) To document compliance with Condition D.4.10(a), the Permittee shall maintain once per day records of the total static pressure drop during normal operation.

(c) To document compliance with Condition D.4.10(b), the Permittee shall maintain once per day records of the fan amperes during normal operation.

(e) To document compliance with Condition D.4.5(d), the Permittee shall maintain records of the amount of Fluorspar applied at the Castrip.

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

The 34.0 MMBtu/hr boiler, CMB #2, permitted in PSD/SSM No. 107-24348-00038 has not been installed, instead it will be replaced by the proposed 40 MMBtu/hr Cold Mill Boiler, CMB #2. SECTION D.18 will be revised to incorporate this change:

SECTION D.18 FACILITY OPERATION CONDITIONS

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

COLD MILL – COLD MILL BOILER (CMB#2)

(aa) One (1) natural gas fueled Cold Mill Boiler (CMB #2), identified as EU-19, with a heat input capacity of ~~34~~ **40** MMBtu per hour, with emissions exhausting to stack S-23. Propane is used as a back-up fuel. The Cold Mill Boiler (CMB #2) is is ~~not yet installed~~ **approved for construction in 2007**.

~~Under 40 CFR Part 63, Subpart DDDDD, this unit is considered a new boiler in the large gaseous fuel subcategory.~~

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

(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.18.1 Cold Mill Boiler~~s~~ PSD BACT Limit [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** ~~and PSD SSM 107-16823-00038, issued November 21, 2003,~~ the Permittee shall comply with the following BACT requirements for the **40.0 MMBtu/hr Cold Mill Boiler (CMB #2)**:

(a) The Cold Mill Boiler (CMB #2) shall use pipeline natural gas as primary fuel and propane as back up fuel.

(b) The Cold Mill Boiler (CMB #2) shall be equipped and operated with low NO_x burners.

(c) The NO_x emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.035 lb/MMBtu.

(d) The CO emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.061 lb/MMBtu.

(e) The VOC emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.0026 lb/MMBtu.

(f) The SO_2 emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.0006 lb/MMBtu.

(g) The filterable and condensible PM_{10} emissions from Cold Mill Boiler (CMB #2) shall not exceed 0.0076 lb/MMBtu.

(h) The filterable PM emissions from Cold Mill Boiler (CMB #2) shall not exceed ~~0.0019~~ **0.0076** lb/MMBtu.

(i) Good combustion shall be practiced.

D.18.2 Particulate Matter Emission Limitations for Sources of Indirect Heating [326 IAC 6-2-4]

(a) Pursuant to 326 IAC 6-2-4, the particulate matter (PM) from the ~~34.0~~ **40.0** MMBtu per hour heat input Cold Mill boiler CMB #2 shall be limited to ~~0.327~~ **0.283** pounds per MMBtu heat input.

This limitation is based on the following equation:

$Pt = 1.09 / Q^{0.26}$ where Pt = Pounds of PM emitted per million Btu (lb/MMBtu) heat input, and

Q = Total source maximum operating capacity rating in million Btu per hour (MMBtu per hour) heat input.

D.18.3 Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units [40 CFR Part 63, Subpart Dc]

Pursuant to 40 CFR 60, Subpart Dc, the Permittee shall comply with the requirements specified in E.~~2~~**1**for the Cold Mill Boiler (CMB #2) rated at ~~34.0~~ **40.0** MMBtu/hr.

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

D.18.5 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11] [326 IAC 2-2]

Within sixty (60) days after achieving maximum capacity but no later than one hundred and eighty (180) days after initial startup of the Cold Mill Boiler (CMB #2) to demonstrate compliance with Condition D.18.1, the Permittee shall conduct performance tests to measure the NOx, CO, VOC, SO2, PM and PM10 emissions, utilizing methods as approved by the Commissioner. PM-10 includes filterable and condensible PM-10. NOx, CO, VOC, SO2, PM and PM10 emissions tests shall be repeated at least once every two and half (2.5) years from the date of the most recent valid compliance demonstration.

D.18.6 Natural Gas Fuel [326 IAC 2-2]

Pursuant to ~~PSD/SSM 107-16823-00038~~ **326 IAC 2-2-3 (Control Technology Review Requirements)** the Permittee shall use pipeline natural gas that is a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions, and which is provided by the supplier through a pipeline.

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

SECTION D.23

Condition D.23.1 has been revised to incorporate the new PSD BACT for the acid regeneration:

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

D.23.1 Acid Regeneration PSD BACT [326 IAC 2-2]

Pursuant to ~~PSD SSM 107-16823-00038, issued on November 21, 2003, PSD 107-2764-00038, issued on November 30, 1993, amended September 18, 1998 via A 107-9857-00038,~~ and 326 IAC 2-2**-3 (Control Technology Review Requirements) and PSD SSM 107-24348-00038,** the acid regeneration system (EU-04) shall comply with the following BACT limits:

(a) The two (2) tangentially fired burners shall burn natural gas as primary fuel and propane as back up fuel.

(b) The gas shall be cleaned in a cyclone, absorber, and a counter flow-packed scrubber prior to being vented to the atmosphere through the exhaust fan and stack.

(c) PM and PM_{10} emissions shall be limited to ~~2.0 pounds per hour~~ **7.6** pounds per million cubic feet of natural gas burned, **0.04** pounds per hour and ~~8.8~~ **0.19** tons per year.

(d) NO_x emissions shall be limited to 100 pounds per million cubic feet of natural gas burned, ~~0.7~~ **0.56** pounds per hour, and ~~3.2~~ **2.45** tons per year.

(e) CO emissions shall be limited to ~~20.0~~ **84** pounds per million cubic feet of natural gas burned, ~~0.1~~ **0.47** pounds per hour, and ~~0.6~~ **2.06** tons per year.

(f) Volatile organic compound emissions shall be limited to ~~5.3~~ **5.5** pounds per million cubic feet of natural gas burned, ~~0.05~~ **0.31** pounds per hour, and ~~0.2~~ **1.35** tons per year.

(g) Visible emissions from the acid regeneration scrubber/control system shall not exceed 5% opacity, based on a 6-minute average.

SECTION D.31 OPERATION CONDITIONS

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

MELTSHOP– ELECTRIC ARC FURNACES, ARGON OXYGEN DECARBURIZATION (AOD) VESSELS, DESULFURIZATION, CONTINUOUS CASTERS, EAF DUST TREATMENT FACILITY

(nn) Two (2) Meltshop Electric Arc Furnaces (EAFs), identified as EAF #1 and EAF #2, **constructed in 1989 and approved for modification in 2007 to replace the furnace bottoms. EAF #1 consists of three (3) co-jet oxyfuel burner/lance, each has a rated capacity of 6 megawatt** constructed in 1989, **and one (1) co-jet oxyfuel burner/lance, with rated capacity of 10 megawatt using oxygen, natural gas and propane as backup fuels, approved for construction in 2007**. **EAF #2 consists of three (3) co-jet oxyfuel burner/lance, each has a rated capacity of 6 megawatt** constructed in 1989, **and one (1) co-jet oxyfuel burner/lance, with rated capacity of 10 megawatt using oxygen, natural gas and propane as backup fuels, approved for construction in 2007. EAF #1 consists of three (3) carbon injectors with total maximum rated capacity of 1000 pounds per minute and EAF #2 consists of three (3) carbon injectors with total maximum rated capacity of 1000 pounds per minute constructed in 1989. T**~~t~~ogether ~~with~~ the **EAFs and the** Argon Oxygen Decarburization (AOD) have a maximum capacity of 502 tons/hour, with emissions controlled by multi compartment reverse air type baghouses (identified as Meltshop EAF Baghouse1 and Meltshop EAF Baghouse2). **In addition the EAFs have the following associated equipment:**

(1) Seven (7) small charge buckets, five (5) buckets constructed in 1989 and two (2) charge buckets approved for construction in 2007.

(2) Three (3) additional large charge buckets used for single furnace charges on both EAFs, approved for construction in 2007.

(3) Twenty-five (25) EAFs ladles, twenty-one (21) constructed in 1989, four (4) ladles approved for construction in 2007.

(4) EAF charge handling currently utilizing two (2) overhead cranes with magnets and a conveyor to load charge buckets constructed in 1989 and approved for modification in 2007 with the addition of 2 new scrap cranes with magnetics, enhancement of existing cranes and/or magnetics, use of rail and/or truck dump and loader operations and the use of mobile cranes to load charge buckets in the scrap yard.

(5) Flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the EAFs and approved for modification in 2007 with the addition of bulk loading of material to the system in a three-sided building.

A continuous emission monitor (CEM) is used to monitor NOx, CO, and SO_2 emissions from the EAFs.

Under 40 CFR Part 60, Subpart AAa, these units are considered electric arc furnaces.

(1) The EAFs also utilize the following technologies:

(A) A direct shell evacuation (DSE) control system ("a fourth hole duct"),

(B) An overhead roof exhaust system consisting of canopy hoods,

(C) Oxy fuel burners, and

(2) Each or any combination of the Meltshop EAFs and AOD can independently produce the maximum capacity of 502 tons/hour of steel. Each Meltshop EAF can operate concurrently or independently to achieve this maximum capacity.

(3) Both the Meltshop EAF Baghouse1 and Meltshop EAF Baghouse2 capture the emissions from the Meltshop EAFs, AOD vessel, Desulfurization, Meltshop Continuous Casters and other miscellaneous sources.

Each Meltshop Baghouse can sufficiently control emissions independently.

Each Meltshop EAF Baghouse serves as a back up control to the Meltshop LMFs.

(A) The Meltshop EAF Baghouse1 is a multi compartment positive pressure baghouse, has a design air flow rate of 1,527,960 actual cubic foot/min (acf/min) and an outlet PM loading of 0.0018 grains/dry standard cubic foot (gr/dscf).

This Meltshop EAF Baghouse1 exhausts to a roof vent/monitor identified as vent BH1.

(B) The Meltshop EAF Baghouse2 is a multi compartment positive pressure baghouse, has a design flow rate of 915,000 dscf/min and 1,200,000 acf/min and an outlet PM loading of 0.0018 gr/dscf.

This Meltshop EAF Baghouse2 exhausts to a stack identified as BH2.

(4) The fugitive emissions generated during the furnace operations are captured by the Meltshop Roof Canopies or contained within the Meltshop Building.

(5) The Meltshop roof monitors include exhausts from the ladle preheaters, ladle dryers, tundish preheaters, tundish dryers, ladle lancing station, tundish dumping, fugitive emissions from the LMFs, fugitive emissions from the Meltshop Casters and other Meltshop operations.

(oo) **One (1)** Argon oxygen decarburization (AOD) vessel~~s~~, identified as AOD~~s~~**1**, constructed in 1995, **and approved for modification in 2007 with the addition of one (1) AOD vessel, identified as AOD2 with a capacity of 160 tons/hour, one (1) top lance for both AODs, rated at 300,000 cubic feet/hour of oxygen, and one (1) rebricking station**. **T**~~t~~ogether ~~with~~ the **AODs and the** Meltshop EAFs have a total maximum capacity of 502 tons/hour, with emissions controlled by the Meltshop EAF Baghouse1 which exhausts to a roof vent/monitor identified as vent BH1, and Meltshop EAF Baghouse2 which exhausts to stack BH2. Only one (1) AOD vessel can operate at a time.

Under 40 CFR Part 60, Subpart AAa, these units are considered argon-oxygen decarburization vessels.

(pp) Desulfurization (DS) is an additional step in the Meltshop operations that remove sulfur. It has a maximum capacity of 502 tons of metal per hour.

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

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

D.31.1 Meltshop EAF Baghouses PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, **and PSD/SSM 107-24348-00038,** the Permittee shall comply with the following BACT requirements:

(1) The Meltshop EAF Baghouses (1 and 2) shall capture and control the emissions from the Meltshop EAFs, AOD vessels, Desulfurization station, and Meltshop Continuous Casters (EAF #1, EAF #2, AODs, DS, CC #1, and CC #2) and LMF (EU-13)(c).

(2) Steel production shall not exceed 4,397,520 tons of steel poured/tapped per 12-consecutive month period with compliance demonstrated at the end of each month.

(3) The total sulfur dioxide (SO_2) emissions from the Meltshop EAF Baghouses (1 and 2), **controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c)** shall not exceed 0.25 pound per ton of steel produced and 125 pounds of SO_2 per hour, based on a 3-hour block average.

(4) The total nitrogen oxide (NO_x) emissions from the Meltshop EAF Baghouses (1 and 2) **controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c)** shall not exceed 0.35 pounds per ton of steel produced and 175.7 pounds of NO_x per hour.

(5) The total carbon monoxide (CO) emissions from the Meltshop EAF Baghouses (1 and 2) **controlling the two (2) EAFs, AOD, desulfurization station, two (2)**

Continuous Casters and LMF EU-13 (c) shall not exceed 2.0 pounds per ton of steel produced and 1,004 pounds of CO per hour, based on a 3-hour block average.

(6) The total volatile organic compound (VOC) emissions from the Meltshop EAF Baghouses (1 and 2) **controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c)** shall not exceed 0.09 pound per ton of steel produced and 45.18 pounds of VOC per hour, based on a 3-hour block average.

(7) Filterable particulate matter (PM) emissions from the Meltshop EAF Baghouses (1 and 2) **controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c)** shall not exceed 0.0018 grains/dscf.

(8) Filterable and condensible PM_{10} emissions from the Meltshop EAF Baghouses (1 and 2) **controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c)** shall not exceed 0.0052 grains/dscf.

(9) The visible emissions from each Meltshop EAF Baghouse shall not exceed 3% opacity, based on a 6-minute average.

(10) Visible emissions from the Meltshop Roof Monitors shall not exceed 5% opacity, based on a 6-minute average.

(11) Fugitive emissions generated at each EAF (EAF #1 and EAF #2) during each complete cycle from tap to tap shall not exceed 3% opacity when emitted from any roof monitor or building opening, based on a 6-minute average.

(12) Good working practices shall be observed such as following various tapping, melting and refining practices.

(b) Pursuant to **326 IAC 2-2-3 (Control Technology Review Requirements)** CP 107-3599-00038, issued September 22, 1994, revised via A107-4631 00038, issued September 28, 1995, the Permittee shall comply with the following BACT requirements:

(~~a~~**1**) The Argon-Oxygen Decarburization (AOD) Dryout and Preheat Burner shall be limited as follows: 100 percent of all PM/PM10 fugitive emissions generated during the operation of the AOD Dryout and Preheat burner shall be captured by the roof canopy in the North Furnace Bay or contained and collected within the North Furnace Bay.

(~~b~~ **2**) The AOD Dryout and Preheat Burner is limited solely to the use of natural gas and limited to 20.0 million Btu per hour heat input.

(~~c~~ **3**) That all equipment consuming natural gas as the fuel source shall be limited to the use of a propane-air mixture as the alternative backup source.

(~~d~~ **4**) NOx emissions shall be limited to 140 pounds per million cubic feet of natural gas burned, 2.8 pounds per hour, and 12.3 tons per year.

D.31.2 Operational Flexibility [326 IAC 2-2]

Pursuant to 326 IAC 2-2 ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, the Permittee shall comply with the following requirements:

(a) Each or any combination of the Meltshop EAFs and AOD (EAF #1, EAF #2, and AODs) may independently produce the maximum capacity of 502 tons/hour of steel. Each Meltshop EAF can operate concurrently or independently to achieve this maximum capacity.

(b) Only 1 AOD vessel (AODs) shall operate at a time.

(c) Each Meltshop Baghouse can sufficiently control emissions independently.

(d) The Meltshop EAF Baghouses (1 and 2) can serve as back up to the Meltshop LMF Baghouse.

(e) The Meltshop Continuous Casters (CC #1 and CC #2) can cast molten steel either from the Meltshop LMFs, **Castrip Vacuum Degasser** or Castrip LMS.

D.31.4 **Meltshop EAF PSD BACT for Metals** ~~PSD minor Limit~~[326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038**, ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, the Permittee shall ~~emit less than the following rates from the Meltshop EAF Baghouses (1 and 2) combined:~~ **comply with the following BACT requirements:**

~~**Pollutant**~~	~~**Emission Rate (lb/hr)**~~	~~**PSD Significant Level (tons/year)**~~
~~Lead~~	~~0.134~~	~~0.6~~
~~Mercury~~	~~0.023~~	~~0.1~~

~~Compliance with these limitations renders the requirements of 326 IAC 2-2 not applicable to the Meltshop EAF Baghouses (1 and 2).~~

(a) The Lead emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall be limited to 0.00048 pound per ton of steel produced and 0.24 pound per hour, based on a 3-hour block average.

(b) The Mercury emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall be limited to 0.04 pound per hour, based on a 3-hour block average.

(c) The Beryllium emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall be limited to 0.002 pound per hour, based on a 3-hour block average.

(d) The Fluorides emissions from the Meltshop EAF Baghouses (1 and 2) controlling the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and LMF EU-13 (c) shall be limited to 0.01 pound per ton of steel produced and 5.02 pounds per hour, based on a 3-hour block average.

The fluorides emissions from the EAFs shall be minimized by using granular Fluorspar to minimize fluorides emissions and it shall be applied at a maximum rate of 250 pounds/heat at each EAFs.

(e) The emissions from lead and mercury shall be minimized in accordance with the Scrap Management Program (SMP) and

(f) The emissions from the Meltshop EAFs/AODs, desulfurization station and two (2) Continuous Casters shall be controlled by a baghouse.

D.31.5 Meltshop EAF Dust and Alloy Handling/Treatment System PM and Opacity PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, the Permittee shall comply with the following BACT requirements:

(a) Visible emissions from the EAF Dust Handling System and the Treatment System (DTF) shall each not exceed 10% opacity, based on a 6-minute average.

(b) The AOD vessel alloy handling system emissions shall be captured by the Meltshop Roof Canopy.

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

D.31.7 Meltshop EAF PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, the Permittee shall comply with the following BACT requirements:

(a) Each EAF (EAF #1 and EAF #2) shall be equipped and operated with oxy fuel burners.

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

(c) VOC emissions shall be controlled through an extensive scrap management program. The Permittee shall implement the scrap management plan (SMP) attached to this permit in Appendix B.

    (1) All grades of scrap charged to the furnaces shall not contain observable non-ferrous metals or non-metallics.

    (2) All grades of scrap shall be free of excessive dirt, oil, and grease.

    (3) Heavily oiled scrap shall not be used.

(d) Good working practices shall be observed.

D.31.8 Meltshop EAF Dust Handling System and Dust Treatment System PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, the Permittee shall comply with the following BACT requirements:

(a) The EAF Dust Handling System (DTF) shall be equipped with bin vents on the silos.
(b) The Dust Treatment System shall be equipped with a scrubber on the dust system and shall incorporate baghouse(s) for evacuation on the truck loading buildings**.**

(c) Options for the dust transfer are:

    (1) from silo to truck through a loading spout,

    (2) from silo to railcar through a loading spout,

    (3) from silo to truck through a loading spout to transfer to the existing Meltshop EAF Baghouses. Unloading from the truck at the existing Meltshop EAF Baghouses also occurs in the building, transferring the dust through augers and a bucket elevator to the existing silo. In this option, the existing EAF dust treatment will have a maximum capacity of 100,000 lb/hr.

(4) treating dust at the new silo and transferring to a truck. No loading spout is necessary because the material is no longer dusty, as treated.

(d) Dust transfer shall occur inside the building.

D.31.9 Particulate Control Equipment Operation [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2 ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, either or both the Meltshop EAF Baghouses (1 and 2) for particulate control shall be in operation and control emissions at all times that one or all of the EAFs, AOD vessel, Desulfurization station, and Meltshop Continuous Casters (EAF #1, EAF #2, AODs, DS, CC#1, and CC#2) are in operation.

(b) Pursuant to 326 IAC 2-2 ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, the following particulate control shall be in operation and control emissions at all times when its corresponding process is in operation:

(1) bin vents for the silos,

(2) scrubber for dust treatment, and

(3) baghouse for truck loading building evacuation.

(c) Pursuant to 326 IAC 2-2 ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, fugitive emissions generated during EAFs and AOD vessel operations (EAF #1, EAF #2, and AODs) shall be captured by the Meltshop roof canopies or contained and collected within the Meltshop EAF building.

D.31.10 Testing Requirements [326 IAC 2-7-6(1), (6)] [326 IAC 2-1.1-11][40 CFR 60.275a]

(a) ~~Pursuant to 326 IAC 2-1.1-11~~ **Within sixty (60) days but no later than one hundred and eighty (180) days after the initial start up of the modified EAFs and AODs permitted in this PSD/SSM NO. 107-24348-00038**, the Permittee shall conduct a performance test on the Meltshop EAF Baghouses (stack and vent), **controlling the EAFs, AODs, Desulfurization Station, Continuous Caster and LMF EU-13 (c)** for the following:

~~(1) VOC,~~

~~(2)~~**(1)** Lead,

~~(3)~~**(2)** Mercury,

(3) Fluorides

(4) Beryllium

~~(4)~~**)** ~~Filterable PM, and~~

~~(5) Filterable and condensible PM10.~~

The 2 Meltshop EAFs shall be operating simultaneously during the tests.

(b) Pursuant to 40 CFR 60.13(i)(1), for the Meltshop EAF Baghouse 2 stack, the Permittee shall determine either:

(1) the control system fan motor amperes and all damper positions;

(2) the volumetric flow rate through each separately ducted hood; or,

(3) the volumetric flow rate at the control device inlet and all damper positions.

During all compliance demonstration testing.

(c) ~~Within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up of the modified EAFs, the Permittee shall perform testing on the EAF Dust Handling System for opacity.~~

~~(d)~~ **Pursuant to 40 CFR 60.275a and to demonstrate compliance with Conditions D.31.1 and D.31.3, the Permitee shall conduct performance test within sixty (60) days but no later than one hundred and eighty (180) days after the initial start up of the modified EAFs and AODs permitted in this PSD/SSM No. 107-24348-00038** ~~Pursuant to 326 IAC 2-1.1-11 and 40 CFR 60.275a, the Permittee shall perform a compliance test~~ for opacity on the **following emission points utilizing 40 CFR Part 60, Appendix A, Method 9, or other methods as approved by the Commissioner**:

(1) Meltshop EAF Baghouse1 roof monitor and **Baghouse2 stack**,

(2) Meltshop Roof monitor, and

(3) EAF Dust Handling System,

~~within 60 days after achieving maximum capacity, but no later than 180 days after start up of the modified EAFs, utilizing 40 CFR Part 60, Appendix A, Method 9, or other methods as approved by the Commissioner.~~

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

(~~f~~ **e**) The particulate testing shall utilized 40 CFR Part 60, Appendix A, Method 5, Method 201 or 201A, Method 202 or other methods as approved by the Commissioner.

(~~g~~ **f**) PM10 includes filterable and condensible PM10.

(~~h~~ **g**) The PM, PM10, VOC, Mercury, **Fluorides, Beryllium** and Lead tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

(~~i~~ **h**) Any stack which has multiple processes which exhaust to the same stack shall operate all of the processes simultaneously in accordance with 326 IAC 3-6 (Source Sampling Procedures) and 40 CFR 60.275a(b).

(~~j~~ **i**) These tests shall be performed using methods as approved by the Commissioner.

(~~k~~ **j**) Testing shall be conducted in accordance with Section C - Performance Testing and 40 CFR Part 60.275a(a) to (j) (as applicable).

Condition D.31.11, CO, SO2 and NOx CEMS Requirement for the EAFs has been revised since the CEMS has already been certified and calibrated.

D.31.11 CO, SO_2, and NO_x Continuous Emission Rate Monitoring Requirement [326 IAC 2-2] [326 IAC 3-5]

(a) CO, SO2, and NOx CEMS:

(1) Pursuant to the consent decree in United States v. Nucor Corporation, No. 4-00-3945-24 (D.S.C.) and 326 IAC 2-2 (PSD), the Permittee shall install, calibrate, certify, operate, and maintain continuous emissions monitoring systems (CEMS) for measuring CO, SO2, and NOx emissions rates in pounds per hour from the Meltshop EAFs, in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.

The Permittee shall comply with the PSD BACT SO2 and NOx hourly emission rates by averaging the CEMS readings based on the actual hours of operation in a 24-hour period.

~~(2) CEMS for Existing Vents -The CEMS installed to measure the emissions through the existing vent shall be calibrated no later than 180 days from the initial start up of the modified Meltshop EAFs.~~

~~(3) CEMS for Baghouse Stack -The CEMS installed to measure the emissions through the EAF baghouses stack shall be calibrated within 180 days of the installation of the new Meltshop EAF Baghouse2.~~

~~(4) The location of these CEMS to measure the Meltshop EAFs emissions shall be approved by OAQ prior to their installation.~~

(b) ~~The Permittee shall submit to IDEM, OAQ, within ninety (90) days after monitor installation, a complete written continuous monitoring standard operating procedure (CMSOP), in accordance with the requirements of 326 IAC 3-5-4.~~ **The Permittee shall prepare and submit to IDEM, OAQ a written report of the results of the calibration gas audits and relative accuracy test audits for each calendar quarter within thirty (30) calendar days after the end of each quarter. The report must contain the information required by 326 IAC 3-5-5(e)(2).**

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

D.31.12 Visible Emissions [40 CFR 60.273a]

(a) Pursuant to 40 CFR 60.273a, 326 IAC 2-2, ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, the Permittee shall have a certified visible emissions reader/observer to conduct, perform and record visible observations of the:

(1) EAF Baghouse1 roof monitor and EAF Baghouse2 stack, and

(2) Meltshop Roof Monitor,

once per day, when either one or both the Meltshop EAFs are operating in the melting and refining period, in accordance with 40 CFR 60, Appendix A, Method 9.

(b) Pursuant to 40 CFR 60.13(i)(1) and the Approved Alternate Monitoring System requirements for the Meltshop EAF Baghouse 2 stack, the Permittee shall have a certified visible emissions reader/observer to conduct, perform and record visible observations of the stack for at least three (3) six (6)-minute periods during furnace meltdown and refining operations, including periods of simultaneous furnace operation at least, once per day, when either one or both the Meltshop EAFs are operating in the melting and refining period, in accordance with 40 CFR 60, Appendix A, Method 9.

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

D.31.19 Compliance Assurance Monitoring (CAM) [40 CFR Part 64]

Pursuant to 40 CFR Part 64, the Permittee shall comply with the following Compliance Assurance Monitoring requirements for the Meltshop baghouses controlling the EAFs, Argon Oxygen Decarburization vessels, desulfurization station and continuous casters:

(a) Monitoring Approach – For EAFs/AODs

EAFs/AODs				
PARAMETER	**INDICATOR NO. 1**	**INDICATOR NO. 2**	**INDICATOR NO. 3**	**INDICATOR NO. 4**
I. Indicator Measurement Approach	**PM Concentration)**	**Opacity**	**Bag Leak Detection System (BLDS)**	**Bag Condition**
	U.S. EPA Method 5, for PM or **other Methods approved by the Commissioner – Baghouse1 and Baghouse2**	**Method 9 visual observations.**	**Continuous measurement of relative PM loading in the baghouse stack.**	**Visual inspection.**
II. Indicator Range	**PM emission limit of 0.0018 grain/dscf**	**An excursion is defined as an opacity measurement exceeding 3% on a 6-minute average.**	**Predetermined increases in PM loading sets off an alarm, which the operator will respond to.**	**An excursion is defined as failure to perform the monthly inspection.**
III. Performance Criteria				
A. Data Representativeness	**U.S. EPA Method 5, for PM or other Methods approved by the Commissioner**	**Procedures addressed in Method 9**	**Monthly operational status inspections of the equipment important to the total capture system.**	**Baghouse inspected visually for bag leaks.**
B. Verification of Operational Status	**Fans amps and damper position.**	**NA**	**NA**	**NA**
C. QA/QC Practices and Criteria	**U.S. EPA Method 5, for PM or other Methods approved by the Commissioner**	**Use of a certified visible emission observer.**	**Periodic maintenance of BLDS.**	**Trained personnel perform inspections and maintenance.**
D. Monitoring Frequency	**Once every 2.5 years.**	**Daily (when the EAF is operating unless inclement weather).**	**Continuous relative PM loading measurements.**	**Bi-Annual**
IV. Data Collection Procedures	**U.S. EPA Method 5, for PM or other Methods approved by the Commissioner**	**Daily visual observations of opacity are recorded on V.E. Form.**	**Record of alarm instances and maintenance activity.**	**Results of inspections and maintenance activities performed are recorded in baghouse maintenance log.**
Averaging Period	**Average of 3 test runs each 4 hours long**	**Six-minute average.**	**NA**	**NA**

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

D.31.~~19~~ **20** Record Keeping Requirements

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

(i) To document compliance with Condition D.31.19 the Permittee shall maintain records of baghouse inspections. These records shall include at a minimum, dates, initials of the person performing the inspections, results, and corrective actions taken in response to excursions as required by the CAM Plan for the EAFs/AODs (if any are required).

(j) To document compliance with Condition D.31.4(d), the Permittee shall maintain records of the amount of Fluorspar applied at the EAFs.

D.31.~~20~~ **21** Reporting Requirements [326 IAC 2-1.1-11] [40 CFR 60.276a]

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

D.31.~~21~~**22**General Provisions Relating to NSPS [326 IAC 12-1-1] [40 CFR Part 60, Subpart A]

Pursuant to 40 CFR 60.460, the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1-1, for the two (2) Meltshop Electric Arc Furnaces (EAFs), identified as EAF #1 and EAF #2, the Argon oxygen decarburization (AOD) vessels, identified as AODs, and the EAF dust treatment facility, identified as DTF, as specified in Appendix A of 40 CFR Part 60, Subpart AAa in accordance with schedule in 40 CFR Part 60, Subpart AAa.

D.31.~~22~~**23**New Source Performance Standards for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels [40 CFR Part 60, Subpart AAa]

Pursuant to 40 CFR Part 60, Subpart AAa, the two (2) Meltshop Electric Arc Furnaces (EAFs), identified as EAF #1 and EAF #2, the Argon oxygen decarburization (AOD) vessels, identified as AODs, and the EAF dust treatment facility, identified as DTF, shall comply with the following provisions:

D.31.~~23~~ **24**One Time Deadlines Relating to Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983

The Permittee must conduct the initial performance tests within 60 days after achieving maximum production rate, but no later than 180 days after start-up.

SECTION D.32 FACILITY OPERATION CONDITIONS

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

MELTSHOP – LADLE METALLURGY FURNACES, PREHEATERS, AND DRYERS

(ss) ~~Two (2)~~ **Three (3)** Meltshop Ladle Metallurgy Furnaces (LMFs)/Stirring Station, **two (2) identified as EU-13 (a) and (b)**, constructed in 1988, **and one (1) LMF identified as EU-13(c) approved for construction in 2007** with a maximum capacity of 502 tons/hour each and **EU-13 (a) and (b) are** controlled by a baghouse, identified as Meltshop LMF Baghouse, exhausting to stack S-13. The Meltshop LMF Baghouse has a design flow rate of 200,000 acf/min. The LMF baghouse was constructed in 1992. **The LMF, EU-13(c) will be controlled by the EAFs baghouses which vent to stacks BH1 and BH2. In addition the LMFs have the following associated equipment:**

(1a) Ladle Preheaters, identified as LP #1 - #5, uncontrolled and exhausting to stacks 7 and 8, consisting of:

(A) 3 units, identified as LP #1 - #3, constructed in 1989, each rated at 10 MMBtu per hour.

(B) 1 unit, identified as LP #4, constructed in 1994, rated at ~~7.5~~ **10** MMBtu per hour.

(C) 1 unit, identified as LP #5, constructed in 1989, rated at ~~15~~ **10** MMBtu per hour.

(1b) Ladle Preheaters, identified as LP #1a through LP #7a, consisting of:

(A) Three (3) natural gas-fired ladle preheaters, identified as LP #1a, LP #2a, and LP #3a, approved for construction in 2007, each with a heat input capacity of 10 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(B) One (1) natural gas-fired AOD ladle preheater, identified as LP #4a, approved for construction in 2007, with a heat input capacity of 10 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(C) One (1) natural gas-fired ladle preheater, identified as LP #5a, approved for construction in 2007, with a heat input capacity of 10 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(D) One (1) natural gas-fired ladle preheater, identified as LP #6, approved for construction in 2006, with a heat input capacity of 12 MMBtu/hour, utilizing low-NOx burners, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(E) One (1) natural gas-fired ladle preheater/dryer, identified as LP #7a, approved for construction in 2007, with a heat input capacity of 10 MMBtu/hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stacks 7 and 8.

(2a) Ladle Dryer, identified as LDS #1, constructed in 1989, consisting of a low NO_x natural gas fired burner, with a heat input capacity of 5 MMBtu per hour. Emissions are uncontrolled and exhausting to stack 12.

(2b) One (1) natural gas-fired Ladle Dryer, identified as LDS #1a, approved for construction in 2007, with a heat input capacity of 5 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-12.

(3) Four (4) Tundish Preheaters, identified as TPH #1 - #4, constructed in 1995, consisting of 4 low NOx natural gas fired heaters, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10. **Five (5) Tundish Preheaters, identified as TP1 - TP5, constructed in 1995, each with a heat input capacity of 6 MMBtu per hour, using propane as a backup fuel.**

(4) Two (2) Tundish Dryout Stations, identified as TD #1 and TD #2. TD #1 was constructed in 1989, and TD#2 was constructed in 1990, each with a heat input capacity of 9 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(5) Four (4) Tundish Nozzle Preheaters, identified as TNP #1- #4, constructed in 1995, consisting of a low NOx natural gas fired Preheaters, each with a heat input capacity of 0.8 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(6) One (1) natural gas-fired tundish dryout station, identified as TD #3, approved for construction in 2007, with a maximum heat input capacity of 2.4 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(7) Two (2) natural gas-fired mandrel dryers, identified as MD #1 and MD #2, approved for construction in 2007, each with a heat input capacity of 1.5 MMBtu per hour, using propane as a backup fuel, with uncontrolled emissions exhausting to stack S-10.

(8) Fifteen (15) belt conveyors and 20 weight hoppers, with a maximum throughput of 200 tons per hour, approved for construction in 2007. These conveyors will supply lime, carbon and alloys to the new LMF.

(9) Flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the LMFs, constructed in 1988 and approved for modification in 2007 with the addition of a three-sided building for bulk loading of material to the system.

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

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

The Permittee agreed to install a CEMS for SO2 at the LMFs. Therefore, the BACT limit for SO2 will be in pounds per hour.

D.32.1 Meltshop LMFs PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** ~~(PSD BACT) and PSD SSM 107-16823-00038, issued November 21, 2003~~, **and PSD/SSM 107-24348-00038,** the Permittee shall comply with the following BACT requirements:

(a) The Meltshop LMFs **EU-13 (a), (b)**, shall be equipped with side draft hoods that evacuate to a baghouse (identified as Meltshop LMF Baghouse) capturing the particulate matter (PM). **The Meltshop LMFs EU-13 (c) shall be controlled by the EAFs Baghouse1 and Baghouse2.**

(b) The filterable PM emissions from the Meltshop LMF Baghouse **controlling the two (2) LMFs, identified as EU-13 (a) and (b)** shall not exceed 0.0018 gr/dscf.

(c) The filterable and condensible PM_{10} emissions from the Meltshop LMF Baghouse **controlling the two (2) LMFs, identified as EU-13 (a) and (b)** shall not exceed 0.0052 gr/dscf.

(d) The visible emissions from the Meltshop LMF Baghouse **controlling the two (2) LMFs, identified as EU-13(a) and (b)** shall not exceed 3% opacity, based on a 6-minute average.

(e) The NO_x emissions from the Meltshop LMF Baghouse **controlling the two (2) LMFs, identified as EU-13 (a) and (b)** shall not exceed 0.0176 lb/ton of steel produced and 8.8 pounds of NO_x per hour, based on a 3-hour block average.

(f) The SO_2 emissions from the Meltshop LMF Baghouse **controlling the two (2) LMFs, identified as EU-13 (a) and (b)** shall not exceed ~~0.185 lb/ton of steel produced and 92.87~~ **210.84** pounds of SO_2 per hour **averaged over a** ~~based on a 3~~-**24-**hour block ~~average~~ **period**.

(g) The CO emissions from the Meltshop LMF Baghouse **controlling the two (2) LMFs, identified as EU-13 (a) and (b)**, shall not exceed 0.07125 lb/ton of steel produced and 35.77 pounds of CO per hour, based on a 3-hour block average.

(h) The VOC emissions from the Meltshop LMF Baghouse **controlling the two (2) LMFs, identified as EU-13 (a) and (b)**, shall not exceed 0.0086 lb/ton of steel produced and 4.32 pounds of VOC per hour, based on a 3-hour block average.

D.32.2 Ladle Dryer**s** ~~(LDS #1)~~ PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** ~~(PSD BACT) and PSD 107-2764-00038, issued November 30, 1993, amended June 23, 1997 via A 107-8255-00038~~, **and PSD/SSM 107-24348-00038,** the ~~Tundish Dryout Stations (TD #1 and TD #2)~~ **Ladle Dryers (LDS #1 and LDS#1a)** shall comply with the following BACT requirements:

(a) The ~~Tundish Dryout Stations (TD #1 and TD #2)~~ **Ladle Dryers (LDS #1 and LDS#1a)** shall only burn natural gas, except as specified below, and shall be limited to ~~9.0~~ **5.0** million Btu per hour heat input, each.

(b) PM/PM10 shall be limited to ~~3.0~~ **7.6** pounds per million cubic feet of natural gas burned, ~~0.005~~ **0.076** pounds per hour (total), and ~~0.02~~ **0.33** tons per year (total).

(c) NOx emissions shall be limited to 100 pounds per million cubic feet of natural gas burned, ~~0.2~~ 0 **1.0** pounds per hour (total), and ~~0.7~~ **4.38** tons per year (total).

(d) CO emissions shall be limited to ~~20.0~~ **84** pounds per million cubic feet of natural gas burned, ~~0.02~~ **0.84** pounds per hour (total), and ~~0.1~~ **3.6** tons per year (total).

(e) VOC emissions from shall be limited to ~~5.3~~ **5.5** pounds per million cubic feet of natural gas burned, ~~0.007~~ **0.06** pounds per hour (total), and ~~0.03~~ **0.24** tons per year (total).

(f) SO2 emission shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.006 pound per hour (total) and 0.026 ton per year (total).

~~(f)~~ **(g)** Visible emissions shall not exceed 5% opacity, based on a 6-minute average.

~~(g)~~ **(h)** The ~~Tundish Dryout Stations (TD #1 and TD #2)~~ **Ladle Dryer (LDS #1 and LDS #1a)** shall only burn propane as a back-up fuel.

The new BACT determinations made for various natural gas units do not include emissions in tons per year as reflected in Conditions D.32.3 and D.32.4. However, previous BACT determinations in tons of emissions per year from these conditions will not be deleted.

D.32.3 Ladle Preheaters PSD BACT [326 IAC 2-2]

(a) Pursuant to 326 IAC 2-2-3 ~~(PSD BACT) and PSD 107-2764-00038, issued November 30, 1993~~, **(Control Technology Review Requirements) and PSD/SSM 107-24348-00038,** the ~~four~~ **eleven** Ladle Preheaters (LP #1- #~~4~~ **5, LP#1a - #5a and #7a**) shall comply with the following BACT requirements:

(1) The ~~four~~ **eleven** Ladle Preheaters (LP #1- #~~4~~ **5, LP#1a - #5a and #7a**) shall only burn natural gas, except as specified below. The ~~three horizontal~~ **eleven** preheaters (LP#1 - #~~3~~ **5 LP#1a - #5a and #7a**) shall each be limited to 10.0 million Btu per hour heat input ~~and the one vertical preheat station (LP#4) shall be limited to 7.5 million Btu per hour heat input.~~

(2) PM/PM10 emissions from each of the ~~four~~ **eleven** Ladle Preheaters (LP #1- #4 **5, LP#1a - #5a and #7a**) shall be limited to ~~3.0~~ **7.6** pounds per million cubic feet of natural gas burned, ~~0.1~~ **0.836** pounds per hour **(total)**, and ~~0.5~~ **3.7** tons per year **(total)**.

(3) NOx emissions from each of the ~~four~~ **eleven** Ladle Preheaters (LP #1- #~~4~~ **5, LP#1a - #5a and #7a**) shall be limited to 100 pounds per million cubic feet of natural gas burned, ~~3.7~~ **11** pounds per hour **(total)**, and ~~16.4~~ **48.2** tons per year **(total)**.

(4) CO emissions from each of the ~~four~~ **eleven** Ladle Preheaters (LP #1- #~~4~~ **5, LP#1a - #5a and #7a**) shall be limited to ~~20.0~~ **84** pounds per million cubic feet of natural gas burned, ~~0.8~~ **9.24** pounds per hour **(total)**, and ~~3.3~~ **40.5** tons per year **(total)**.

(5) VOC emissions from each of the ~~four~~ **eleven** Ladle Preheaters (LP #1- #~~4~~ **5, LP#1a - #5a and #7a**) shall be limited to ~~5.3~~ **5.5** pounds per million cubic feet of

natural gas burned, ~~0.2~~ **0.605** pounds per hour **(total)**, and ~~0.9~~ **2.6** tons per year **(total)**.

(6) **SO2 emissions from each of the eleven Ladle Preheaters (LP #1-#5, LP#1a - #5a and #7a**) **shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.07 pounds per hour.**

~~(5)~~ **(7)** The ~~four~~ **eleven** Ladle Preheaters (LP #1- #~~4~~ **5, LP#1a - #5a and #7a**) shall only burn propane as a back-up fuel.

~~(6)~~ **(8)** Visible emissions from the ~~four~~ **eleven** Ladle Preheaters (LP #1- #~~4~~ **5, LP#1a - #5a and #7a**) shall not exceed 5% opacity, based on a 6-minute average.

~~(b) Pursuant to 326 IAC 2-2-3 (PSD BACT) and PSD 107-5235-00038, issued June 20, 1996, the one Ladle Preheater (LP #5) shall comply with the following BACT requirements:~~

~~(1) The one Ladle Preheater (LP #5) shall burn natural gas with propane as a back-up fuel.~~

~~(2) NOx emissions from Ladle Preheater (LP #5) shall not exceed 140 lbs per million cubic feet of gas burned,~~

~~(c)~~ Pursuant to 326 IAC 2-2-~~(PSD BACT) and PSD 107-5235-00038, issued June 20, 1996,~~ **(Control Technology Review Requirements)** and PSD SSM 107-21359-00038, issued on April 27, 2006, ladle preheater LP #6 shall comply with the following BACT requirements:

(1) The BACT for NOx shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a NOx emission rate of ~~0.05~~ **0.10** pounds per MMBtu and ~~0.60~~ **1.2** lbs per hour.

(2) The BACT for SO_2 shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a SO_2 emission rate of 0.0006 pounds per MMBtu and 0.007 lbs per hour.

(3) The BACT for CO shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a CO emission rate of 0.084 pounds per MMBtu and 1.01 lbs per hour.

(4) The BACT for PM/PM10 (filterable plus condensable) shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a PM/PM10 (filterable plus condensable) emission rate of 0.0076 pounds per MMBtu and 0.091 lbs per hour.

(5) The BACT for VOC shall be “good combustion practices”, utilize “pipeline quality” natural gas as the primary fuel and may utilize propane as a backup fuel, proper operation and shall not exceed a VOC emission rate of 0.0054 pounds per MMBtu and 0.065 lbs per hour.

(6) The opacity from stacks 7 and 8 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). Compliance with this limitation satisfies the opacity limitations required by 326 IAC 5-1 (Opacity Limitations).

(c) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Tundish Nozzle Preheaters (TPH1 through TPH4) shall comply with the following BACT requirements:

(1) The Tundish Nozzle Preheaters (TPH1 through TPH4) shall only burn natural gas, except as specified below, and shall be limited to 0.8 million Btu per hour heat input each.

(2) PM/PM10 emissions from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 7.6 pounds per million cubic feet of natural gas burned, 0.02 pounds per hour (total).

(3) NOx emissions from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 100 pounds per million cubic feet of natural gas burned, 0.32 pounds per hour (total).

(4) CO emissions from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 84 pounds per million cubic feet of natural gas burned, 0.27 pounds per hour (total).

(5) VOC emissions from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 5.5 pounds per million cubic feet of natural gas burned, 0.02 pounds per hour (total).

(6) SO2 emission from the Tundish Nozzle Preheaters (TPH1 through TPH4) shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.002 pounds per hour (total).

(7) Visible emissions shall not exceed 5% opacity, based on a 6-minute average.

(8) The Tundish Nozzle Preheaters (TPH1 through TPH4) shall only burn propane as a back-up fuel.

(d) Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements) and PSD/SSM 107-24348-00038, the Tundish Preheaters (TP1 through TP5) shall comply with the following BACT requirements:

(1) The Tundish Preheaters (TP1 through TP5) shall only burn natural gas, except as specified below, and shall be limited to 6.0 million Btu per hour heat input each.

(2) PM/PM10 emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 7.6 pounds per million cubic feet of natural gas burned, 0.23 pounds per hour (total).

(3) NOx emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 100 pounds per million cubic feet of natural gas burned, 3.0 pounds per hour (total).

(4) CO emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 84 pounds per million cubic feet of natural gas burned, 2.5 pounds per hour (total).

(5) VOC emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 5.5 pounds per million cubic feet of natural gas burned, 0.165 pounds per hour (total).

(6) **SO2 emissions from the Tundish Preheaters (TP1 through TP5) shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.02 pounds per hour (total).**

(7) **Visible emissions shall not exceed 5% opacity, based on a 6-minute average.**

(8) **The Tundish Preheaters (TP1 through TP5) shall only burn propane as a back-up fuel.**

D.32.4 Tundish Dryout Station (TD #1) PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 ~~(PSD BACT) and PSD 107-2764-00038, issued November 30, 1993, amended June 23, 1997 via A 107-8255-00038~~, **(Control Technology Review Requirements) and PSD/SSM 107-24348-00038,** the Tundish Dryout Stations (TD #1 and TD #2) shall comply with the following BACT requirements:

(a) The Tundish Dryout Station (TD #1 and TD #2) shall only burn natural gas, except as specified below, and shall be limited to 9.0 million Btu per hour heat input each.

(b) PM/PM10 shall be limited to ~~3.0~~ **7.6** pounds per million cubic feet of natural gas burned, ~~0.005~~ **0.14** pounds per hour (total), and ~~0.02~~ **0.6** tons per year (total).

(c) NOx emissions shall be limited to 100 pounds per million cubic feet of natural gas burned, ~~0.2~~ **1.8** pounds per hour (total), and ~~0.7~~ **7.9** tons per year (total).

(d) CO emissions shall be limited to ~~20.0~~ **84** pounds per million cubic feet of natural gas burned, ~~0.02~~ **1.5** pounds per hour, and ~~0.1~~ **6.6** tons per year (total).

(e) VOC emissions shall be limited to ~~5.3~~ **5.5** pounds per million cubic feet of natural gas burned, ~~0.007~~ **0.1** pounds per hour, ~~0.03~~ **0.43** tons per year (total).

(f) **SO2 emission shall be limited to 0.6 lb per million cubic feet of natural gas burned, 0.01 pounds per hour (total).**

~~(f)~~ **(g)** Visible emissions shall not exceed 5% opacity, based on a 6-minute average.

~~(g)~~ **(h)** The Tundish Dryout Stations (TD #1 and TD #2) shall only burn propane as a back-up fuel.

LP #1a through LP #5a, LP #7a and LDS #1a went through PSD review and each are subject to a PSD BACT limit. Therefore, they are no longer subject to a propane usage limit to avoid the requirements of PSD. Condition D.32.5 has been revised as follows:

D.32.5 PSD Limit [326 IAC 2-2]

The combined input of propane to emission units ~~LP #4a, LP #7a,~~ TD #3, MD #1, MD #2, ~~LDS #1a, LP #1a, LP #2a, LP #3a, and LP #5a~~, combined with the input of propane to annealing furnace AN-19 (permitted in Section D.21) shall be limited to less than 1,089 thousand gallons of propane (LPG) per twelve consecutive month period, with compliance determined at the end of each month. NOx emissions shall not exceed 0.208 pounds per MMBtu when burning propane. Compliance with this limit will ensure that the potential to emit from the modification performed under SSM 107-23609-00038 is less than forty (40) tons of NOx per year and will render the requirements of 326 IAC 2-2 (PSD) not applicable.

D.32.6 Meltshop LMF PSD BACT for Metals [326 IAC 2-2]

Pursuant to 326 IAC 2-2-3 (Control Technology Review Requirements), the Permittee shall comply with the following BACT requirements:

(a) **The lead emissions from the LMF baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b), shall be limited to 0.00048 pound per ton of steel produced and 0.24 pound per hour, based on a 3-hour block average.**

(b) **The Mercury emissions from the LMF baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall be limited to 0.04 pound per hour, based on a 3-hour block average.**

(c) **The Beryllium emissions from the LMF baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall be limited to 0.002 pound per hour, based on a 3-hour block average.**

(d) **The Fluorides emissions from the LMF baghouse controlling the two (2) LMFs, identified as EU-13 (a) and (b) shall be limited to 0.01 pound per ton of steel produced and 5.02 pounds per hour, based on a 3-hour block average.**

The fluorides emissions from the LMFs shall be minimized by using granular Fluorspar to minimize fluorides emissions and it shall be applied at a maximum rate of 500 pounds/heat at each LMF.

(e) **The emissions from lead and mercury shall be minimized in accordance with the Scrap Management Program (SMP) and**

(f) **The emissions from the Meltshop LMFs shall be controlled by a baghouse.**

D.32.~~6~~ **7** Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the LMFs (EU-13) and their control devices.

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

D.32.~~7~~**8** Meltshop LMFs PSD BACT [326 IAC 2-2]

Pursuant to 326 IAC 2-2**-3 (Control Technology Review Requirements)** ~~and PSD SSM 107-16823-00038, issued November 21, 2003~~, the Permittee shall comply with the following BACT requirements:

(a) The Meltshop LMF Baghouse shall operate at all times that at least one of the Meltshop LMFs (EU-13) is operating, except during the times that one of the Meltshop EAF Baghouses serves as a back up.

(b) Good working practices shall be observed.

D.32.~~8~~**9** Testing Requirements [326 IAC 2-7-6(1),(6)]

~~In order to 326 IAC 2-1.1-11~~ **Within sixty (60) days but no later than one hundred and eighty (180) days after the issuance of PSD/SSM NO. 107-24348-00038, the Permittee shall perform a compliance test on the Meltshop LMFs baghouse stack (S-13), for the following pollutants utilizing methods as approved by the Commissioner:**

~~(a) In order to demonstrate compliance with Condition D.32.1, the Permittee shall perform PM, PM10, and SO_2, testing for the Meltshop LMFs.~~

~~(b)~~ **(a)** With the submission of the test protocol, at a minimum, the Permittee shall include estimates of the sulfur content of the raw materials to be used in testing and the sulfur content of the raw materials used from previous year.

~~(c) PM_{10} includes filterable and condensible PM10.~~

~~(d)~~ ~~The Particulate testing shall utilize 40 CFR Part 60, Appendix A, Method 5, Method 201 or 201A, Method 202 or other methods as approved by the Commissioner.~~

~~(e)~~ **(b)** Any stack which has multiple processes which exhaust to the same stack shall operate shall of the processes simultaneously in accordance with 326 IAC 3-5 (Source Sampling Procedures).

(c) **Lead, Mercury, Beryllium and Fluorides in order to comply with Condition 32.6.**

~~(f)~~ **(d)** The PM, PM10, ~~and SO_2~~, **NOx**, **CO, VOC, Lead, Mercury, Beryllium and Fluorides** tests shall be repeated at least once every 2.5 years from the date of a valid compliance demonstration.

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

~~(h)~~ **(f)** Testing shall be conducted in accordance with Section C - Performance Testing.

D.32.~~9~~**10** Sulfur Content [326 IAC 2-7-5(3)(A)(iii)][326 IAC 2-7-5(d)]

The Permittee shall monitor the sulfur content of the charge carbon and injection carbon added to the LMFs. Vendor certifications or analyses may verify the sulfur content of the charge carbon and injection carbon.

D.32.11 SO_2 Continuous Emission Rate Monitoring Requirement [326 IAC 2-2[[326 IAC 3-5]

(a) **The Permittee shall install, calibrate, certify, operate, and maintain continuous emissions monitoring systems (CEMS) for measuring SO_2 emissions rates in pounds per hour from the Meltshop LMFs, EU-13 (a) and (b), in accordance with 326 IAC 3-5-2 and 326 IAC 3-5-3.**

The Permittee shall comply with the PSD BACT SO_2 hourly emission rates by averaging the CEMS readings based on the actual hours of operation in a 24-hour period.

(1) **The CEMS shall be calibrated within sixty (60) days but no later than one hundred eighty (180) days after the issuance of PSD/SSM NO. 107-24348-00038.**

(2) **The location of the CEMS to measure the Meltshop LMFs SO_2 emissions shall be approved by OAQ prior to their installation.**

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

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

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

D.32.~~10~~**12** Visible Emissions Notations [326 IAC 2-7-5(3)(A)(iii)][326 IAC 2-7-5(d)]

(a) Visible emission notations of the Meltshop LMF Baghouse shall be performed once per day during normal daylight operations. 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 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.32.~~11~~ **13** Baghouses Parametric Monitoring [326 IAC 2-7-5(3)(A)(iii)][326 IAC 2-7-5(d)]

The Permittee shall record the pressure drop across the Meltshop LMF Baghouse used in conjunction with the Meltshop LMFs, **EU-13 (a) and (b),** at least once per day, when one or more of the Meltshop LMFs is in operation. When for any one reading, the pressure drop across the baghouse is outside the range of 1 and 10 inches of water or a range established during the latest stack test, the Permittee shall take reasonable steps in accordance with Section C - 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 reasonable response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

The instrument used for determining the pressure 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 annually.

The instrument used for determining the pressure shall have a range higher than 10 inches of water to accurately measure the range.

D.32.~~12~~**14** Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

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

D.32.15 Maintenance of CEMS [326 IAC 2-7-5(3)(A)(iii)]

(a) In the event that a breakdown for the LMFs EU-13 (a) and (b) SO_2 continuous emission monitoring system (CEMS) occurs, the Permittee shall maintain records of all CEMS malfunctions, out of control periods, calibration and adjustment activities, and repair or maintenance activities.

(b) The continuous emissions monitoring system (CEMS) shall be operated at all times the emissions unit or process is operating except for reasonable periods of monitor system downtime due to necessary calibration or maintenance activities

or malfunctions. Calibration and maintenance activities shall be conducted pursuant to the standard operating procedures under 326 IAC 3-5-4(a).

(c) Except as otherwise provided by a rule or provided specifically in this permit, whenever a continuous emission monitor system (CEMS) is malfunctioning or will be down for calibration, maintenance, or repairs for a period of four (4) hours or more, the Permittee shall perform supplemental monitoring by using calibrated handheld monitors to measure the SO_2 emissions on a once per shift basis, unless the CEMS operation is restored prior to the end of the shift.

The handheld monitors shall be approved by the IDEM, OAQ.

(d) The Permittee shall keep records in accordance with 326 IAC 3-5-6(b) that includes the following:

(1) All documentation relating to:

(A) design, installation, and testing of all elements of the monitoring system; and

(B) required corrective action or compliance plan activities.

(2) All maintenance logs, calibration checks, and other required quality assurance activities.

(3) All records of corrective and preventive action.

(4) A log of plant operations, including the following:

(A) Date of facility downtime.

(B) Time of commencement and completion of each downtime.

(C) Reason for each downtime.

(e) The Permittee shall keep records that describe the supplemental monitoring implemented during the downtime to assure compliance with applicable emission limitations.

(f) In accordance with 326 IAC 3-5-7(5), the Permittee shall submit reports of continuous monitoring system instrument downtime, except for zero (0) and span checks, which shall be reported separately.

The reports shall include the following:

(1) Date of downtime.

(2) Time of commencement.

(3) Duration of each downtime.

(4) Reasons for each downtime.

(5) Nature of system repairs and adjustments.

(g) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous emission monitoring system pursuant to 326 IAC 3-5, 326 IAC 2-2, and 40 CFR Part 60.

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

Condition D.32.13(b), now D.32.16(b) is no longer necessary since SO_2 CEMS will be installed for the LMFs. Therefore, it has been deleted from the permit.

D.32.~~13~~**16** Record Keeping Requirements

(a) To document compliance with Condition D.32.~~10~~**12,** the Permittee shall maintain once per day records of visible emission notation readings at the Meltshop LMF Baghouse stack exhaust **and the reason for the lack of visible emission notation (e.g. the process did not operate that day).**

~~(b) To document compliance with Condition D.32.9,~~**10** ~~the Permittee shall maintain records of the sulfur content of the charge carbon and injection carbon added to the LMFs (EU-13 (a) and (b).~~

~~(c)~~ **(b)** To document compliance with Condition D.32.~~11~~ **13**, the Permittee shall maintain records of once per day total static pressure drop during normal operation **and the reason for the lack of pressure drop notation (e.g. the process did not operate that day).**

LP #1a through LP #5a, LP #7a and LDS #1a went through PSD review and each are subject to a PSD BACT limit. Therefore, they are no longer subject to a propane usage limit to avoid the requirements of PSD.

~~(d)~~ **(c)** To document compliance with Condition D.32.5, the Permittee shall maintain records of the actual quantity of propane (LPG) used in the emission units identified as ~~LP #4a, LP #7a,~~ TD #3, MD #1, MD #2, ~~LDS #1a, LP #1a, LP #2a, LP #3a, and LP #5a~~. Records shall be taken monthly and shall be complete and sufficient to establish compliance with the limit established in Condition D.32.5. Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.

(d) To document compliance with Condition D.32.6(d), the Permittee shall maintain records of the amount of Fluorspar applied at the LMFs.

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

D.32.~~14~~ **17** Reporting Requirements

A monthly summary of the information to document compliance with Condition D.32.5 shall be submitted quarterly to the addresses listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within 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).

Nucor Steel boilers would have been subject to the requirements of the National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Supbart DDDDD. However, on June 8, 2007, the United States Court of appeals for the District of Columbia Circuit (in NRDC v. EPA, no. 04-1386) vacated in its entirety the National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Supbart DDDDD. Additionally, since the state rule at 326 IAC 20-95 incorporated the requirements of the NESHAP 40 CFR 63, Subpart DDDDD by reference, the requirements of 326 IAC 20-95 are no longer effective. Therefore, the requirements of 40 CFR 63, Subpart DDDDD and 326 IAC 20-95 are not included in the permit. Conditions D.2.6, D.2.8, D.9.1, D.9.2, D.9.6, D.17.1, D.17.2, D. 18.4 and the entire SECTION E.1 pertaining to the NESHAP DDDDD have been deleted

~~D.2.6 Annual Carbon Monoxide (CO) Performance Tests [40 CFR Part 63, Subpart DDDDD]~~

~~Pursuant to 40 CFR 63.7515(a) and PSD SSM 107-21359-00038, issued April 27, 2006, the Permittee shall conduct a CO performance test on an annual basis. CO annual performance tests must be completed between 10 and 12 months after the previous performance test. Testing shall be conducted in accordance with Section C - Performance Testing.~~

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

D.2.~~7~~ **6** Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

(a) Pursuant to ~~40 CFR 63.7555(d)(1) and~~ 40 CFR Part 60, Subpart Dc, the Permittee shall keep records of fuel used each calendar month by Boiler ID No. 501, including the types of fuel and amount used.

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

~~**National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements: Industrial, Commercial, and Institutional Boilers and Process Heaters [326 IAC 2-7-5(1)]**~~

~~D.2.8 National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters [40 CFR Part 63, Subpart DDDDD]~~

~~Pursuant to 40 CFR 63, Subpart DDDDD, the Permittee shall comply with the requirements specified in Section E.1 for Boiler ID No. 501 rated at 71.04 MMBtu/hr, which is an affected source for the large gaseous fuel subcategory.~~

~~D.9.1 General Provisions Relating to NESHAP [326 IAC 20-1][40 CFR Part 63, Subpart A]~~

~~The provisions of 40 CFR Part 63, Subpart A - General Provisions, which are incorporated as 326 IAC 20-1-1, apply to the one (1) natural gas-fired boiler (ID No. 2) rated at 15.0 MMBtu per hour, except when otherwise specified in 40 CFR Part 63, Subpart DDDDD. The Permittee must comply with these requirements on and after the effective date of 40 CFR Part 63, Subpart DDDDD.~~

~~D.9.2 National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters [40 CFR Part 63, Subpart DDDDD]~~

~~(a) The one (1) natural gas-fired boiler (ID No. 2) rated at 15.0 MMBtu per hour is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, (40 CFR Part 63, Subpart DDDDD), as of the effective date of 40 CFR Part 63, Subpart DDDDD. Pursuant to this rule, the Permittee must comply with 40 CFR Part 63, Subpart DDDDD on and after September 13, 2007.~~

~~(b) The following emissions units comprise the affected source for the existing large gaseous fuel subcategory: One (1) BOC Gases natural gas-fired boiler (ID No. 2), rated at 15.0 MMBtu per hour. This boiler was installed in 1994.~~

~~(c) The definitions of 40 CFR Part 63, Subpart DDDDD at 40 CFR 63.7575 are applicable to the affected sources.~~

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

D.9.~~6~~ **4** Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]~~[40 CFR Part 63, Subpart DDDDD~~][40 CFR Part 60 Subpart Dc]

(a) Pursuant to 40 CFR 60.48c(g), the Permittee shall keep records of the fuel used each day by Boiler ID No. 2, including the types of fuel and amount used.

~~(b) Pursuant to 40 CFR 63.7555(a)(1), the Permittee shall keep records of a copy of each notification and report to comply with 40 CFR Part 63, Subpart DDDDD, including all documentation supporting any Initial Notification.~~

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

~~D.17.1 General Provisions Relating to NESHAP [326 IAC 20-1][40 CFR Part 63, Subpart A]~~

~~The provisions of 40 CFR Part 63 Subpart A - General Provisions, which are incorporated as 326 IAC 20-1-1, apply to boiler CMB #1 except when otherwise specified in 40 CFR Part 63 Subpart DDDDD. The Permittee must comply with these requirements on and after the effective date of 40 CFR Part 63, Subpart DDDDD.~~

~~D.17.2 National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters [40 CFR Part 63, Subpart DDDDD]~~

~~(a) Boiler CMB #1 is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers and Process Heaters, (40 CFR Part 63, Subpart DDDDD), as of the effective date of 40 CFR Part 63, Subpart DDDDD. Pursuant to this rule, the Permittee must comply with 40 CFR Part 63, Subpart DDDDD on and after September 13, 2007.~~

~~(b) The following emissions unit comprises the affected source for the existing large gaseous fuel subcategory: Natural gas-fired boiler CMB #1, rated at 34.0 MMBtu per hour.~~

~~(c) The definitions of 40 CFR Part 63, Subpart DDDDD at 40 CFR 63.7575 are applicable to the affected source. (d) The Permittee shall submit an Initial Notification no later than November 4, 2004.~~

~~(b) Pursuant to 40 CFR 63.7555(a)(1), the Permittee shall keep records of a copy of each notification and report to comply with 40 CFR Part 63, Subpart DDDDD, including all documentation supporting any Initial Notification.~~

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

~~D.18.4 National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters [40 CFR Part 63, Subpart DDDDD]~~

~~Pursuant to 40 CFR 63, Subpart DDDDD, the Permittee shall comply with the requirements specified in Section E.1 for the Cold Mill boiler (CMB #2) rated at 40. MMBtu/hr, which is an affected source for the large gaseous fuel subcategory.~~

~~**SECTION E.1 FACILITY OPERATION CONDITIONS**~~

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

~~(b) One (1) natural gas fueled low-NO_x boiler, identified as Boiler ID No. 501, constructed in 2004, a heat input capacity of 71.04 MMBtu/hour, utilizing low-NOx burners, and exhausting to Stack 501. This boiler provides steam to the vacuum degasser. Propane will be used as back up fuel.~~

~~Under 40 CFR Part 63, Subpart DDDDD, this unit is considered a new boiler in the large gaseous fuel subcategory.~~

~~Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.~~

~~(aa) One (1) natural gas fueled Cold Mill Boiler (CMB #2), identified as EU-19, with a heat input capacity of 40.0 MMBtu per hour, with emissions exhausting to stack S-23. Propane is used as a back-up fuel. The Cold Mill Boiler (CMB #2) is permitted to be installed in 2007.~~

~~Under 40 CFR Part 63, Subpart DDDDD, this unit is considered a new boiler in the large gaseous fuel subcategory.~~

~~Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.~~

~~(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)]

E.1.1 General Provisions Relating to NESHAP [326 IAC 20-1] [40 CFR Part 63, Subpart A]

Pursuant to 40 CFR Part 63, Subpart DDDDD, the Permittee shall comply with the applicable provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 20-1-1, for boiler ID No. 501 rated at 71.04 MMBtu/hr and boiler ID No. CMB #2 rated at 40.0 MMBtu/hr, as specified in Appendix A of 40 CFR Part 63, Subpart DDDDD in accordance with schedule in 40 CFR Part 63, Subpart DDDDD.

E.1.2 National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters: Requirements [40 CFR Part 63, Subpart DDDDD]

Pursuant to 326 IAC 20-95 and 40 CFR Part 63, Subpart DDDDD, boiler ID No. 501 rated at 71.04 MMBtu/hr and boiler ID No. CMB #2 rated at 40.0 MMBtu/hr shall comply with the following provisions:

Subpart DDDDD—National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

Emission Limits and Work Practice Standards

§ 63.7500 What emission limits, work practice standards, and operating limits must I meet?

(a) You must meet the requirements in paragraphs (a)(1) and (b) of this section.

(1) You must meet each emission limit and work practice standard in Table 1 to this subpart that applies to your boiler or process heater, except as provided under §63.7507.

(b) As provided in §63.6(g), EPA may approve use of an alternative to the work practice standards in this section.

General Compliance Requirements

§ 63.7505 What are my general requirements for complying with this subpart?

(a) You must be in compliance with the emission limits (including operating limits) and the work practice standards in this subpart at all times, except during periods of startup, shutdown, and malfunction.

(b) You must always operate and maintain your affected source, including air pollution control and monitoring equipment, according to the provisions in §63.6(e)(1)(i).

(d) If you demonstrate compliance with any applicable emission limit through performance testing, you must develop a site-specific monitoring plan according to the requirements in paragraphs (d)(1) through (4) of this section. This requirement also applies to you if you petition the EPA Administrator for alternative monitoring parameters under §63.8(f).

(2) In your site-specific monitoring plan, you must also address paragraphs (d)(2)(i) through (iii) of this section.

(i) Ongoing operation and maintenance procedures in accordance with the general requirements of §63.8(c)(1), (c)(3), and (c)(4)(ii);

(ii) Ongoing data quality assurance procedures in accordance with the general requirements of §63.8(d); and

(iii) Ongoing recordkeeping and reporting procedures in accordance with the general requirements of §63.10(c), (e)(1), and (e)(2)(i).

~~(e) If you have an applicable emission limit or work practice standard, you must develop and implement a written startup, shutdown, and malfunction plan (SSMP) according to the provisions in §63.6(e)(3).~~

~~**Testing, Fuel Analyses, and Initial Compliance Requirements**~~

~~**§ 63.7510 What are my initial compliance requirements and by what date must I conduct them?**~~

~~(a) For affected sources that elect to demonstrate compliance with any of the emission limits of this subpart through performance testing, your initial compliance requirements include conducting performance tests according to §63.7520 and Table 5 to this subpart, conducting a fuel analysis for each type of fuel burned in your boiler or process heater according to §63.7521 and Table 6 to this subpart, establishing operating limits according to §63.7530 and Table 7 to this subpart, and conducting CMS performance evaluations according to §63.7525.~~

~~(c) For affected sources that have an applicable work practice standard, your initial compliance requirements depend on the subcategory and rated capacity of your boiler or process heater. If your boiler or process heater is in any of the limited use subcategories or has a heat input capacity less than 100 MMBtu per hour, your initial compliance demonstration is conducting a performance test for carbon monoxide according to Table 5 to this subpart. If your boiler or process heater is in any of the large subcategories and has a heat input capacity of 100 MMBtu per hour or greater, your initial compliance demonstration is conducting a performance evaluation of your continuous emission monitoring system for carbon monoxide according to §63.7525(a).~~

~~(e) If your new or reconstructed affected source commenced construction or reconstruction between January 13, 2003 and November 12, 2004, you must demonstrate initial compliance with either the proposed emission limits and work practice standards or the promulgated emission limits and work practice standards no later than 180 days after November 12, 2004 or within 180 days after startup of the source, whichever is later, according to §63.7(a)(2)(ix).~~

~~(f) If your new or reconstructed affected source commenced construction or reconstruction between January 13, 2003, and November 12, 2004, and you chose to comply with the proposed emission limits and work practice standards when demonstrating initial compliance, you must conduct a second compliance demonstration for the promulgated emission limits and work practice standards within 3 years after November 12, 2004 or within 3 years after startup of the affected source, whichever is later.~~

~~(g) If your new or reconstructed affected source commences construction or reconstruction after November 12, 2004, you must demonstrate initial compliance with the promulgated emission limits and work practice standards no later than 180 days after startup of the source.~~

~~**§ 63.7515 When must I conduct subsequent performance tests or fuel analyses?**~~

~~(a) You must conduct all applicable performance tests according to §63.7520 on an annual basis, unless you follow the requirements listed in paragraphs (b) through (d) of this section. Annual performance tests must be completed between 10 and 12 months after the previous performance test, unless you follow the requirements listed in paragraphs (b) through (d) of this section.~~

~~(e) If you have an applicable work practice standard for carbon monoxide and your boiler or process heater is in any of the limited use subcategories or has a heat input capacity less than 100 MMBtu per hour, you must conduct annual performance tests for carbon monoxide according to §63.7520. Each annual performance test must be conducted between 10 and 12 months after the previous performance test.~~

~~(g) You must report the results of performance tests and fuel analyses within 60 days after the completion of the performance tests or fuel analyses. This report should also verify that the operating limits for your affected source have not changed or provide documentation of revised operating parameters established according to §63.7530 and Table 7 to this subpart, as~~

~~applicable. The reports for all subsequent performance tests and fuel analyses should include all applicable information required in §63.7550.~~

~~§ 63.7520 What performance tests and procedures must I use?~~

~~(a) You must conduct all performance tests according to §63.7(c), (d), (f), and (h). You must also develop a site-specific test plan according to the requirements in §63.7(c) if you elect to demonstrate compliance through performance testing.~~

~~(b) You must conduct each performance test according to the requirements in Table 5 to this subpart.~~

~~(e) You may not conduct performance tests during periods of startup, shutdown, or malfunction.~~

~~(f) You must conduct three separate test runs for each performance test required in this section, as specified in §63.7(e)(3). Each test run must last at least 1 hour.~~

~~§ 63.7530 How do I demonstrate initial compliance with the emission limits and work practice standards?~~

~~(a) You must demonstrate initial compliance with each emission limit and work practice standard that applies to you by either conducting initial performance tests and establishing operating limits, as applicable, according to §63.7520, paragraph (c) of this section, and Tables 5 and 7 to this subpart OR conducting initial fuel analyses to determine emission rates and establishing operating limits, as applicable, according to §63.7521, paragraph (d) of this section, and Tables 6 and 8 to this subpart.~~

~~Continuous Compliance Requirements~~

~~§ 63.7535 How do I monitor and collect data to demonstrate continuous compliance?~~

~~(a) You must monitor and collect data according to this section and the site-specific monitoring plan required by §63.7505(d).~~

~~(b) Except for monitor malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), you must monitor continuously (or collect data at all required intervals) at all times that the affected source is operating.~~

~~(c) You may not use data recorded during monitoring malfunctions, associated repairs, or required quality assurance or control activities in data averages and calculations used to report emission or operating levels. You must use all the data collected during all other periods in assessing the operation of the control device and associated control system. Boilers and process heaters that have an applicable carbon monoxide work practice standard and are required to install and operate a CEMS, may not use data recorded during periods when the boiler or process heater is operating at less than 50 percent of its rated capacity.~~

~~§ 63.7540 How do I demonstrate continuous compliance with the emission limits and work practice standards?~~

~~(a) You must demonstrate continuous compliance with each emission limit, operating limit, and work practice standard in Tables 1 through 4 to this subpart that applies to you according to the methods specified in Table 8 to this subpart and paragraphs (a)(1) through (10) of this section.~~

~~(1) Following the date on which the initial performance test is completed or is required to be completed under §§63.7 and 63.7510, whichever date comes first, you must not operate above any of the applicable maximum operating limits or below any of the applicable minimum operating limits listed in Tables 2 through 4 to this subpart at all times except during periods of startup, shutdown and malfunction. Operating limits do not apply during performance tests. Operation~~

above the established maximum or below the established minimum operating limits shall constitute a deviation of established operating limits.

(b) You must report each instance in which you did not meet each emission limit, operating limit, and work practice standard in Tables 1 through 4 to this subpart that apply to you. You must also report each instance during a startup, shutdown, or malfunction when you did not meet each applicable emission limit, operating limit, and work practice standard. These instances are deviations from the emission limits and work practice standards in this subpart. These deviations must be reported according to the requirements in §63.7550.

(c) During periods of startup, shutdown, and malfunction, you must operate in accordance with the SSMP as required in §63.7505(e).

(d) Consistent with §§63.6(e)and 63.7(e)(1), deviations that occur during a period of startup, shutdown, or malfunction are not violations if you demonstrate to the EPA Administrator's satisfaction that you were operating in accordance with your SSMP. The EPA Administrator will determine whether deviations that occur during a period of startup, shutdown, or malfunction are violations, according to the provisions in §63.6(e).

Notification, Reports, and Records

§ 63.7545 What notifications must I submit and when?

(a) You must submit all of the notifications in §§63.7(b) and (c), 63.8 (e), (f)(4) and (6), and 63.9 (b) through (h) that apply to you by the dates specified.

(b) As specified in §63.9(b)(2), if you startup your affected source before November 12, 2004, you must submit an Initial Notification not later than 120 days after November 12, 2004. The Initial Notification must include the information required in paragraphs (b)(1) and (2) of this section, as applicable.

(1) If your affected source has an annual capacity factor of greater than 10 percent, your Initial Notification must include the information required by §63.9(b)(2).

(c) As specified in §63.9(b)(4) and (b)(5), if you startup your new or reconstructed affected source on or after November 12, 2004, you must submit an Initial Notification not later than 15 days after the actual date of startup of the affected source.

(d) If you are required to conduct a performance test you must submit a Notification of Intent to conduct a performance test at least 30 days before the performance test is scheduled to begin.

(e) If you are required to conduct an initial compliance demonstration as specified in §63.7530(a), you must submit a Notification of Compliance Status according to §63.9(h)(2)(ii). For each initial compliance demonstration, you must submit the Notification of Compliance Status, including all performance test results and fuel analyses, before the close of business on the 60th day following the completion of the performance test and/or other initial compliance demonstrations according to §63.10(d)(2). The Notification of Compliance Status report must contain all the information specified in paragraphs (e)(1) through (9), as applicable.

(1) A description of the affected source(s) including identification of which subcategory the source is in, the capacity of the source, a description of the add-on controls used on the source description of the fuel(s) burned, and justification for the fuel(s) burned during the performance test.

(2) Summary of the results of all performance tests, fuel analyses, and calculations conducted to demonstrate initial compliance including all established operating limits.

(4) Identification of whether you plan to demonstrate compliance with each applicable emission limit through performance testing or fuel analysis.

(6) A signed certification that you have met all applicable emission limits and work practice standards.

(7) A summary of the carbon monoxide emissions monitoring data and the maximum carbon monoxide emission levels recorded during the performance test to show that you have met any applicable work practice standard in Table 1 to this subpart.

(9) If you had a deviation from any emission limit or work practice standard, you must also submit a description of the deviation, the duration of the deviation, and the corrective action taken in the Notification of Compliance Status report.

§ 63.7550 What reports must I submit and when?

(a) You must submit each report in Table 9 to this subpart that applies to you.

(b) Unless the EPA Administrator has approved a different schedule for submission of reports under §63.10(a), you must submit each report by the date in Table 9 to this subpart and according to the requirements in paragraphs (b)(1) through (5) of this section.

(1) The first compliance report must cover the period beginning on the compliance date that is specified for your affected source in §63.7495 and ending on June 30 or December 31, whichever date is the first date that occurs at least 180 days after the compliance date that is specified for your source in §63.7495.

(2) The first compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the first calendar half after the compliance date that is specified for your source in §63.7495.

(3) Each subsequent compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

(4) Each subsequent compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period.

(5) For each affected source that is subject to permitting regulations pursuant to 40 CFR part 70 or 40 CFR part 71, and if the permitting authority has established dates for submitting semiannual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), you may submit the first and subsequent compliance reports according to the dates the permitting authority has established instead of according to the dates in paragraphs (b)(1) through (4) of this section.

(c) The compliance report must contain the information required in paragraphs (c)(1) through (11) of this section.

(1) Company name and address.

(2) Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

(3) Date of report and beginning and ending dates of the reporting period.

(4) The total fuel use by each affected source subject to an emission limit, for each calendar month within the semiannual reporting period, including, but not limited to, a description of the fuel and the total fuel usage amount with units of measure.

(5) A summary of the results of the annual performance tests and documentation of any operating limits that were reestablished during this test, if applicable.

(6) A signed statement indicating that you burned no new types of fuel. Or, if you did burn a new type of fuel, you must submit the calculation of chlorine input, using Equation 5 of §63.7530, that demonstrates that your source is still within its maximum chlorine input level established during

~~the previous performance testing (for sources that demonstrate compliance through performance testing) or you must submit the calculation of HCl emission rate using Equation 9 of §63.7530 that demonstrates that your source is still meeting the emission limit for HCl emissions (for boilers or process heaters that demonstrate compliance through fuel analysis). If you burned a new type of fuel, you must submit the calculation of TSM input, using Equation 6 of §63.7530, that demonstrates that your source is still within its maximum TSM input level established during the previous performance testing (for sources that demonstrate compliance through performance testing), or you must submit the calculation of TSM emission rate using Equation 10 of §63.7530 that demonstrates that your source is still meeting the emission limit for TSM emissions (for boilers or process heaters that demonstrate compliance through fuel analysis). If you burned a new type of fuel, you must submit the calculation of mercury input, using Equation 7 of §63.7530, that demonstrates that your source is still within its maximum mercury input level established during the previous performance testing (for sources that demonstrate compliance through performance testing), or you must submit the calculation of mercury emission rate using Equation 11 of §63.7530 that demonstrates that your source is still meeting the emission limit for mercury emissions (for boilers or process heaters that demonstrate compliance through fuel analysis).~~

~~(7) If you wish to burn a new type of fuel and you can not demonstrate compliance with the maximum chlorine input operating limit using Equation 5 of §63.7530, the maximum TSM input operating limit using Equation 6 of §63.7530, or the maximum mercury input operating limit using Equation 7 of §63.7530, you must include in the compliance report a statement indicating the intent to conduct a new performance test within 60 days of starting to burn the new fuel.~~

~~(9) If you had a startup, shutdown, or malfunction during the reporting period and you took actions consistent with your SSMP, the compliance report must include the information in §63.10(d)(5)(i).~~

~~(10) If there are no deviations from any emission limits or operating limits in this subpart that apply to you, and there are no deviations from the requirements for work practice standards in this subpart, a statement that there were no deviations from the emission limits, operating limits, or work practice standards during the reporting period.~~

~~(d) For each deviation from an emission limit or operating limit in this subpart and for each deviation from the requirements for work practice standards in this subpart that occurs at an affected source where you are not using a CMSs to comply with that emission limit, operating limit, or work practice standard, the compliance report must contain the information in paragraphs (c)(1) through (10) of this section and the information required in paragraphs (d)(1) through (4) of this section. This includes periods of startup, shutdown, and malfunction.~~

~~(1) The total operating time of each affected source during the reporting period.~~

~~(2) A description of the deviation and which emission limit, operating limit, or work practice standard from which you deviated.~~

~~(3) Information on the number, duration, and cause of deviations (including unknown cause), as applicable, and the corrective action taken.~~

~~(f) Each affected source that has obtained a title V operating permit pursuant to 40 CFR part 70 or 40 CFR part 71 must report all deviations as defined in this subpart in the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A). If an affected source submits a compliance report pursuant to Table 9 to this subpart along with, or as part of, the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), and the compliance report includes all required information concerning deviations from any emission limit, operating limit, or work practice requirement in this subpart, submission of the compliance report satisfies any obligation to report the same deviations in the semiannual monitoring report. However, submission of a compliance report does not otherwise affect any obligation the affected source may have to report deviations from permit requirements to the permit authority.~~

~~(g) If you operate a new gaseous fuel unit that is subject to the work practice standard specified in Table 1 to this subpart, and you intend to use a fuel other than natural gas or equivalent to fire the~~

~~affected unit, you must submit a notification of alternative fuel use within 48 hours of the declaration of a period of natural gas curtailment or supply interruption, as defined in §63.7575. The notification must include the information specified in paragraphs (g)(1) through (5) of this section.~~

~~(1) Company name and address.~~

~~(2) Identification of the affected unit.~~

~~§ 63.7555 What records must I keep?~~

~~(a) You must keep records according to paragraphs (a)(1) through (3) of this section.~~

~~(1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that you submitted, according to the requirements in §63.10(b)(2)(xiv).~~

~~(2) The records in §63.6(e)(3)(iii) through (v) related to startup, shutdown, and malfunction.~~

~~(3) Records of performance tests, fuel analyses, or other compliance demonstrations, performance evaluations, and opacity observations as required in §63.10(b)(2)(viii).~~

~~(d) For each boiler or process heater subject to an emission limit, you must also keep the records in paragraphs (d)(1) through (5) of this section.~~

~~(1) You must keep records of monthly fuel use by each boiler or process heater, including the type(s) of fuel and amount(s) used.~~

~~§ 63.7560 In what form and how long must I keep my records?~~

~~(a) Your records must be in a form suitable and readily available for expeditious review, according to §63.10(b)(1).~~

~~(b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.~~

~~(c) You must keep each record on site for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1). You can keep the records off site for the remaining 3 years.~~

~~Other Requirements and Information~~

~~§ 63.7565 What parts of the General Provisions apply to me?~~

~~Table 10 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you.~~

~~Table 1 to Subpart DDDDD of Part 63.—Emission Limits and Work Practice Standards~~

~~As stated in '63.7500, you must comply with the following applicable emission limits:~~

~~**If your boiler or process heater is in this subcategory...**~~	~~**For the following pollutants...**~~	~~**You must meet the following emission limits and work practice standards...**~~
~~7. New or reconstructed large gaseous fuel~~	~~Carbon Monoxide~~	~~400 ppm by volume on a dry basis corrected to 3 percent oxygen (30-day rolling average for units 100 MMBtu/hr or greater, 3-run average for units less than 100 MMBtu/hr)~~

~~Table 5 to Subpart DDDDD of Part 63 C Performance Testing Requirements~~

~~As stated in '63.7520, you must comply with the following requirements for performance test for existing, new or reconstructed affected sources:~~

~~To conduct a performance test for the following pollutant...~~	~~You must...~~	~~Using...~~
~~5. Carbon Monoxide~~	~~a. Select the sampling ports location and the number of traverse points.~~	~~Method 1 in appendix A to part 60 of this chapter.~~
	~~b. Determine velocity and volumetric flow-rate of the stack gas.~~	~~Method 2, 2F, or 2G in appendix A to part 60 of this chapter.~~
	~~c. Determine oxygen and carbon dioxide concentrations of the stack gas.~~	~~Method 3A or 3B in appendix A to part 60 of this chapter, or ASTM D6522-00 (IBR, see '63.14(b)), or ASME PTC 19, Part 10(1981)(IBR, see '63.14(i)).~~
	~~d. Measure the moisture content of the stack gas.~~	~~Method 4 in appendix A to part 60 of this chapter.~~
	~~e. Measure the carbon monoxide emission concentration.~~	~~Method 10, 10A, or 10 B in appendix A to part 60 of this chapter.~~
	~~f. Convert emissions concentration to lb per MMBtu emission rates.~~	~~Method 19 F-factor methodology in appendix A to part 60 of this chapter.~~

~~Table 9 to Subpart DDDDD of Part 63 -Reporting Requirements~~
~~As stated in §63.7550, you must comply with the following requirements for reports:~~

~~You must submit a(n)~~	~~The report must contain...~~	~~You must submit the report...~~
~~1. compliance report~~	~~a. information required in '63.7550(c)(1)through(11)~~ ~~AND~~ ~~b. if there are no deviations from any emission limitation (emission limit and operating limit) that applies to you and there are no deviations from the requirements for work practice standards in Table 8 to this subpart that apply to you, a statement that there were no deviations from the emission limitations and work practice standards during the reporting period. If there were no periods during which the CMSs, including continuous emissions monitoring system, continuous opacity monitoring system, and operating parameter monitoring systems, were out-of-control as specified in '63.8(c)(7), a statement that there were no periods during the which the CMSs were out-of-control during the reporting period~~ ~~AND~~ ~~c. if you have a deviation from any emission~~	~~semiannually according to the requirements in '63.7550(b).~~

~~You must submit a(n)~~	~~The report must contain...~~	~~You must submit the report...~~
	~~limitation (emission limit and operating limit) or work practice standard during the reporting period, the report must contain the information in '63.7550(d). If there were periods during which the CMSs, including continuous emissions monitoring system, continuous opacity monitoring system, and operating parameter monitoring systems, were out-of-control, as specified in '63.8(c)(7), the report must contain the information in '63.7550(e)~~ ~~AND~~ ~~d. if you had a startup, shutdown, or malfunction during the reporting period and you took actions consistent with your startup, shutdown, and malfunction plan, the compliance report must include the information in '63.10(d)(5)(i)~~	
~~2. an immediate startup, shutdown, and malfunction report if you had a startup, shutdown, or malfunction during the reporting period that is not consistent with your startup, shutdown, and malfunction plan, and the source exceeds any applicable emission limitation in the relevant emission standard.~~	~~a. actions taken for the event~~ ~~AND~~	~~i. by fax or telephone within 2 working days after starting actions inconsistent with the plan;~~ ~~and~~
	~~b. The information in '63.10(d)(5)(ii)~~	~~ii. by letter within 7 working days after the end of the event unless you have made alternative arrangements with the permitting authority.~~

~~E.1.3 One Time Deadlines Relating to NESHAP: Industrial, Commercial, and Institutional Boilers and Process Heaters~~

~~Pursuant to 40 CFR Part 63.7510(e), the Permittee shall demonstrate initial compliance with either the proposed emission limits and work practice standards or the promulgated emission limits and work practice standards in 40 CFR Part 63, Subpart DDDDD no later than 180 days after November 12, 2004 or within 180 days after the startup of the source, whichever is later, according to 63.7(a)(2)(ix).~~

~~Pursuant to 40 CFR Part 63.7510(f), if the Permittee chose to comply with the proposed emission limits and work practice standards when demonstrating initial compliance, the Permittee must conduct a second compliance demonstration for the promulgated emission limits and work practice standards within 3 years after November 12, 2004 or within 3 years after startup of the affected source, whichever is later.~~

SECTION E.~~2~~ 1 FACILITY OPERATION CONDITIONS

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

COLD MILL – COLD MILL BOILER (CMB#2)

(aa) One (1) natural gas fueled Cold Mill Boiler (CMB #2), identified as EU-19, with a heat input capacity of ~~34~~ **40.0** MMBtu per hour, with emissions exhausting to stack S-23. Propane is used as a back-up fuel. The Cold Mill Boiler (CMB #2) is **permitted to be installed in 2007** ~~not yet installed.~~

~~Under 40 CFR Part 63, Subpart DDDDD, this unit is considered a new boiler in the large gaseous fuel subcategory.~~

Under 40 CFR Part 60, Subpart Dc, this unit is considered a steam generating unit.

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

E.~~2~~.**1**.1 General Provisions Relating to NSPS [326 IAC 12-1-1] [40 CFR Part 60, Subpart A]

The Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1-1, for the Cold Mill Boiler (CMB #2) rated at ~~34~~ **40.0** MMBtu/hr, as specified in Appendix A of 40 CFR Part 60, Subpart Dc in accordance with schedule in 40 CFR Part 60, Subpart Dc.

E.~~2~~.**1.**2 Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units [40 CFR Part 60, Subpart Dc]

Pursuant to 40 CFR Part 60, Subpart Dc, the Cold Mill Boiler (CMB #2) rated at ~~34~~ **40.0** MMBtu/hr shall comply with the following provisions:

~~E.2.3 Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units NSPS [326 IAC 12]~~

~~The Permittee shall comply with the previous version of 40 CFR 60.40c, Subpart Dc, published in 55 FR 37683, September 12, 1990, for the emission unit in SECTION E.1 as follows:~~

~~*§ 60.48c Reporting and recordkeeping requirements.*~~

~~(a) The owner or operator of each affected facility shall submit notification of the date of construction or reconstruction and actual startup, as provided by §60.7 of this part. This notification shall include:~~

~~(1) The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.~~

~~(3) The annual capacity factor at which the owner or operator anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.~~

Conclusion and Recommendation

The construction and operation of this proposed modification shall be subject to the conditions of the attached **PSD/Significant Source Modification No. 107-24348-00038 and Part 70 Significant Permit Modification No. 107-24699-00038**. The staff recommends to the Commissioner that these source and permit modifications be approved.

Past Actual Emissions (tons/year)										
Emission Unit Description	**VOC**	**PM**	**$PM_{10}/PM_{2.5}$**	**NOx**	**CO**	**SO_2**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**
Existing Emission Units Being Modified										
Melt Shop - EAFs/AOD	98.10	245.30	76.70	381.60	2180.70	272.60	0.52	0.08	0.09	0.44
Melt Shop LMFs	9.40	63.80	10.35	19.20	77.70	458.00	0.52	0.08	0.09	10.47
New Emission Unit										
1 additional LMF	18.90	72.50	13.50	38.70	156.70	923.50	1.06	0.16	0.18	14.07
LMF Conveyors		1.3	1.3							
Cold Mill Boiler	0.50	1.30	1.30	6.10	10.70	0.10	0.315 (Hexane)			
TOTAL	126.90	384.20	103.15	445.60	2425.80	1654.20	10.43			

PAST ACTUAL TO PTE TEST (tons/year)										
POLLUTANTS	**VOC**	**PM**	**$PM_{10}/PM_{2.5}$**	**NOx**	**CO**	**SO_2**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**
Existing Emission Units Being Modified										
	197.9	398.6	138.00	769.60	4,397.50	549.70	1.06	0.16	0.18	7.92
Melt Shop - EAF/AOD	98.10	245.30	76.70	381.60	2180.70	272.60	0.52	0.08	0.09	0.44
Emission Change (ATP)	**99.80**	**153.30**	**61.30**	**388.00**	**2216.80**	**277.10**	**0.54**	**0.08**	**0.09**	**7.48**
	18.90	72.50	13.50	38.70	156.70	923.50	1.06	0.16	0.18	14.07
Melt Shop LMFs	9.40	63.80	10.35	19.20	77.70	458.00	0.52	0.08	0.09	10.47
Emission Change (ATP)	**9.50**	**8.70**	**3.15**	**19.50**	**79.00**	**465.50**	**0.54**	**0.08**	**0.09**	**3.60**
New Emission Units										
1 additional LMF	18.90	72.50	13.50	38.70	156.70	923.50	1.06	0.16	0.18	14.07
LMF Conveyors		1.3	1.3							
Cold Mill Boiler	0.50	1.30	1.30	6.10	10.70	0.10	0.315 (Hexane)			
Total PTE from New Emission Units	**19.40**	**75.10**	**16.10**	**44.80**	**167.40**	**923.60**	**1.06**	**0.16**	**0.18**	**14.07**
Total Emission Change from the Project	**128.70**	**237.10**	**80.55**	**452.30**	**2463.20**	**1666.20**	**2.14**	**0.32**	**0.36**	**25.15**
PSD SignificantLevels	40	25	15	40	100	40				
PSD Threshold Levels							**0.6**	**0.1**	**0.0004**	**3**

Uncontrolled PTE (tons/year)											
Emission Unit Description	**VOC**	**PM**	**$PM_{10}/PM_{2.5}$**	**NOx**	**CO**	**SO_2**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**	**Combined HAPs**
Existing Emission Units Being Modified											
Melt Shop - EAFs/AOD	197.90	265733.30	91984.60	769.60	4397.50	549.70	703.60	109.90	120.20	5277.00	6210.70
Melt Shop LMFs	18.90	8700.00	48333.30	38.70	156.70	923.50	703.60	109.90	120.20	9380.00	10313.70
Castrip							378.40	59.10	64.60	7884.00	8386.10
TOTAL PTE FROM MODIFIED EMISSION UNITS	216.80	274433.30	140317.90	808.30	4554.20	1473.20	1407.20	219.80	240.40	14657.00	24910.50
New Emission Units											
1 additional LMF	18.90	8700.00	48333.30	38.70	156.70	923.50	703.60	109.90	120.20	9380.00	10313.70
LMF Conveyors		56.4	56.4								
Cold Mill Boiler	1.00	1.30	1.30	17.50	14.70	0.10	0.315 (Hexane)				0.33
TOTAL PTE FROM THE PROJECT	217.80	274434.60	140319.20	825.80	4568.90	1473.30	1407.52				35224.53

	Controlled PTE (tons/year)										
Emission Unit Description	**VOC**	**PM**	**$PM_{10}/PM_{2.5}$**	**NOx**	**CO**	**SO_2**	**LEAD**	**Mercury**	**Beryllium**	**Fluorides**	**Combined HAPs**
Existing Emission Units Being Modified											
Melt Shop - EAFs/AOD	197.90	398.60	138.00	769.60	4397.50	549.70	1.06	0.16	0.18	7.92	9.32
Melt Shop LMFs	18.90	13.50	72.50	38.70	156.70	923.50	1.06	0.16	0.18	14.07	15.47
Castrip							0.57	0.09	0.10	11.83	12.59
New Emission Units											
1 additional LMF	18.90	13.50	72.50	38.70	156.70	923.50	1.06	0.16	0.18	14.07	15.47
LMF Conveyors		1.3	1.3								
Cold Mill Boiler	0.50	1.30	1.30	6.10	10.70	0.10	0.315 (Hexane)				0.315
TOTAL PTE FROM THE PROJECT	236.20	428.20	285.60	853.10	4721.60	2396.80	3.75	0.57	0.64	47.89	53.17

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

Company Name: Nucor Steel
Address City IN Zip: 4537 South Nucor Road, Crawfordsville, IN 47933
PSD/SSM No.: 107-24348
Plt ID: 107-00038
Reviewer: Aida De Guzman
Date Application Received: 21-Feb-07

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
40.0 **Cold Mill boiler**	350.4

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	7.6	7.6	0.6	100.0 **see below	5.5	84.0
BACT limit in lb/MMBtu	0.0076	0.0076	0.0006	0.035	0.0026	0.061
Potential Emission in tons/yr	1.3	1.3	0.1	17.5	1.0	14.7
BACT Limit in tons/yr	1.3	1.3	0.1	6.1	0.5	10.7

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler
HAPs Emissions

Company Name: Nucor Steel
Address City IN Zip: 4537 South Nucor Road, Crawfordsville, IN 47933
Permit Number: 107-24348
Plt ID: 107-00038
Reviewer: Aida De Guzman
Date: 21-Feb-07

Heat Input Capacity
MMBtu/hr

40.0
cold mill boiler

	HAPs - Organics				
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	3.679E-04	2.102E-04	1.314E-02	3.154E-01	5.957E-04

	HAPs - Metals				
	Lead	Cadmium	Chromium	Manganese	Nickel
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03
Potential Emission in tons/yr	8.760E-05	1.927E-04	2.453E-04	6.658E-05	3.679E-04
TOTAL HAPs	**3.306E-01**				

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Maximum Production: **4,397,520** tons/year Steel
Control Equipment: Baghouses each with 99.85% efficiency

UNCONTROLLED POTENTIAL TO EMIT

Modified Emission Units	SO2 Emission Factor (lb/ton)	SO2 Emissions (lb/hr)	SO2 Emissions (tons/yr)	PM Emissions (lb/hr)	PM Emissions (tons/yr)	$PM_{10}/PM_{2.5}$ Emissions (lb/hr)	$PM_{10}/PM_{2.5}$ Emissions (tons/yr)	CO Emission Factor (lb/ton)	CO Emissions (lb/hr)	CO Emissions (tons/yr)	VOC Emission Factor (lb/ton)	VOC Emissions (lb/hr)	VOC Emissions (tons/yr)	NOx Emission Factor (lb/ton)	NOx Emissions (lb/hr)	NOx Emissions (tons/yr)	LEAD (Pb) Emissions (lb/hr)	LEAD (Pb) Emissions (tons/yr)	Mercury Emissions (lb/hr)	Mercury Emissions (tons/yr)	Beryllium Emissions (lb/hr)	Beryllium Emissions (tons/yr)	Fluorides Emissions (lb/hr)	Fluorides Emissions (tons/yr)
Melt Shop - Electric Arc Furnace /Argon Oxygen Decarburization (EAF/AOD)	0.25	125.5	549.7	60669.71	265733.3	21001.05	91984.6	2.00	1004	4397.5	0.09	45.18	197.9	0.35	175.7	769.6	160.6	703.6	25.1	109.9	27.4	120.2	1204.8	5277.0
Melt Shop - Ladle Metalurgical Furnace (LMFs)	0.42	210.84	923.5	1986.30	8700.0	11035.01	48333.3	0.07125	35.8	156.7	0.0086	4.3	18.9	0.0176	8.8	38.7	160.6	703.6	25.1	109.9	27.4	120.2	2141.6	9380.0
TOTAL UNCONTROLLED PTE From Modified Emission Units		**336.34**	**1473.2**	**62656.0**	**274433.3**	**32036.1**	**140317.9**		**1039.8**	**4554.2**		**49.5**	**216.8**		**184.5**	**808.3**	**321.3**	**1407.2**	**50.2**	**219.9**	**54.9**	**240.4**	**3346.4**	**14657.0**
New LMF	0.42	210.84	923.5	1986.30	8700.0	11035.01	48333.3	0.07125	0.0	0.0	0.0086	0.0	0.0	0.0176	0.0	0.0	160.6	703.6	25.1	109.9	27.4	120.2	2141.6	9380.0
New LMF Conveyors					56.4		56.4																	

CONTROLLED/LIMITED POTENTIAL TO EMIT

Modified Emision Units	SO2 Emission Factor (lb/ton)	SO2 Emissions (lb/hr)	SO2 Emissions (tons/yr)	PM Emission Factor outlet grain loading (gr/dscf)	PM Emissions (lb/hr)	PM Emissions (tons/yr)	PM10/PM2.5 Emission Factor outlet grain loading (gr/dscf)	PM10/PM2.5 Emissions (lb/hr)	PM10/PM2.5 Emissions (tons/yr)	CO Emission Factor (lb/ton)	CO Emissions (lb/hr)	CO Emissions (tons/yr)	VOC Emission Factor (lb/ton)	VOC Emissions (lb/hr)	VOC Emissions (tons/yr)	NOx Emission Factor (lb/ton)	NOx Emissions (lb/hr)	NOx Emissions (tons/yr)	LEAD (Pb) Emissions (lb/hr)	LEAD (Pb) Emissions (tons/yr)	Mercury Emissions (lb/hr)	Mercury Emissions (tons/yr)	Beryllium Emissions (lb/hr)	Beryllium Emissions (tons/yr)	Fluorides Emissions (lb/hr)	Fluorides Emissions (tons/yr)
Melt Shop - Electric Arc Furnace /Argon Oxygen Decarburization (EAF/AOD)	0.25	125.5	549.7	0.0052	91.00	398.6	0.0018	31.50	138.0	2.00	1004	4397.5	0.09	45.18	197.9	0.35	175.7	769.6	0.27	1.06	0.04	0.16	0.05	0.18	5.52	7.92
Melt Shop - Ladle Metallurgical Furnace (LMFs)	0.42	210.8	923.5	0.0018	2.98	13.1	0.01	16.55	72.5	0.07125	35.8	156.7	0.0086	4.3	18.9	0.0176	8.8	38.7	0.27	1.06	0.04	0.16	0.05	0.18	5.52	14.07
TOTAL CONTROLLED PTE From Modified Emission Units		**336.3**	**1473.2**		**94.0**	**411.6**		**48.1**	**210.5**		**1039.8**	**4554.2**		**49.5**	**216.8**		**184.5**	**808.3**	**0.54**	**2.11**	**0.08**	**0.33**	**0.10**	**0.36**	**11.04**	**21.99**
New LMF	0.42	210.8	923.5	0.0018	2.98	13.1	0.01	16.55	72.5	0.07125	35.8	156.7	0.0086	4.3	18.9	0.0176	8.8	38.7	0.27	1.06	0.04	0.16	0.05	0.18	5.52	14.07
New LMF Conveyors						1.3			1.3																	

LMF Conveyors: **PM/PM10 PTE** There are 17 transfer pts. for the metallic Ferro Alloy

Lime/Alloys = 11,400 lbs/hr lime AP-42 11.17-4 for lime manufacturing 2.2 lb/ton
6,000 lbs/hr metallic Ferro alloy

Lime Handling PTE=

54.9	tons/yr	uncontrolled
0.5	tons/yr	controlled

Metallic Ferro Alloy Handling AP-42 11.19.2-2 for crushed stones 0.003 lb/ton
Metallic Ferro Alloy Handling PTE =

0.7	tons/yr uncontrolled
0.0	tons/yr controlled

Miscellaneous Alloy addition 2.0 tons/day AP-42 11.17-4 for lime manufacturing 2.2 lb/ton
Miscellaneous Alloy addition PTE

0.8	tons/yr uncontrolled
0.3	tons/yr controlled

Note: Metallic HAP (Lead) is controlled by the baghouses.
Methodology:
PM = 398.6 tons/yr * yr/8760 hrs * hr/60 min * 2000 lb/ton * 7000 gr/lb * dscf/0.0052 gr =
PM PTE, tons/yr = air flow rate, dscf/min * EF, gr/dscf * *60 min/hr * 8760 hrs/yr * lb/7000 gr * ton /2000 l **2,041,769** dscf/min (AOD air flow rate) **193113** dscf/min (LMF air flow rate)
PTE Uncontrolled/Controlled, lb/hr = maximum production, tons/yr * EF, lb/ton * yr/8760 hrs
PTE Uncontrolled/Controlled, tons/yr = maximum production, tons/yr * EF, lb/ton * ton/2000 lbs

Appendix C

CONTROL TECHNOLOGY / PSD BACT ANALYSIS

Nucor Steel

Source Background and Description

Source Location:	**4537 South Nucor Road, Crawfordsville, Indiana 47933**
County:	**Montgomery**
SIC Code:	**3312**
Part 70 Operating Permit No.:	**T107-7172-00038**
SSM/PSD No.:	**107-24348-00038**
Permit Reviewer:	**Aida De Guzman**

Nucor Steel submitted a permit application for the following modifications to its steel mini-mill:

(a) Meltshop - Electric Arc Furnaces (EAFs), Argon Oxygen Decarburization (AOD) modification, which involves the following:

(1) Installation of one (1) co-jet oxyfuel burner/lance for each EAF, with a rated capacity of 10 megawatt, using oxygen, natural gas and propane as backup fuels.

(2) Install three (3) new large charge buckets that will allow single furnace charges on both EAFs.

(3) Two (2) additional small charge buckets for the existing EAFs.

(4) Four (4) additional ladles for the EAFs.

(5) Replace EAF furnace bottoms with ones that are deeper on both furnaces.

(6) Installation of one (1) rebricking station and one (1) additional AOD vessel, identified as AOD vessel #2 with a rated capacity of 160 tons with one (1) top lance for both AODs, rated at 300,000 cubic feet/hour of oxygen. The additional AOD vessel will be used as a spare when one AOD is being rebricked.

(7) Modify existing EAF charge handling with the addition of two (2) new scrap cranes with magnetics, enhancement of existing cranes and/or magnetics, use of rail and/or truck dump and loader operations and the use of mobile cranes to load charge buckets in the scrap yard.

(8) Modify the existing flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the EAFs including the addition of bulk loading of material to the system in a three-sided building.

(b) Meltshop - Ladle Metallurgical Furnaces (LMFs) modification, which involves the following:

(1) Installation of 15 belt conveyors, and 20 weight hoppers with a maximum throughput of 200 tons per hour. The proposed belt conveyors will replace existing

screw conveyors. These conveyors will supply lime, carbon and alloys to the LMF process.

(2) Installation of one (1) additional LMF and associated auxiliary equipment to be controlled by the existing Meltshop EAF baghouse, exhausting to stack. The steel production will remain at 502 tons per hour and 4,397,520 tons per year.

(3) Modify the existing flux and alloy material handling system for direct feeding of alloys, lime, carbon, scrap substitutes and other related materials to the LMFs, including the addition of bulk loading of material to the system in a three-sided building.

(c) Cold Mill:

(1) Installation of one (1) new natural gas-fired Cold Mill boiler (CMB#2) (propane as back up), with a maximum heat input capacity of 40 Million British thermal units per hour (MMBtu/hr).

The steel production capability of the source will remain the same at 502 tons per hour and 4,397,520 tons per year. Currently, on occasion, the molten steel in the ladle cools down while waiting for the LMF station to open up. The third ladle metallurgy furnace (LMF) is being proposed to minimize these cases.

(d) Request to modify the BACT limits from the following natural gas combustion units to reflect the new U.S. EPA AP-42 emission factors (AP-42, July 1998). None of these natural gas-fired combustion units is being physically modified:

Emission Units/ID	Heat Input Rate (MMBtu/hr)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each
1 Acid Regeneration	5.6
2 Tundish Dryout Station (TD1 and TD2)	9.0 each
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each
5 Tundish Preheaters (TP1 - TP5)	6.0 each
1 Ladle Dryer	5.0

The proposed modification is subject to PSD review for PM, PM10, VOC, CO, NOx and SO2, because each criteria pollutant is emitted at significant level; and it is subject to PSD review for lead, beryllium, fluorides and mercury, because each regulated pollutant is emitted at PSD significant level. Therefore, PSD BACT analysis is required, under 326 IAC 2-2-3(2), (PSD Rule: Control Technology Review Requirements) for all these pollutants.

The BACT analysis submitted by Nucor Steel, which has been reviewed and analyzed by IDEM, OAQ is based on the draft “Top-Down approach: BACT Guidance” published by USEPA, Office of Air Quality Planning Standards, March 15, 1990. The BACT analysis has been based on the following sources of information which have been reviewed or contacted:

(a) Downloadable USEPA RACT/BACT/LAER Clearinghouse (RBLC) System;
(b) USEPA/State/Local Air Quality Permits;
(c) Federal/State/Local Permit Engineers;
(d) Control Technology Vendors; and

(e) Inspection/Performance Test Reports.
(f) OAQPS Control Cost Manual.

BACT Definition and Applicability

Federal guidance on BACT requires an evaluation that follows a "top down" process. In this approach, the applicant identifies the best-controlled similar source on the basis of controls required by the regulation or the permit, or the controls achieved in practice. The highest level of the control is then evaluated for technical feasibility.

The five basic steps of a top-down BACT analysis are listed below:

Step 1: Identify Potential Control Technologies

The first step is to identify potentially "available" control options for each emission unit and for each pollutant under review. Available options should consist of a comprehensive list of those technologies with a potentially practical application to the emissions unit in question. The list should include lowest achievable emission rate (LAER) technologies, innovative technologies and controls applied to similar source categories.

Step 2: Eliminate Technically Infeasible Options

The second step is to eliminate technically infeasible options from further consideration. To be considered feasible, a technology must be both available and applicable. It is important in this step that any presentation of a technical argument for eliminating a technology from further consideration be clearly documented based on physical, chemical, engineering and source-specific factors related to safe and successful use of the controls.

Step 3: Rank The Remaining Control Technologies By Control Effectiveness

The third step is to rank the technologies not eliminated in Step 2 in order of descending control effectiveness for each pollutant of concern. If the highest ranked technology is proposed as BACT, it is not necessary to perform any further technical or economic evaluation, except for the environmental analyses.

Step 4: Evaluate The Most Effective Controls And Document The Results

The fourth step entails an evaluation of energy, environmental and economic impacts for determining a final level of control. The evaluation begins with the most stringent control option and continues until a technology under consideration cannot be eliminated based on adverse energy, environmental, or economic impacts.

Step 5: Select BACT

The fifth and final step is to select as BACT the most effective of the remaining technologies under consideration for each pollutant of concern. BACT must, at a minimum, be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits.

BACT for Nitrogen Oxide (NOx):

The proposed modification has a net increase of 40 tons of NOx per year or greater. Therefore, all NOx emission units affected by the modification, which are as follows are required to apply Best Available Control Technology (BACT):

- Meltshop - Electric Arc Furnaces (EAFs)
- Meltshop - Ladle Metallurgical Furnaces (LMFs)
- Proposed one (1) 40 MMBtu/hr natural gas-fired Cold Mill Boiler (CMB #2)
- Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator

Meltshop - EAFs

NO_x is formed from the chemical reaction between nitrogen and oxygen at high temperatures. NO_x formation occurs by different mechanisms. In the case of EAF, NO_x predominantly forms from thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air. This mechanism of NO_x formation is referred to as thermal NO_x. The other mechanisms of NO_x formation such as fuel NO_x (due to the evolution and reaction of fuel-bound nitrogen compounds with oxygen) and prompt NO_x (due to the formation of HCN followed by oxidation to NO_x) are thought to have lesser contributions to NO_x emissions from EAFs. The NO_x emission increase from the EAFs based on maximum potential minus past actual emission is estimated at 388.0 tons/year.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control NOx emissions from the Meltshop - EAFs:

(a) Combustion Controls;

(b) Selective Catalytic Reduction (SCR);

(c) Non-Selective Catalytic Reduction (NSCR);

(d) SCONOx Catalytic Oxidation/Absorption;

(e) Shell $DeNO_x$ System (modified SCR);

(1) Selective Non-Catalytic Reduction (SNCR) options -
(2) Exxon's Thermal $DeNO_x$®
(3) Nalco Fuel Tech's NO_xOUT®
(4) Low Temperature Oxidation (LTO)

Step 2 – Eliminate Technically Infeasible Control Options

The test for technical feasibility of any control option is whether it is both available and applicable to reducing NO_x emissions from the existing EAFs. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

(a) Combustion Controls - There is an entire group of combustion controls for NO_x reduction from various combustion units as follows:

(1) Low Excess Air (LEA) - This control option is typically used in conjunction with some of the other options. The use of this option will result in the generation of additional CO emissions, which is another pollutant under review in this BACT analysis. In addition, LEA is not very effective for implementation in electric arc furnaces that do not operate with combustion air feeds, since the combustion

process is not modulated with the near-atmospheric furnace conditions. Thus, this option is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(2) Oxyfuel Burner - The existing EAF system does employ natural gas-fired oxyfuel burners, thus, this option will be included for further consideration in this BACT analysis.

(3). Overfire Air (OFA) - This control option is geared primarily for fuel NO_x reduction, which is not the major NO_x formation mechanism from EAFs. Further, this option is associated with potential operational problems due to low primary air, creating incomplete combustion conditions. Such conditions can result in inefficient scrap melting and unacceptable increases in tap-to-tap times. Thus, this option is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(4) Burners Out Of Service (BOOS) - BOOS and Load Reduction (or Deration) options - incorporate a reduction in furnace load, thereby, potentially reducing NO_x formation. This reduction must be balanced, however, against a longer period of NO_x generation resulting from the furnace's inability to efficiently melt scrap and scrap substitutes. Furthermore, both BOOS and Load Reduction are fundamentally inconsistent with the design criterion for the furnace, which is to increase furnace loadings to achieve enhanced production. Therefore, these control options are not technically feasible for this particular application and will not be considered any further in this BACT analysis.

(5) Reduced Combustion Air Temperature - This control option inhibits thermal NO_x production. However, the option is limited to equipment with combustion air preheaters which are not applicable to EAFs. Thus, this option is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(6) Flue Gas Recirculation (FGR) - FGR option involves recycling a portion of the cooled exit flue gas back into the primary combustion zone. Typically, FGR is useful in reducing thermal NO_x formation by lowering the oxygen concentration in the combustion zone. The primary limitation of FGR is that it alters the distribution of heat (resulting in cold spots) and lowers the efficiency of the furnace. Since it may be necessary to add additional burners (hence, increasing emissions of other pollutants) to the EAF to reduce the formation of cold spots, FGR technology to reduce EAF NO_x emissions is not considered feasible. Since the EAF does not operate on burner combustion, but relies upon the electric arc and chemical energy for oxidation, neither pathway is amenable to FGR application. Thus, this option is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(b) <u>Selective Catalytic Reduction (SCR)</u> -- In this process, ammonia (NH_3), usually diluted with air or steam, is injected through a grid system into the exhaust gas stream upstream of a catalyst bed. On the catalyst surface the NH_3 reacts with NO_x to form molecular nitrogen and water. The basic reactions are as follows:

$$4NH_3 + 4NO + O_2 \rightarrow 4N_2 + 6H_2O \qquad \text{(i)}$$
$$8NH_3 + 6NO_2 \rightarrow 7N_2 + 12H_2O \qquad \text{(ii)}$$

The reactions take place on the surface of the catalyst. Usually, a fixed bed catalytic reactor is used for SCR systems. The function of the catalyst is to effectively lower the activation energy of the NO_x decomposition reactions. Technical factors related to this technology include the catalyst reactor design, optimum operating temperature, sulfur content of the charge, catalyst deactivation due to aging, ammonia slip emissions and design of the ammonia injection system.

Three types of catalyst bed configurations have been successfully applied to commercial sources: the moving bed reactor, the parallel flow reactor and the fixed bed reactor. The fixed bed reactor is applicable to sources with little or no particulate present in the flue gas. In this reactor design, the catalyst bed is oriented perpendicular to the flue gas flow and transport of the reactants to the active catalyst sites occurs through a combination of diffusion and convection.

Depending on system design, NO_x removal of 80 - 90 percent may be achievable under optimum conditions (refer, USEPA "ACT Document - NO_x Emissions from Iron and Steel Mills", Sept., 1994). The reaction of NH_3 and NO_x is favored by the presence of excess oxygen. Another variable affecting NO_x reduction is exhaust gas temperature. The greatest NO_x reduction occurs within a reaction window at catalyst bed temperatures between 600 ^oF – 750 ^oF for conventional (vanadium or titanium-based) catalyst types, and 470 ^oF – 510 ^oF for platinum-based catalysts. Performance for a given catalyst depends largely on the temperature of the exhaust gas stream being treated. A given catalyst exhibits optimum performance when the temperature of the exhaust gas stream is at the midpoint of the reaction temperature window for applications where exhaust gas oxygen concentrations are greater than 1 percent. Below the optimum temperature range, the catalyst activity is greatly reduced, potentially allowing unreacted ammonia (referred to as "ammonia slip") to be emitted directly to the atmosphere.

The SCR system may also be subject to catalyst deactivation over time. Catalyst deactivation occurs through two primary mechanisms – physical deactivation and chemical poisoning. Physical deactivation is generally the result of either continual exposure to thermal cycling or masking of the catalyst due to entrainment of particulates or internal contaminants. Catalytic poisoning is caused by the irreversible reaction of the catalyst with a contaminant in the gas stream. Catalyst suppliers typically guarantee a 3-year catalyst lifetime for a sustainable emission limit.

In order for an SCR system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates, NO_x concentrations, and temperature. In addition, certain elements such as iron, nickel, chrome, and zinc can react with platinum catalysts to form compounds or alloys which are not catalytically active. These reactions are termed "catalytic poisoning", and can result in premature replacement of the catalyst. An EAF flue gas may contain a number of these catalytic poisons. In addition, any solid material in the gas stream can form deposits and result in fouling or masking of the catalytic surface. Fouling occurs when solids obstruct the cell openings within the catalyst. Masking occurs when a film forms on the surface of catalyst over time. The film prevents contact between the catalytic surface and the flue gas. Both of these conditions can result in frequent cleaning and/or replacement requirements. Due to the above effective technical applicability constraints, SCR technology has never been applied to EAF operations, and will be eliminated for further evaluation in this BACT analysis.

(c) <u>Non-Selective Catalytic Reduction (NSCR)</u> - The NSCR system is a post-combustion add-on exhaust gas treatment system. It is often referred to as a "three-way conversion" catalyst since it reduces NO_x, unburned hydrocarbons (UBH), and CO simultaneously. In order to operate properly, the combustion process must be stoichiometric or near-stoichiometric which is not maintained in an EAF and varies widely under regular operation. Under stoichiometric conditions, in the presence of the catalyst, NO_x is reduced by CO, resulting in nitrogen and carbon dioxide. Currently, NSCR systems are limited to rich-burn

IC engines with fuel rich ignition system applications. Moreover, potential problems with NSCR systems include catalyst poisoning by oil additives such as phosphorus and zinc (present in galvanized scrap steel charged in the EAF). In view of the above limitations, the NSCR option is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(d) SCONO$_x$-Catalytic Oxidation/Absorption -- This is a catalytic oxidation/absorption technology that has been applied for reductions of NO_x, CO and VOC from an assortment of combustion applications that mostly include – small turbines, boilers and lean-burn engines. However, this technology has never been applied to steel mill EAFs. SCONO$_x$ employs a single catalyst for converting NO_x, CO and VOC. The flue gas temperature should be preferably in the 300-700 ^oF range for optimal performance without deleterious effects on the catalyst assembly. The technology was developed as an alternative to traditional SCR applications which utilize ammonia resulting in additional operational safeguards, unfavorable environmental impacts and excessive costs. In the initial oxidation cycle, the CO is oxidized to CO_2, the NO gets converted to NO_2 and the VOC gets oxidized to carbon dioxide and water. The NO_2 is then absorbed on the potassium carbonate coated (K_2CO_3) catalyst surface forming potassium nitrites and nitrates (KNO_2, KNO_3). Prior to saturation of the catalyst surface, the catalyst enters the regeneration cycle.

In the regeneration phase, the saturated catalyst section is isolated with the expedient of moving hinged louvers and then exposed to a dilute reducing gas (methane in natural gas) in the presence of a carrier gas (steam) in the absence of oxygen. The reductant in the regeneration gas reacts with the nitrites and nitrates to form water and elemental nitrogen. Carbon dioxide in the regeneration gas reacts with potassium nitrites and nitrates to recover the potassium carbonate, which is the absorber coating that was on the surface of the catalyst before the oxidation/absorption cycle began. Water (as steam) and elemental nitrogen are exhausted up the stack and the re-deposited K_2CO_3 allows for another absorption cycle to begin.

SCONO$_x$ technology is a variation of traditional SCR technology and for optimal performance it makes similar demands such as - stable gas flows, lack of thermal cycling, invariant pollutant concentrations and residence times on the order of 1-1.5 seconds. However, the initial attractive feature of not using ammonia has been replaced by other potential operational problems that impair the effectiveness of the technology.

In summary, an effective SCONO$_x$ application to a steel mill EAF application has the following reservations:

(1) The technology is not readily adaptable to high-temperature applications outside the 300-700 ^oF range and is susceptible to thermal cycling that will be experienced in the Nucor application;

(2) Scale-up is still an issue. The technology has not been demonstrated for larger applications and the vendor's contention in this context is still being debated upon;

(3) Optimum SCONO$_x$ operation is predicated by stable gas flow rates, NO_x concentrations and temperature. As discussed earlier, the nature of EAF operations do not afford any of these conditions which will significantly impair the effective control efficiency of the SCONO$_x$ system;

(4) The catalyst is susceptible to moisture interference and the vendor indicates negation of its warranties and performance guarantees if the catalyst is exposed to

any quantity of liquid water. However, during certain atmospheric conditions, the catalyst could be potentially exposed to moisture following a unit shutdown;

(5) The prospect of moving louvers that effect the isolation of the saturated catalyst readily lends itself to the possibility of thermal warp and in-duct malfunctions in general. The process is dependent on numerous hot-side dampers that must cycle every 10-15 minutes. Directional flow solutions are not yet known to have been implemented for this technology;

(6) The K2CO3 coating on the catalyst surface is an active chemical reaction and reformulation site which makes it particularly vulnerable to fouling. On some field installations, the coating has been found to be friable and tends to foul in the harsh in-duct environment;

(7) During the regeneration step, the addition of the flammable reducing gas (natural gas which contains 85% methane) into the hot flue gas generates the possibility of LEL exceedances and subsequently catastrophic failure in the event the catalyst isolation is not hermetic or there is a failure in the carrier steam flow; and

(8) There is a possibility of some additional SO2 emissions if the dry scrubber with the tandem "guard-bed" SCOSOx unit experiences a malfunction.

Thus, there are significant reservations regarding effective technical applicability of this control alternative for a steel mill EAF application. Moreover $SCONO_x$ technology has never been proposed nor successfully implemented for similar industry applications. In view of the above limitations, $SCONO_x$ is considered technically infeasible for the present application and will not be considered any further in this BACT analysis.

(e) Shell $DeNO_x$ System (modified SCR) - The Shell $DeNO_x$ system is a variant of traditional SCR technology which utilizes a high activity dedicated ammonia oxidation catalyst based on a combination of metal oxides. The system is comprised of a catalyst contained in a modular reactor housing where in the presence of ammonia NO_x in the exhaust gas is converted to nitrogen and water. The catalyst is contained in a low-pressure drop lateral flow reactor (LFR), which makes best use of the plot space available. Due to the intrinsically high activity of the catalyst, the technology is suited for NO_x conversions at lower temperatures with a typical operating range of 250-660 ^oF. In addition, the vendor contends that conventional SCR systems that use honeycomb catalysts generally operate in the temperature range of 610-720 ^oF with attendant pressure drops of between 2.8-4.0 inches WG. The Shell $DeNO_x$ technology can not only operate at a lower temperature but also have a lower pressure drop penalty of around 2 inches WG.

The low temperature operation is the only aspect of the Shell $DeNO_x$ technology that marks its variance from traditional SCR technology. From an EAF application standpoint, there are no additional differences between this technology and SCR technology.

In summary, an effective Shell $DeNO_x$ application to the EAF application has the following reservations:

(1) The Shell $DeNO_x$ system does not suffer from similar placement limitation considerations discussed earlier for SCRs. However, even a downstream of EAF baghouse placement of the system does not render it completely safe from the prospect of particulate fouling. The catalyst will still be exposed to particulates, which can inflict a masking effect impairing the effective control efficiency of the

system;

(2) Optimum Shell DeNOx operation is predicated by stable gas flow rates, NOx concentrations and temperature. The nature of EAF operations do not afford any of these conditions which will significantly impair the effective control efficiency of the Shell DeNOx system;

(3) Since steel is produced from scrap, there is the possibility of the presence of catalytic poisons, which can adversely affect the Shell DeNOx catalyst resulting in impaired control efficiencies and frequent replacement of the catalyst;

(4) The catalyst is particularly susceptible to thermal fluctuations. The vendor indicated a threshold temperature of around 680 oF for catalyst degradation;

(5) The use of relatively large amounts of ammonia - a regulated toxic chemical - will have accidental release and hazardous impact implications; and

(6) As discussed earlier, even a 7 ppmv ammonia slip from a 2,727,960 acfm exhaust gas flow can result in the emission of approximately 211.7 tons/yr of ammonia which is a regulated hazardous air pollutant with well documented health impacts.

It is noted that the Shell DeNOx technology is presently supplied by EmeraChem under the name of EMx™. As described in the literature, the application of EmeraChem's EMx™ technology has been specific to the following emission sources: gas/dual-fuel turbines, reciprocating engines and industrial/utility boilers. There have been no applications to electric arc furnaces. In general, the technology review for Shell DeNOx still applies for the EMx™ technology. However, it appears that the EMx™ technology has now met the scale-up applications (e.g. utility and industrial boilers) and also claims reductions in SO_2 and PM emissions.

Thus, there are significant reservations regarding effective technical applicability of this control alternative for an EAF application. Moreover Shell $DeNO_x$ has never been proposed nor successfully implemented for similar steel mill applications. Therefore, the Shell $DeNO_x$ option is considered technically infeasible and will not be considered any further in this BACT analysis.

(f) Selective Non-Catalytic Reduction (SNCR) - The three commercially available SNCR systems are Exxon's Thermal $DeNO_x$® system, Nalco Fuel Tech's NO_xOUT® system and Low Temperature Oxidation (LTO). These technologies are reviewed below for technical feasibility in controlling EAF NO_x emissions.

(1) Exxon's Thermal $DeNO_x$® - Exxon's Thermal $DeNO_x$® system is a non-catalytic process for NO_x reduction. The process involves the injection of gas-phase ammonia (NH_3) into the exhaust gas stream to react with NO_x. The ammonia and NO_x react according to the following competing reactions:

$$2NO + 4NH_3 + 2O_2 \rightarrow 3N_2 + 6H_2O \quad \text{(i)}$$
$$4NH3 + 5O2 \rightarrow 4NO + 6H2O \quad \text{(ii)}$$

The temperature of the exhaust gas stream is the primary criterion controlling the above selective reaction. Reaction (i) dominates in the temperature window of 1,600 ^oF - 2,200 ^oF resulting in a reduction of NOx. However above 2,200 ^oF, reaction (ii) begins to dominate, resulting in enhanced NO_x production. Below 1,600 ^oF, neither reaction has sufficient activity to produce or destroy NO_x. Thus, the optimum temperature window for the Thermal $DeNO_x$® process is approximately 1,600 °F - 1,900 °F. The above reaction temperature window can be shifted down to approximately 1,300 °F - 1,500 °F with the introduction of readily oxidizable hydrogen gas. In addition, the process also requires a minimum of 1.0 second residence time in the desired temperature window for any significant NO_x reduction.

In order for the Thermal $DeNO_x$® system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates; ensuring the required residence time and be within the prescribed temperature range. Based on discussions with Exxon and vendors knowledgeable about steel mill operations, application of Thermal $DeNO_x$® technology to control NO_x emissions from EAF operations are not known. Therefore, this option is considered technically infeasible and will not be considered any further in this BACT analysis.

In summary, an effective Thermal $DeNO_x$® application to the EAF application has the following reservations:

(A) The placement of the Thermal $DeNO_x$® system in an adequate temperature regime. In order to achieve optimum operational efficiency the system should be located in a temperature region of at least 1,300 °F and preferably between 1,600 °F - 1,900 °F which would put it upstream of the EAF baghouse. Such a placement configuration would not afford the desired temperature range, which would be typically in the region of 300 °F - 400 °F with an entry temperature of 250 °F at the inlet to the EAF baghouse. The system cannot be placed further upstream for operational hazard reasons. Also any injection mechanism upstream of the baghouse will be susceptible to prompt particulate fouling;

(B) Optimum Thermal $DeNO_x$® operation is predicated by stable gas flow rates, NOx concentrations and temperature. The nature of EAF operations do not afford any of these conditions which will significantly impair the effective control efficiency of the Thermal $DeNO_x$® system;

(C) The use of relatively large amounts of ammonia - a regulated toxic chemical - will have accidental release and hazardous impact implications; and

(D) Even a 7 ppmv ammonia slip from a 2,727,960 acfm exhaust gas flow can result in the emission of approximately 211.7 tons/yr of ammonia which is a regulated hazardous air pollutant with well documented health impacts.

Depending on system design, NO_x removal of 40-70 percent may be achievable under optimum conditions (refer, USEPA “ACT Document - NO_x Emissions from Iron and Steel Mills” Sept., 1994). In view of the concerns with the availability of steady gas flows and prescribed residence times, thermal cycling and the ability of the control option to load-follow varying pollutant concentrations and the fact that the source will be required to continually comply with an hourly emission rate, an effective NOx control efficiency will be hard to maintain for an EAF application. It should be noted that if the required residence time or other optimum operation parameters are not available, unreacted ammonia will be released directly to the atmosphere.

There are significant reservations regarding effective technical applicability of this control alternative for an EAF application. In order for the Thermal $DeNO_x$® system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates, ensuring the requisite residence time requirements and temperature. The temperature of the EAF exhaust gas will vary widely over the melt cycle, and will not remain in the desired temperature window during all phases of operation. Similarly, the gas flow rates will not remain stable during furnace operation, precluding the possibility of adequate residence time. Moreover, Thermal $DeNO_x^{®}$ technology has never been proposed nor successfully implemented to control NO_x emissions from EAFs. Therefore, the Thermal $DeNO_x^{®}$ option is considered technically infeasible and will not be considered any further in this BACT analysis.

(2) Nalco Fuel Tech's $NO_XOUT^{®}$ - The $NO_xOUT^{®}$ process is very similar in principle to the Thermal $DeNO_x^{®}$ process, except that it involves the injection of a liquid urea (NH_2CONH_2) compound (as opposed to NH_3) into the high temperature combustion zone to promote NO_x reduction. The chemical reaction proceeds as follows:

$NH2 + NO \rightarrow N_2 + H_2O$ (i)

The reaction involves the decomposition of urea at temperatures of approximately 1,700 ^oF - 3,000 ^oF. Certain proprietary additive developments have allowed the operational temperature window to shift to approximately 1,400 ^oF - 2,000 ^oF. However, the process still has similar constraints as the Thermal $DeNO_x^{®}$ system. The limitations are dictated by the reaction-controlling variables such as stable gas flow rates for a minimum residence time of 1.0 second in the desired temperature window to ensure proper mixing.

As with the Thermal $DeNO_x^{®}$ system, the $NO_xOUT^{®}$ system suffers from essentially similar limitations to effectively reduce NO_x emissions from EAF operations. Moreover, applications of the $NO_xOUT^{®}$ technology to control NO_x emissions from steel mill EAF operations are not known. Therefore, this option is considered technically infeasible and will not be considered any further in this BACT analysis.

Similar to the Thermal $DeNO_x^{®}$ application, an effective $NO_xOUT^{®}$ application to the EAF application has the following reservations:

(A) The placement of the $NO_xOUT^{®}$ system in an adequate temperature regime. In order to achieve optimum operational efficiency the system should be located in a temperature region preferably between 1,400 ^oF - 2,000 ^oF which would put it upstream of the EAF baghouse. Firstly, such a placement configuration would not afford the desired temperature range, which would be typically in the region of 300 ^oF -400 ^oF with an entry temperature of 250 ^oF at the inlet to the EAF baghouse. Also any injection mechanism upstream of the baghouse will be susceptible to prompt particulate fouling;

(i) Optimum $NO_xOUT^{®}$ operation is predicated by stable gas flow rates, NO_x concentrations and temperature. The nature of EAF operations do not afford any of these conditions which will significantly impair the effective control efficiency of the $NO_xOUT^{®}$ system; and

(ii) Although the $NO_xOUT^{®}$ technology does not utilize ammonia directly, secondary chemical reactions under certain conditions (such as unreacted urea combining to form ammonia) can generate ammonia from the process. In fact the vendor indicates a

25 ppmv ammonia at the exhaust stack which is higher than direct ammonia applications discussed earlier. Even a 7 ppmv ammonia slip from a 2,727,960 acfm exhaust gas flow can result in the emission of approximately 211.7 tons/yr of ammonia which is a regulated hazardous air pollutant with well documented health impacts.

Depending on system design, NO_x removal of 40-70 percent may be achievable under optimum conditions (refer, USEPA "ACT Document - NO_x Emissions from Iron and Steel Mills" Sept., 1994). In view of the concerns with the availability of steady gas flows and prescribed residence times, thermal cycling and the ability of the control option to load-follow varying pollutant concentrations and the fact that the source will be required to continually comply with an hourly emission rate, an effective NOx control efficiency will be hard to maintain for an EAF application. It should be noted that if the required residence time or other optimum operation parameters are not available, secondary production ammonia would be released directly to the atmosphere. In some instances, it may even be higher than direct ammonia applications discussed earlier.

There are significant reservations regarding effective technical applicability of this control alternative for an EAF application. In order for the $NO_xOUT^®$ system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates, ensuring the requisite residence time requirements and temperature. The temperature of the EAF exhaust gas will vary widely over the melt cycle, and will not remain in the desired temperature window during all phases of operation. Similarly, the gas flow rates will not remain stable during furnace operation, precluding the possibility of adequate residence time. Moreover, $NO_xOUT^®$ technology has never been proposed nor successfully implemented to control NO_x emissions from EAFs. Therefore, this control option is considered technically infeasible and will not be considered any further in this BACT analysis.

(3) Low Temperature Oxidation (LTO) - LTO technology has never been utilized for any steel mill EAF application. The vendor has listed applications for mostly industrial boilers and cogeneration gas turbines, which have a more favorable energy balance. The technology is a variant of SNCR technology using ozone. The ozone is injected into the gas stream and the NO_x in the gas stream is oxidized to nitrogen pentoxide (N_2O_5) vapor, which is absorbed in the scrubber as dilute nitric acid (HNO_3). The nitric acid is then neutralized with caustic (NaOH) in the scrubber water forming sodium nitrate ($NaNO_3$). The overall chemical reaction can be summarized as follows:

$$NO_2 + NO + 2O_3 + NaOH \rightarrow HNO_3 + NaNO_3 + 2O_2 \qquad \text{(i)}$$

For optimal performance, the technology requires stable gas flows, lack of thermal cycling, invariant pollutant concentrations and residence times on the order of 1 - 1.5 seconds. In addition, LTO technology requires frequent calibration of analytical instruments, which sense the NO_x concentrations for proper adjustment of ozone injection. Since LTO uses ozone injection, it has a potential for ozone slip, which can vary between 5 - 10 ppmv. Also, the technology requires a cooler flue gas of less than 300 ^oF at the point of ozone injection; otherwise the reactive gas is rendered redundant. The technology also suffers from low NO_x conversion rates

(40% - 60%), potential for nitric acid vapor release (in the event of a scrubber malfunction) with subsequent regional haze impacts and the handling, treatment and disposal issues for the spent scrubber effluent.

In conclusion, the technology is still nascent and evolving out of the earlier bench scale solution to effect a reliable SNCR application utilizing reactive gas-phase ozone to control NO_x emissions from combustion applications. The technology is neither applicable nor proven for steel mill EAF applications and attendant limitations render it technically infeasible in its current manifestation. In view of the above, the LTO control option is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

All control alternatives identified in Step 2 were eliminated as not technically feasible for controlling NO_x emissions from the EAFs, with the exception of good operating combustion practices and the continued use of oxyfuel burners.

Step 4 – Evaluate the Most Effective Controls and Document Results

Good operating combustion practices with the continued use of oxyfuel burners, was the only technically feasible control option in controlling NO_x emissions from the EAFs.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, including Indiana air permits and sources permitted by other states agencies, identified the following with respect to Meltshop Electric Arc Furnaces (EAFs):

Meltshop -Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**NOX Control Technology/NOx Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	0.35 lb/ton
Current limit: Nucor Steel - Crawfordsville	PSD/SSM 107-16823-00038	11/21/2003	502 tons/hr and 4,397,520 tons/yr	0.35 lb/ton
STEEL MILLS WITH CONTINUOUS FEED (CONSTEEL) PROCESS				
Gerdau Ameristeel -Knoxville	-	(Tennessee)	500,000 tons/yr	0.25 lb/ton
Nucor Steel – Darlington, SC	0820-0001-CW	1/8/1998 (South Carolina)	300 tons/hr	0.35 lb/ton 0.41[a] lb/ton for resulfurized steel
Nucor Steel - Hertford County	08680T09	11/23/2004 (North Carolina)	capacity unknown	0.36 lb/ton
Ameristeel – Charlotte, NC	19-99v-567	4/29/1999 (North Carolina)	569,400 tons/yr	0.51 lb/ton
New Jersey Steel	-	- (New Jersey)	capacity unknown	0.54 lb/ton
STEEL MILLS WITH BATCH PROCESSES				
Nucor Steel - Memphis	0710-04PC	11/6/2000 (Tennessee)	150 tons/hr	**0.27 lb/ton (LAER)**
Nucor Auburn Steel	7-0501-00044/00007	6/22/2004 (New York)	110 tons/hr	**0.27 lb/ton**
Gerdau AmeriSteel – Duval County	031057-007-AC (PSD-FL-349)	9/25/2005 (Florida)	1,192,800 tons/yr	**0.33 lb/ton**
Nucor Steel – Tuscaloosa, Inc.	413-0033	6/6/2006 (Alabama)	300 tons/hr	0.35 lb/ton
SDI - Pittsboro	PSD 063-16628-00037	8/29/2003 (Indiana)	125 tons/hr	0.35 lb/ton*
Beta Steel	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	0.35 lb/ton
Nucor Steel –Berkeley County	-	- (South Carolina)	capacity unknown	0.35 lb/ton
SeverCorr – Columbus	1680-00064	3/31/2005 Mississippi	capacity unknown	0.35 lb/ton
SDI – Columbia City	PSD 183-10097-00030	7/9/1999 (Indiana)	200 tons/hr	0.35 lb/ton

Meltshop -Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**NOX Control Technology/NOx Emissions Limit**
Nucor-Yamato Steel – Blytheville		Arkansas	450 tons/hr	0.38 lb/ton
Nucor Steel – Decatur, (formerly Trico Steel)	712-0037	7/11/2002 (Alabama)	440 tons/hr	0.40 lb/ton
IPSCO – Axis	503-8065	10/16/1998 (Alabama)	200 tons/hr	0.40 lb/ton
Nucor Steel – Jewett	PSD-1029	1/5/2003 (Texas)	240 tons/hr	0.4314 lb/ton
Nucor Steel – Hickman	1139-AOP-R5	6/9/2003 (Arkansas)	425 tons/hr	0.51 lb/ton
Charter Steel – Saukville, WI	00DCF041	6/9/2000 (Wisconsisn)	550,000 tons/yr	0.51 lb/ton
Roanoke Electric Steel – Roankoe, VA	20131	11/6/1998 (Virgiania)	100 tons/hr	0.51 lb/ton
Quanex Corporation -MacSteel Division	693-AOP-RO	2/18/1998- Arkansas)	86 tons/hr	0.51 lb/ton
SDI – Butler, IN	CP033-8091-00043	6/25/1997 (Indiana)	200 tons/hr	0.51 lb/ton
Gallatin – Ghent	-	- (Kentucky)	capacity - unknown-	0.51 lb/ton
Nucor Steel – Norfolk	35677RC3	6/22/2004 (Nebraska)	capacity unknown	0.54 lb/ton
Chaparral Steel – Petersburg	51264	4/24/1998 (Virginia)	215 tons/hr	0.70 lb/ton combined limit for EAF and LMF
IPSCO – Montpelier, IA	-	(Iowa)	capacity unknown	0.80 lb/ton*
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	50 tons/hr	1.0 lb/ton
Nucor Steel - Plymouth	-	Utah	capacity unknown	245 tons/year

Note: Nucor Steel - Indiana's Meltshop EAFs limit includes two (2) EAFs, Argon Oxygen Decarburization (AOD), Desulfurization station and Continuous Casters emissions.

The following four sources from the above table have the most stringent NOx limits:

Gerdau Ameristeel -Knoxville, Tennessee - This source has a LAER limit of 0.25 lb/ton. Gerdau Ameristeel uses a Consteel ® process in their steel production, and it is not comparable to the Batch melting process Nucor - Indiana utilizes in their steel sheet metal production.

Consteel ®- is the process of continuously feeding and preheating the metallic charge (scrap, pig iron, HB, etc.) to the EAF while controlling gaseous emissions. The charge is loaded directly from the scrap yard or rail car conveyor. The charge is then automatically and continuously transported to the EAF as it is preheated by off gases leaving the furnace through the preheat conveyor. Once preheated, the charge discharges into the EAF where it is continuously melted by the liquid steel. This permits constant flat bath operation, a key advantage over conventional (Batch) EAF process where scrap is melted directly by the EAF.

Batch Melting process - EAF in this type of process, produces batches of molten steel known "heats". The EAF operating cycle is called tap-to-tap cycle and is made up of the following operations:

(a) Furnace Charging - The roof and electrodes are raised and are swung to the side of the furnace to allow the scrap-charging crane to move a full bucket of scrap into place over the furnace. The bucket bottom is usually a clamshell design - i.e. the bucket opens up by retracting two segments on the bottom of the bucket. The scrap falls into the furnace and the scrap crane removes the scrap bucket. The roof and electrodes swing back into place over the furnace. The roof is lowered and then the electrodes are lowered to strike an arc on the scrap. This commences the melting portion of the cycle. Continuous charging operations such as Consteel ® eliminate the charging cycle.

(b) Melting - The melting period is the heart of EAF operations. The EAF has evolved into a highly efficient melting apparatus. Melting is accomplished by supplying energy to the furnace interior. This energy can be electrical or chemical.

(c) Refining - Refining operations in the electric arc furnace have traditionally involved the removal of phosphorus, sulfur, aluminum, silicon, manganese and carbon from the steel. These refining reactions are all dependent on the availability of oxygen.

(d) De-slagging - De-slagging operations are carried out to remove impurities from the furnace. During melting and refining operations, some of the undesirable materials within the bath are oxidized and enter the slag phase.

(e) Tapping - Once the desired steel composition and temperature are achieved in the furnace, the tap-hole is opened, the furnace is tilted, and the steel pours into a ladle for transfer to the next batch operation (usually a ladle furnace or ladle station).

(f) Furnace turn around - Is the period following completion of tapping until the furnace is recharged for the next heat. During this period, the electrodes and roof are raised and the furnace lining is inspected for refractory damage

Therefore, the Consteel ® process is not comparable with the Batch melting process, and this limit from Gerdau Ameristeel will not be considered in this BACT analysis.

Nucor Steel - Memphis, Tennessee - This source has a LAER limit of 0.27 lb/ton - This plant is not yet in production and has not yet demonstrated compliance with this LAER limit. Therefore, it will not be considered in this BACT analysis.

Nucor Auburn Steel, New York - This source has a LAER limit of 0.27 lb/ton, based on a 30-day average, while the Nucor - Indiana proposed limit of 0.35 lb/ton is based on a 24-hour average. It is not accurate to compare these two limits, since they do not have the same averaging time for demonstration of compliance. In addition, the longer the averaging time, the less stringent the limit is, because there is more flexibility given to the source to maximize its production during the early part of the 30-day compliance period, which may result in more emissions during this period. Therefore, Nucor Auburn will not be considered in this BACT analysis.

Gerdau AmeriSteel – Duval County, Florida - This source has a BACT limit of 0.33 lb/ton, versus the proposed limit of 0.35 lb/ton. Gerdau Ameristeel produces steel bars, while Nucor Steel-Indiana produces sheet metal. Both companies utilize a different process of steel melting in their steel production process, resulting in different emission characteristics. Bar mills tend not to employ an aggressive foamy slag practice when compared to a sheet mill. With the aggressive foamy slag process more carbon units are needed to create a thicker foamy slag needed for quality issues with the sheet products. Because more carbon units are needed, more air is needed to blow the carbon into the EAF, thusly with air being 79% Nitrogen the potential for more NOx is created. Therefore, Gerdau Ameristeel will not be considered in this BACT analysis.

None of the steel mill sources as reflected in the above table have proposed or successfully implemented any add-on control devices to control NOx emissions from EAFs operation.

Nucor Steel is proposing the same NOx BACT as it currently has, except the emissions from the new LMF will be added into the EAFs emissions, since the new LMF will be vented into the EAFs baghouses. Therefore, the BACT for the Meltshop EAFs baghouses is as follows:

(a) The total NOx emissions from the meltshop EAFs baghouses 1 and 2, which control the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and the new LMF shall be limited 0.35 lb/ton of steel produced.

Meltshop - Ladle Metallurgical Furnaces (LMFs)

NO_x is formed from the chemical reaction between nitrogen and oxygen at high temperatures. NO_x formation occurs by different mechanisms. In the case of LMFs, NO_x predominantly forms from thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air. This mechanism of NO_x formation is referred to as thermal NO_x. The other mechanisms of NO_x formation such as fuel NO_x (due to the evolution and reaction of fuel-bound nitrogen compounds with oxygen) and prompt NO_x (due to the formation of HCN followed by oxidation to NO_x) are thought to have lesser contributions to NO_x emissions from LMFs. The NO_x emission increase from the LMFs, which includes the new LMF is estimated at 19.5 tons/year.

Step 1 – Identify Control Options

The following are the control alternatives potentially available to control NO_x from LMFs:

(a) Selective Catalytic Reduction (SCR);

(b) Non-Selective Catalytic Reduction (NSCR);

(c) GoalLine SCONO$_x$ Catalytic Oxidation/Absorption;

(d) Shell DeNO$_x$ System (modified SCR); and

(e) Selective Non-Catalytic Reduction (SNCR) options-

(1) Exxon's Thermal DeNO$_x$®

(2) Nalco Fuel Tech's NOxOUT®

(3) Low Temperature Oxidation (LTO)

Step 2 – Eliminate Technically Infeasible Control Options

(a) Selective Catalytic Reduction (SCR) -- In this process, ammonia (NH_3), usually diluted with air or steam, is injected through a grid system into the exhaust gas stream upstream of a catalyst bed. On the catalyst surface the NH_3 reacts with NO_x to form molecular nitrogen and water. The basic reactions are as follows:

$4NH_3 + 4NO + O_2 \rightarrow 4N_2 + 6H_2O$ (i)
8NH3 + 6NO2 → 7N2 + 12H2O (ii)

The reactions take place on the surface of the catalyst. Usually, a fixed bed catalytic reactor is used for SCR systems. The function of the catalyst is to effectively lower the activation energy of the NO_x decomposition reactions. Technical factors related to this technology include the catalyst reactor design, optimum operating temperature, sulfur content of the charge, catalyst deactivation due to aging, ammonia slip emissions and design of the ammonia injection system.

Three types of catalyst bed configurations have been successfully applied to commercial sources: the moving bed reactor, the parallel flow reactor and the fixed bed reactor. The fixed bed reactor is applicable to sources with little or no particulate present in the flue gas. In this reactor design, the catalyst bed is oriented perpendicular to the flue gas flow and transport of the reactants to the active catalyst sites occurs through a combination of diffusion and convection.

Depending on system design, NO_x removal of 80 - 90 percent may be achievable under optimum conditions (refer, USEPA "ACT Document - NO_x Emissions from Iron and Steel Mills", Sept., 1994). The reaction of NH_3 and NO_x is favored by the presence of excess oxygen. Another variable affecting NO_x reduction is exhaust gas temperature. The greatest NO_x reduction occurs within a reaction window at catalyst bed temperatures between 600 ^oF – 750 ^oF for conventional (vanadium or titanium-based) catalyst types, and 470 ^oF – 510 ^oF for platinum-based catalysts. Performance for a given catalyst depends largely on the temperature of the exhaust gas stream being treated. A given catalyst exhibits optimum performance when the temperature of the exhaust gas stream is at the midpoint of the reaction temperature window for applications where exhaust gas oxygen concentrations are greater than 1 percent. Below the optimum temperature range, the catalyst activity is greatly reduced, potentially allowing unreacted ammonia (referred to as "ammonia slip") to be emitted directly to the atmosphere.

The SCR system may also be subject to catalyst deactivation over time. Catalyst deactivation occurs through two primary mechanisms – physical deactivation and chemical poisoning. Physical deactivation is generally the result of either continual exposure to thermal cycling or masking of the catalyst due to entrainment of particulates or internal contaminants. Catalytic poisoning is caused by the irreversible reaction of the catalyst with a contaminant in the gas stream. Catalyst suppliers typically guarantee a 3-year catalyst lifetime for a sustainable emission limit.

In order for an SCR system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates, NO_x concentrations, and temperature. In addition, certain elements such as iron, nickel, chrome, and zinc can react with platinum catalysts to form compounds or alloys, which are not catalytically active. These reactions are termed "catalytic poisoning", and can result in premature replacement of the catalyst. Any solid material in the gas stream can form deposits and result in fouling or masking of the catalytic surface. Fouling occurs when solids obstruct the cell openings within the catalyst. Masking occurs when a film forms on the surface of catalyst over time. The film prevents contact between the catalytic surface and the flue gas. Both of these conditions can result in frequent cleaning and/or replacement requirements. Due to the above effective technical applicability constraints, SCR technology has never been applied to LMF operations.

Successful applications of SCR technology to control NO_x emissions from LMFs are not known. The analysis presented above discusses a number of effective technical applicability concerns regarding SCR. In order for the SCR system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates, NO_x concentrations, and temperature. The temperature of the LMF exhaust gas will vary over the LMF cycle, and the gas flow rates and NO_x concentrations will exhibit wide amplitude. Moreover, the presence of particulates in the exhaust gas prior to the LMF baghouse may result in fouling of the catalyst, rendering it ineffective. Also, the SCR system cannot be installed after particulate removal in the LMF baghouse due to unacceptably low temperatures outside the effective operating range. Note that SCR technology has not been utilized to control NO_x emissions from LMFs. Any projected application of SCR to LMFs would be considered a "technology transfer." In view of the above limitations, the SCR option is considered technically infeasible with unresolved technical issues and significant environmental impacts. Thus, this option is considered technically infeasible for this application and will be not be considered any further in this BACT analysis.

(b) Non-Selective Catalytic Reduction (NSCR) -- The NSCR system is a post-combustion add-on exhaust gas treatment system. It is often referred to as a “three-way conversion” catalyst since it reduces NO_x, unburned hydrocarbons (UBH), and CO simultaneously. In order to operate properly, the combustion process must be stoichiometric or near-stoichiometric which is not maintained in an LMF and varies widely under regular operation. Under stoichiometric conditions, in the presence of the catalyst, NO_x is reduced by CO, resulting in nitrogen and carbon dioxide. Currently, NSCR systems are limited to rich-burn IC engines with fuel rich ignition system applications. Moreover, potential problems with NSCR systems include catalyst poisoning by oil additives such as phosphorus and zinc. In view of the above limitations, the NSCR option is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(c) $SCONO_x$-Catalytic Oxidation/Absorption -- This is a catalytic oxidation/absorption technology that has been applied for reductions of NO_x, CO and VOC from an assortment of combustion applications that mostly include – small turbines, boilers and lean-burn engines. However, this technology has never been applied for steel mill LMFs. $SCONO_x$ employs a single catalyst for converting NO_x, CO and VOC. The flue gas temperature should be preferably in the 300-700 ^oF range for optimal performance without deleterious effects on the catalyst assembly. The technology was developed as an alternative to traditional SCR applications which utilize ammonia resulting in additional operational safeguards, unfavorable environmental impacts and excessive costs. In the initial oxidation cycle, the CO is oxidized to CO_2, the NO gets converted to NO_2 and the VOC gets oxidized to carbon dioxide and water. The NO_2 is then absorbed on the potassium carbonate coated (K_2CO_3) catalyst surface forming potassium nitrites and nitrates (KNO_2, KNO_3). Prior to saturation of the catalyst surface, the catalyst enters the regeneration cycle.

In the regeneration phase, the saturated catalyst section is isolated with the expedient of moving hinged louvers and then exposed to a dilute reducing gas (methane in natural gas) in the presence of a carrier gas (steam) in the absence of oxygen. The reductant in the regeneration gas reacts with the nitrites and nitrates to form water and elemental nitrogen. Carbon dioxide in the regeneration gas reacts with potassium nitrites and nitrates to recover the potassium carbonate, which is the absorber coating that was on the surface of the catalyst before the oxidation/absorption cycle began. Water (as steam) and elemental nitrogen are exhausted up the stack and the re-deposited K_2CO_3 allows for another absorption cycle to begin.

$SCONO_x$ technology is a variation of traditional SCR technology and for optimal performance it makes similar demands such as - stable gas flows, lack of thermal cycling, invariant pollutant concentrations and residence times on the order of 1-1.5 seconds. However, the initial attractive feature of not using ammonia has been replaced by other potential operational problems that impair the effectiveness of the technology.

In summary, an effective SCONOx application to a steel mill LMF application has the following reservations:

(1) The technology is not readily adaptable to temperature applications outside the 300-700 ^oF range and is susceptible to thermal cycling that will be experienced in the Nucor application;

(2) Optimum $SCONO_x$ operation is predicated by stable gas flow rates, NO_x concentrations and temperature. As discussed earlier, the nature of LMF operations do not afford any of these conditions;

(3) The catalyst is susceptible to moisture interference and the vendor indicates negation of its warranties and performance guarantees if the catalyst is exposed to any quantity of liquid water. However, during certain atmospheric conditions, the catalyst could be potentially exposed to moisture following a unit shutdown;

(4) The prospect of moving louvers that effect the isolation of the saturated catalyst readily lends itself to the possibility of thermal warp and in-duct malfunctions in general. The process is dependent on numerous hot-side dampers that must cycle every 10-15 minutes. Directional flow solutions are not yet known to have been implemented for this technology;

(5) During the regeneration step, the addition of the flammable reducing gas (natural gas which contains 85% methane) into the hot flue gas generates the possibility of LEL exceedances and subsequently catastrophic failure in the event the catalyst isolation is not hermetic or there is a failure in the carrier steam flow; and

(6) There is a possibility of some additional SO_2 emissions if the dry scrubber with the tandem "guard-bed" $SCOSO_x$ unit experiences a malfunction.

Thus, there are significant reservations regarding effective technical applicability of this control alternative for a steel mill LMF application. Moreover $SCONO_x$ technology has never been proposed nor successfully implemented for similar industry applications. In view of the above limitations, $SCONO_x$ is considered technically infeasible for the present application and will not be considered any further in this BACT analysis.

(d) Shell $DeNO_x$ System (modified SCR) -- The Shell $DeNO_x$ system is a variant of traditional SCR technology which utilizes a high activity dedicated ammonia oxidation catalyst based on a combination of metal oxides. The system is comprised of a catalyst contained in a modular reactor housing where in the presence of ammonia NO_x in the exhaust gas is converted to nitrogen and water. The catalyst is contained in a low pressure drop lateral flow reactor (LFR) which makes best use of the plot space available. Due to the intrinsically high activity of the catalyst, the technology is suited for NO_x conversions at lower temperatures with a typical operating range of 250-660 ^oF. In addition, the vendor contends that conventional SCR systems that use honeycomb catalysts generally operate in the temperature range of 610-720 ^oF with attendant pressure drops of between 2.8-4.0 inches WG. The Shell $DeNO_x$ technology can not only operate at a lower temperature but also have a lower pressure drop penalty of around 2 inches WG.

The low temperature operation is the only aspect of the Shell $DeNO_x$ technology that marks its variance from traditional SCR technology. From an LMF application standpoint, there are no additional differences between this technology and SCR technology.

In summary, an effective Shell $DeNO_x$ application to the LMF application has the following reservations:

(1) The Shell $DeNO_x$ system does not suffer from similar placement limitation considerations discussed earlier for SCRs. However, even a downstream of LMF baghouse placement of the system does not render it completely safe from the prospect of particulate fouling. The catalyst will still be exposed to particulates which can inflict a masking effect impairing the effective control efficiency of the system;

(2) Optimum Shell DeNOx operation is predicated by stable gas flow rates, NOx concentrations and temperature. The nature of LMF operations do not afford any of these conditions;

(3) The catalyst is particularly susceptible to thermal fluctuations. The vendor indicated a threshold temperature of around 680 oF for catalyst degradation;

(4) The use of relatively large amounts of ammonia - a regulated toxic chemical - will have accidental release and hazardous impact implications; and

(5) As discussed earlier, even a 7 ppmv ammonia slip from a 200,000 acfm exhaust gas flow can result in the emission of approximately 15.6 tons/yr of ammonia which is a regulated hazardous air pollutant with well documented health impacts.

Thus, there are significant reservations regarding the effective technical applicability of this control alternative for an LMF application, and therefore, will not be considered any further in this BACT analysis.

(e) Selective Non-Catalytic Reduction (SNCR) -- The three commercially available SNCR systems are Exxon's Thermal $DeNO_x$® system, Nalco Fuel Tech's NO_xOUT® system and Low Temperature Oxidation (LTO). These technologies are reviewed below for technical feasibility in controlling LMF NO_x emissions.

(f) Exxon's Thermal $DeNO_x$® - Exxon's Thermal $DeNO_x$® system is a non-catalytic process for NO_x reduction. The process involves the injection of gas-phase ammonia (NH_3) into the exhaust gas stream to react with NO_x. The ammonia and NO_x react according to the following competing reactions:

$2NO + 4NH_3 + 2O_2 \rightarrow 3N_2 + 6H_2O$ (i)
$4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$ (ii)

The temperature of the exhaust gas stream is the primary criterion controlling the above selective reaction. Reaction (i) dominates in the temperature window of 1,600 ^oF - 2,200 ^oF resulting in a reduction of NO_x. However above 2,200 ^oF, reaction (ii) begins to dominate, resulting in enhanced NO_x production. Below 1,600 ^oF, neither reaction has sufficient activity to produce or destroy NO_x. Thus, the optimum temperature window for the Thermal $DeNO_x$® process is approximately 1,600 ^oF - 1,900 ^oF. The above reaction temperature window can be shifted down to approximately 1,300 ^oF - 1,500 ^oF with the introduction of readily oxidizable hydrogen gas. In addition, the process also requires a minimum of 1.0 second residence time in the desired temperature window for any significant NO_x reduction.

In order for the Thermal $DeNO_x$® system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates; ensuring the required residence time and be within the prescribed temperature range. Based on discussions with vendors knowledgeable about steel mill operations, application of Thermal $DeNO_x$® technology to control NO_x emissions from LMF operations are not known.

In summary, an effective Thermal $DeNO_x$® application to the LMF application has the following reservations:

(1) The placement of the Thermal $DeNO_x$® system in an adequate temperature regime. In order to achieve optimum operational efficiency the system should be located in a temperature region of at least 1,300 ^oF and preferably between 1,600 ^oF - 1,900 ^oF which would put it upstream of the LMF baghouse. Such a placement configuration would not afford the desired temperature range which would be typically in the region of 300 ^oF - 400 ^oF with an entry temperature of 150 ^oF at the inlet to the LMF baghouse. The system cannot be placed further upstream for

operational hazard reasons. Also, any injection mechanism upstream of the baghouse will be susceptible to prompt particulate fouling;

(2) Optimum Thermal $DeNO_x$® operation is predicated by stable gas flow rates, NO_x concentrations and temperature. The nature of LMF operations do not afford any of these conditions;

(3) The use of relatively large amounts of ammonia - a regulated toxic chemical - will have accidental release and hazardous impact implications; and

(4) Even a 7 ppmv ammonia slip from a 200,000 acfm exhaust gas flow can result in the emission of approximately 15.6 tons/yr of ammonia which is a regulated hazardous air pollutant with well documented health impacts.

Depending on system design, NO_x removal of 40-70 percent may be achievable under optimum conditions (refer, USEPA "ACT Document - NO_x Emissions from Iron and Steel Mills" Sept., 1994). In view of the concerns with the availability of steady gas flows and prescribed residence times, thermal cycling and the ability of the control option to load-follow varying pollutant concentrations and the fact that the source will be required to continually comply with an hourly emission rate, an effective NO_x control efficiency will be hard to maintain for an LMF application. It should be noted that if the required residence time or other optimum operation parameters are not available, unreacted ammonia will be released directly to the atmosphere.

There are significant reservations regarding the effective technical applicability of this control alternative for an LMF application. In order for the Thermal $DeNO_x$® system to effectively reduce NO_x emissions, the exhaust gas stream should have relatively stable gas flow rates, ensuring the requisite residence time requirements and temperature. The temperature of the LMF exhaust gas will vary over the batch cycle, and will not attain the desired temperature window during all phases of operation. Similarly, the gas flow rates will not remain stable during furnace operation, precluding the possibility of adequate residence time. Moreover, Thermal $DeNO_x$® technology has never been proposed nor successfully implemented to control NO_x emissions from LMFs. Therefore, this control option will be eliminated and will not be considered any further in this BACT analysis.

(g) Nalco Fuel Tech's NO_XOUT® - The NO_xOUT® process is very similar in principle to the Thermal $DeNO_x$® process, except that it involves the injection of a liquid urea (NH_2CONH_2) compound (as opposed to NH_3) into the high temperature combustion zone to promote NO_x reduction. The chemical reaction proceeds as follows:

$$NH_2 + NO \rightarrow N_2 + H_2O \qquad \text{(i)}$$

The reaction involves the decomposition of urea at temperatures of approximately 1,700 °F - 3,000 °F. Certain proprietary additive developments have allowed the operational temperature window to shift to approximately 1,400 °F - 2,000 °F. However, the process still has similar constraints as the Thermal $DeNO_x$® system. The limitations are dictated by the reaction-controlling variables such as stable gas flow rates for a minimum residence time of 1.0 second in the desired temperature window to ensure proper mixing.

As with the Thermal $DeNO_x$® system, the NO_xOUT® system suffers from essentially similar limitations to effectively reduce NO_x emissions from LMF operations. Moreover, applications of the NO_xOUT® technology to control NO_x emissions from steel mill LMF operations are not known.

Similar to the Thermal DeNO$_x$® application, an effective NO$_x$OUT® application to the LMF application has the following reservations:

(1) The placement of the NO$_x$OUT® system in an adequate temperature regime. In order to achieve optimum operational efficiency the system should be located in a temperature region preferably between 1,400 °F - 2,000 °F which would put it upstream of the LMF baghouse. Firstly, such a placement configuration would not afford the desired temperature range which would be typically in the region of 300 °F -400 °F with an entry temperature of 150 °F at the inlet to the LMF baghouse. Also any injection mechanism upstream of the baghouse will be susceptible to particulate fouling;

(2) Optimum NOxOUT® operation is predicated by stable gas flow rates, NOx concentrations and temperature. The nature of LMF operations do not afford any of these conditions; and

(3) Although the NO$_x$OUT® technology does not utilize ammonia directly, secondary chemical reactions under certain conditions (such as unreacted urea combining to form ammonia) can generate ammonia from the process. In fact the vendor indicates a 25 ppmv ammonia at the exhaust stack which is higher than direct ammonia applications discussed earlier. Even a 7 ppmv ammonia slip from a 200,000 acfm exhaust gas flow can result in the emission of approximately 15.6 tons/yr of ammonia which is a regulated hazardous air pollutant with well documented health impacts.

Depending on system design, NO$_x$ removal of 40-70 percent may be achievable under optimum conditions (refer, USEPA "ACT Document - NO$_x$ Emissions from Iron and Steel Mills" Sept., 1994). In view of the concerns with the availability of steady gas flows and prescribed residence times, thermal cycling and the ability of the control option to load-follow varying pollutant concentrations and the fact that the source will be required to continually comply with an hourly emission rate, an effective NO$_x$ control efficiency will be hard to maintain for an LMF application. It should be noted that if the required residence time or other optimum operation parameters are not available, secondary production ammonia will be released directly to the atmosphere. In some instances, it may even be higher than direct ammonia applications discussed earlier.

There are significant reservations regarding effective technical applicability of this control alternative for an LMF application. In order for the NO$_x$OUT® system to effectively reduce NO$_x$ emissions, the exhaust gas stream should have relatively stable gas flow rates, ensuring the requisite residence time requirements and temperature. The temperature of the LMF exhaust gas will vary over the batch cycle, and will not attain in the desired temperature window during all phases of operation. Similarly, the gas flow rates will not remain stable during furnace operation, precluding the possibility of adequate residence time. Moreover, NO$_x$OUT® technology has never been proposed nor successfully implemented to control NO$_x$ emissions from LMFs. Therefore, this control option is considered technically infeasible and will not be considered any further in this BACT analysis.

(h) Low Temperature Oxidation (LTO) - LTO technology has never been utilized for any steel mill LMF application. The vendor has listed applications for mostly industrial boilers and cogeneration gas turbines which have a more favorable energy balance. The technology is a variant of SNCR technology using ozone. The ozone is injected into the gas stream and the NO$_x$ in the gas stream is oxidized to nitrogen pentoxide (N_2O_5) vapor which is absorbed in the scrubber as dilute nitric acid (HNO_3). The nitric acid is then neutralized with caustic (NaOH) in the scrubber water forming sodium nitrate ($NaNO_3$). The overall chemical reaction can be summarized as follows:

$NO_2 + NO + 2O_3 + NaOH \rightarrow HNO_3 + NaNO_3 + 2O_2$ (i)

For optimal performance, the technology requires stable gas flows, lack of thermal cycling, invariant pollutant concentrations and residence times on the order of 1 - 1.5 seconds. In addition, LTO technology requires frequent calibration of analytical instruments which sense the NO_x concentrations for proper adjustment of ozone injection. Since LTO uses ozone injection, it has a potential for ozone slip which can vary between 5 - 10 ppmv. Also, the technology requires a cooler flue gas of less than 300 ^oF at the point of ozone injection, otherwise the reactive gas is rendered redundant. The technology also suffers from low NO_x conversion rates (40% - 60%), potential for nitric acid vapor release (in the event of a scrubber malfunction) with subsequent regional haze impacts and the handling, treatment and disposal issues for the spent scrubber effluent.

In conclusion, the technology is still nascent and evolving out of the earlier bench scale solution to effect a reliable SNCR application utilizing reactive gas-phase ozone to control NO_x emissions from combustion applications. The technology is neither applicable nor proven for steel mill LMF applications and attendant limitations render it technically infeasible in its current manifestation. In view of the above, the LTO control option is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

All control alternatives identified in Step 2 were eliminated as not technically feasible in controlling NO_x emissions from the LMF, with the exception of proper operation to meet the existing NO_x emission limit of 0.0176 lb/ton of steel produced.

Step 4 – Evaluate the Most Effective Controls and Document Results

Proper operation of the LMF and limiting of the NOx emissions was the only technically feasible control option in controlling the NOx emissions from the LMFs.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Meltshop - LMFs:

Meltshop - LMFs				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**LMF Capacity**	**NOX Control Technology/NOx Emissions Limit**
Proposed: Nucor Steel Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	0.0176 lb/ton
Current limit: Nucor Steel - Crawfordsville	PSD/SSM 107-16823-00038	11/21/2003	502 tons/hr and 4,397,520 tons/yr	0.0176 lb/ton
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	capacity - 50 tons/hr -	1.2 lbs/hr
Charter Manufacturing Co., Inc.	13-04176	4/14/2003 (Ohio)	110 tons/hr	1.65-lb/hr
SteelCorr, Inc.	2062-AOP-RO	7/22/2004 (Arkansas)	350 tons/hr -	0.020-lb/ton
SDI – Butler, IN	CP033-8091-00043	6/25/1997 (Indiana)	capacity - 200 tons/hr -	0.025 lb/ton
Beta Steel	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	0.04 lb/ton
SDI - Pittsboro	PSD 063-16628-00037	8/29/2003 (Indiana)	125 tons/hr	0.35 lb/ton combined with EAF
Republic Engineered Products, Inc or Republic Technologies International, LLC.	15-01591	8/30/2005 (Ohio)	220 tons/hr	2.9 lbs/hr

Meltshop - LMFs				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**LMF Capacity**	**NOX Control Technology/NOx Emissions Limit**
Roanoke Electric Steel – Roanoke, VA	20131	11/6/1998 (Virginia)	capacity -100 tons/hr	6.0 lbs/hr
Nucor Steel – Jewett	PSD-1029	1/5/2003 (Texas)	capacity unknown	143 lbs/hr
Nucor-Yamato Steel – Blytheville		Arkansas	capacity -250 tons/hr	No NOx emissions limit

Note: The equivalent limit is not an additional limit but was included for comparison used only.

Charter Manufacturing Co., Inc; Arkansas Steel – Newport; Nucor – Jewett Texas; and Roanoke Electric Steel - All these sources have NOx limits specified in pounds per hour. These pound per hour limits vary based on the capacity of the emission unit, the higher the capacity, the higher the pound per hour limit, and vice-versa. It is not appropriate to compare these pounds per hour limits to a limit that has a different unit of measurement such as lb/ton. Therefore, the NOx limits from these sources will not be included in the BACT analysis.

Republic Engineered Products, Inc. or Republic Technologies International, LLC. - The RBLC listed this source with the most stringent BACT limit for NOx at 0.0132 lb/ton. However, based on the actual permit the source's LMF NOx emission is limited to 2.9 lbs/hr. As stated above, it is not appropriate to compare the pounds per hour limits to a limit that has a different unit of measurement such as lb/ton. Therefore, this source will not be included in the BACT analysis.

None of the steel mill sources as reflected in the above table have proposed or successfully implemented any add on control devices to control NOx emissions from LMF operation. Therefore, the BACT for the LMFs shall be the following:

(a) The total NOx emissions from the two (2) LMFs, identified as EU-13, venting to the LMF baghouse stack S-13 shall be limited to 0.0176 lb/ton of steel produced.

Note: The new LMF NOx BACT limit has been included with the EAFs NOx BACT since the new LMF vents into the EAFs stacks.

Cold Mill Boiler (CMB #2)

The proposed boiler will be fired on a main fuel of natural gas (propane as a back up) with a maximum heat input rate of 40 MMBtu/hr and a NOx PTE of 27.50 tons/year.

NO_x is formed from the chemical reaction between nitrogen and oxygen at high temperatures. NO_x formation occurs by different mechanisms. In the case of boiler, NO_x predominantly forms from thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air. This mechanism of NO_x formation is referred to as thermal NO_x. The other mechanisms of NO_x formation such as fuel NO_x (due to the evolution and reaction of fuel-bound nitrogen compounds with oxygen) and prompt NO_x (due to the formation of HCN followed by oxidation to NO_x) are thought to have lesser contributions to NO_x emissions from the boiler.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control NOx emissions from the Cold Mill boiler:

(a) Flue Gas Recirculation (FGR)

(b) Low NOx burners

Step 2 – Eliminate Technically Infeasible Control Options

(a) Flue Gas Recirculation (FGR) - incorporates the recirculation of a portion of the flue gas back to the primary combustion zone as a replacement for the combustion air. The recirculated combustion products provide inert gases that lower the adiabatic flame temperature and the overall oxygen concentration in the combustion zone. As a result, FGR controls NOx emissions by reducing the generation of thermal NOx. This control option is predominantly used for utility boilers, large-scale industrial gas/refinery fuel boilers and process heaters due to their large volumes of recirculation gas, and has not been incorporated in smaller boiler less than 100 MMBtu/hr, like the size of Nucor's proposed boiler (40 MMBtu/hr). Therefore, this control option will be eliminated for further consideration in this BACT analysis.

(b) Low NOx burners - are a specially designed set of burners that employ two-staged combustion within the burner. Primary combustion typically occurs at a lower temperature under oxygen deficient conditions and secondary combustion is completed with excess air.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Nucor is proposing to utilize low NOx burners in the boiler along with good operating practices to meet the BACT limit.

Step 4 – Evaluate the Most Effective Controls and Document Results

The use of low NOx burners with the boiler along with good operating practices to meet the BACT limit is the only technically feasible control for a boiler of this size (40 MMBtu/hr).

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to boilers with sizes less than 100 MMBtu/hr to make an accurate comparison since the Emission Factor (EF) for these boiler sizes is the same:

Cold Mill Boiler (CMB #2)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**Boiler Heat input F (MMBtu/hr)**	**NOX Control Technology/NOx Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	40	0.035 lb/MMBtu
Mustang Power, Ok	2001-132-C PSD	02/12/2002 (Oklahoma)	31	**0.01 lb/MMBtu**
Merck, Rahway Plant	PCP -020003	9/18/2003 (New Jersey)	99.5	**0.011 lb/MMBtu**
Duke Energy Luna	PSD-NM-2450	12/29/2000 (New Mexico)	44.1	**0.030 lb/MMBtu**
Hawkeye Generating LLC, IA	01-687	07/23/2002 (Iowa)	48.5	**0.034 lb/MMBtu**
Duke Energy Hanging Rock	07-00503	12/28/2004 (Ohio)	30.60	0.035 lb/MMBtu
Hyundai, AL	209-0090-X001,X002,X003	03/23/2004 (Alabama)	50	0.035 lb/MMBtu
Quad Graphics, Inc.	2000-306-C M-1 PSD	02/03/2004 (Oklahoma)	66.77	0.035 lb/MMBtu
Nucor Steel - Crawfordsville	PSD 107-16823-00038	11/21/2003 (Indiana)	34	0.035 lb/MMBtu
SDI, Hendricks, IN	PSD 063-16628-00037	8/29/2003 (Indiana)	48.4	0.035 lb/MMBtu

Cold Mill Boiler (CMB #2)

Plant	RBLC ID or Permit #	Date Issued and State	Boiler Heat input R (MMBtu/hr)	NOX Control Technology/NOx Emissions Limit
Honda	309-0050	10/18/2002 (Alabama)	30	0.035 lb/MMBtu
Duke Energy	1998-AOP-R0 (34-0259)	04/01/2002 (Arkansas)	33	0.035 lb/MMBtu
Genenova, OK	-	(Oklahoma)	33	0.035 lb/MMBtu
Kamine, NY	-	(New York)	33	0.035 lb/MMBtu
MN Corn, NE	-	(Nebraska)	54.4	0.035 lb/MMBtu
Sithe Mystic Development	-	-	96	0.035 lb/MMBtu
Duke Energy LP	P1026	07/22/2003 (Texas)	36	1.3 lb/hr (equivalent to 0.036 lb/MMBtu)
Duke Energy Luna	PSD-NM-2605	06/27/2002 (New Mexico)	33	0.036 lb/MMBtu
NRG, OK	99-213-C M-1 PSD	10/25/2001 (Oklahoma)	22	0.036 lb/MMBtu
US Army, AL	301-0050	1/5/2001 (Alabama)	13.4	0.036 lb/MMBtu
US Army, AL	301-0050	1/5/2001 (Alabama)	11.7	0.036 lb/MMBtu
Darling	-	(Califormia)	31.2	0.036 lb/MMBtu
SDI, Whitley, IN	PSD183-15170-00030	05/31/2002 (Indiana)	41.8	0.040 lb/MMBtu
Cabot, MA	-	(Massachusetts)	26.6	0.041 lb/MMBtu
Redbud	2000-090-C PSD	08/15/2001 (Oklahoma)	20	0.041 lb/MMBtu
GenPower	-	(South Carolina)	38	0.048 lb/MMBtu
Thunderbird, OK	2000-116-C PSD	05/17/2001 (Oklahoma)	20	0.049 lb/MMBtu
Duke Energy Vermillion, LLC	PSD 165-10476-00022-	03/13/2003 (Indiana)	46.6	0.049 lb/MMBtu
Interstate Power, IA	02-357	12/20/2002 (Iowa)	68	0.049 lb/MMBtu
Tenaska, IN	MSOP125-12760-00039	11/12/2002 (Indiana)	40	0.049 lb/MMBtu
Duke Energy	2001-157-C M-1 PSD	03/21/2003 (Oklahoma)	33	0.05 lb/MMBtu
MidAmerican Energy	77-13-002	04/10/2002 (Iowa)	68	0.05 lb/MMBtu
Energetix	2000-278-C PSD	10/22/2001	30	0.05 lb/MMBtu
American Soda, CO	98-RB-0831	05/06/1999 (Colorado_	51	0.05 lb/MMBtu
Cogentrix	MSOP 093-12432-00021	10/05/2001 (Indiana)	35	0.08 lb/MMBtu
Blount	402-0010-X001 AND X002	02/05/2001 (Alabama)	40	0.08 lb/MMBtu
SDI, Dekalb	PSD 033-5625-00043	08/08/1996	20.4	0.081 lb/MMBtu
Qualitech			67.5	0.081 lb/MMBtu
Tenaska	309-0052-X001	10/03/2001 (Alabama)	30	0.096 lb/MMBtu
Smith Cogen, OK	2000-115-C PSD	08/16/2001 (Oklahoma)	48	0.1 lb/MMBtu
Kiowa, OK	2000-103-C M-1 PSD	05/01/2001 (Oklahoma)	27.5	0.1 lb/MMBtu
Ameripol, TX	PSD-TX-957	04/03/2000 (Texas)	54	0.1 lb/MMBtu
Toyota	PSD 051-5391-00037	08/09/1996 (Indiana)	58	0.1 lb/MMBtu
Mid-Georgia	-	(Georgia)	60	0.1 lb/MMBtu

Cold Mill Boiler (CMB #2)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**Boiler Heat input R (MMBtu/hr)**	**NOX Control Technology/NOx Emissions Limit**
Duke, AL	604-0023-X001, X002	12/11/2001 (Alabama)	35	0.108 lb/MMBtu
Gordonsville, VA	-	-	22	0.109 lb/MMBtu
Archer Daniels, ND	PTC98002	07/09/1998	28	0.21 lb/MMBtu

The following sources from the above table of BACT limits have the most stringent NOx limits:

Mustang Power, Oklahoma - This source has a limit of 0.01 lb/MMBtu for a 31 MMBtu/hr boiler. Pursuant to the source's PSD permit, this boiler is used as a cogeneration system for turbines and Heat Recovery Steam Generators. Mustang Power's boiler is not comparable with the Nucor - Crawfordsville CMB #2 boiler since Nucor's boiler is used to generate steam for process heating. Therefore, Mustang Power will not be considered in this BACT analysis.

Merck, Rahway Plant, New Jersey - This source has a limit of 0.011 lb/MMBtu for a 99.5 MMBtu/hr boiler. This boiler uses natural gas co-fired with the waste solvents generated by the plant. This boiler is controlled by a Selective Catalytic Reduction (SCR) system. Based on the information from New Jersey Environmental Protection Agency, this boiler is used as a control device to burn Merck's Pharmaceutical waste solvents generated from all its production processes, instead of hauling the waste solvents for disposal offsite as hazardous wastes. Therefore, NOx is higher or more consistent for hazardous waste control use, which can consistently sustain the SCR operation in the boiler. Merck's boiler is not comparable with the Nucor - Crawforsdville CMB #2 boiler which is used to generate steam for process heating. Therefore, Merck will not be considered in this BACT analysis.

Duke Energy Luna - This source has a limit of 0.030 lb/MMBtu for a 44.1 MMBtu/hr boiler. This boiler is used as a cogeneration system for the turbines to generate electricity. Therefore, this boiler is not comparable to the Nucor CMB #2 boiler since it is used to generate steam for process heating. Therefore, Duke Energy Luna will not be considered in this BACT analysis.

Hawkeye Generating LLC, Iowa - This source has a limit of 0.034 lb/MMBtu for a 48.5 MMBtu/hr boiler. Pursuant to this source's PSD permit, this boiler is used as a cogeneration system for the turbine/heat recovery steam generators during combined cycle operation. Hawkeye's boiler is not comparable with Nucor's CMB #2 boiler since it is used to generate steam for process heating. Therefore, Hawkeye Generating will not be considered in this BACT analysis.

None of the sources in the above table have proposed or successfully implemented any add on control devices to control NOx emissions for boilers with sizes less than 100 MMBtu/hr or from non utility and non waste solvent combustor boilers. Therefore, the BACT for the proposed boiler, CMB #2 shall be the following:

(a) The NOx emissions from the Cold Mill Boiler #2 shall be limited to 0.035 lb/MMBtu.

(b) The Cold Mill Boiler #2 shall utilize low NOx burners.

Various Natural Gas Combustion Units (preheaters, Dryout, Regenerator and Dryers)

Nucor requested to change the BACT limits from the following existing natural gas combustion units (tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer) to reflect the new U.S. EPA AP-42 emission factors (AP-42, July 1998). None of these natural gas-fired combustion units is being physically modified.

Natural Gas Combustion Units	Heat Input Rate (MMBtu.hr)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each
1 Acid Regeneration	5.6
2 Tundish Dryout Station (TD1 and TD2)	9.0 each
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each
5 Tundish Preheaters (TP1 - TP5)	6.0 each
1 Ladle Dryer	5.0

The NOx emissions from the tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer are formed predominantly from thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air.

Step 1 – Identify Control Options

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, there are no reasonably available add-on control options to control NOx emissions from open flame combustion units.

IDEM, OAQ is not aware of any steel mill employing an add-on control to control combustion-related emissions from small combustion sources. However, there are control/pollution prevention systems available:

(a) Low NOx Burners (LNB), and

(b) Ultra Low NOx Burners (ULNB)

Step 2 – Eliminate Technically Infeasible Control Options

(a) Low NOx Burners (LNB) - Low NOx burners - are a specially designed set of burners that employ two-staged combustion within the burner. Primary combustion typically occurs at a

lower temperature under oxygen deficient conditions and secondary combustion is completed with excess air.

(b) Ultra Low NOx Burners (ULNB) - Ultra low-NOx burners (ULNB) use sealed combustion chambers, like boilers and furnaces, where baffle design controls air staging and consequently mitigates NOx generation. ULNB also reduce NOx formation by recirculation of the exhaust gases to slow the dissipation of heat. As a result, the utilization of ULNB requires considerable reconfiguration of the combustion equipment - which is technically infeasible for the tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator.

Step 3 – Rank Remaining Control Options by Control Effectiveness and Step 4 - Evaluate Control Options

Only one technically feasible control option has been identified - Low NOx Burners.

Step 5 - Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to NOx emissions from tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator.

Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator			
Plant	**RBLC ID or Permit # / Date Issued**	**Heat Input Rate (MMBtu/hr)**	**NOx Control Technology/ Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	0.8 to 10	0.1 lb/MMBtu or 100 lb/MMCF each unit
Existing Limit - Nucor Steel - Crawfordsville	PSD 107-16823-00038 11/21/2003	0.8 to 10	0.1 lb/MMBtu or 100 lb/MMCF each unit
Gerdau Ameristeel Wilton	IA-0087 5/29/2007	5	0.1 lb/MMBtu
SDI, Whitley, IN	PSD 183-10097-00030 (7/7/1999) and Proposed PSD 183-23905-00030	10	0.1 lb/MMBtu
Steel Dynamics, Hendricks, IN	PSD 063-16628-00037 8/29/2003	7.5	Low NOx burners - 0.05 lb/MMBtu
Charter Steel, Inc. - Ohio	OH-0276 4/14/2003	20	0.098 lb/MMBtu

While an emission rate of 0.05 lb/MMBtu is the most stringent NOx BACT limitation established for a nearly-identical unit, based on new emissions data for similar sized natural gas combustion units, EPA determined that the NOx emission factor will remain at 0.1 lb/MMBtu or 100 lb/MMCF. In addition, the other sources listed have not demonstrated compliance with the lower emission limits, Therefore, 0.1 lb/MMBtu or 100 lb/MMCF is the most practically achievable NOx limit for the tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator. A more stringent limit is not obtainable without the use of add-on controls; which are technically infeasible at these levels of emissions. Therefore, the BACT for these existing natural gas emission units are as follows:

(a) The NOx BACT shall be:

Emission Units/ID	Heat Input Rate (MMBtu/hr)	Existing NOx BACT	Proposed NOx BACT Limit
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each	100 lb/MMCF	100 lb/MMCF
1 Acid Regeneration	5.6	100 lb/MMCF	100 lb/MMCF
2 Tundish Dryout Station (TD1 and TD2)	9.0 each	100 lb/MMCF	100 lb/MMCF
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each	100 lb/MMCF	100 lb/MMCF
5 Tundish Preheaters (TP1 - TP5)	6.0 each	100 lb/MMCF	100 lb/MMCF
1 Ladle Dryer	5.0	100 lb/MMCF	100 lb/MMCF

(b) Good combustion practices shall be observed.

BACT for Sulfur Dioxide (SO_2):

The proposed modification has a net increase of 40 tons of SO_2 per year or greater. Therefore, all SO_2 emission units affected by the modification, which are as follows are required to apply Best Available Control Technology (BACT):

- Meltshop - Electric Arc Furnaces (EAFs)
- Meltshop - Ladle Metallurgical Furnaces (LMFs)
- One (1) 40 MMBtu/hr natural gas-fired Cold Mill Boiler (CMB #2)

- Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator

Meltshop - EAFs

The source of SO_2 emissions from the EAFs is attributable to the sulfur content of the raw materials charged in the EAFs and the materials which are used in the foamy slag process. The SO_2 emission increase from the EAFs is 277.1 tons/year.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control SO_2 emissions from the Meltshop - EAFs:

(a) Lower-Sulfur Charge Substitution; and

(b) Flue Gas Desulfurization (FGD) options:
(1) Wet Scrubbing
(2) Spray Dryer Absorption (SDA)
(3) Dry Sorbent Injection (DSI)

Step 2 – Eliminate Technically Infeasible Control Options

The test for technical feasibility of any control option is whether it is both available and applicable to reducing SO_2 emissions from the existing EAFs. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

(a) Lower-Sulfur Charge Substitution-- Based on discussions with plant personnel, charge substitution with lower sulfur-bearing raw materials is not practical due to inconsistent availability.

Nucor presently uses low sulfur injection carbon (0.73%S - 0.83%S) and charge carbon (0.77%S) in the steel making process. Recently, however, Nucor has found that these materials have uncertain future availability. For example, Nucor's present low sulfur injection carbon may not always be available because the source does not offer long term contracts. Therefore, as part of the proposed BACT analysis for the EAFs and LMFs, Nucor is seeking to ensure that the BACT determination does not "lock in" a reliance upon low sulfur materials, including carbon/coke, which may not be available in the longer term. A summary of the charge materials, sulfur content of the materials, cost and supply trends are set forth below.

CARBON TYPES
Carbon basically has 3 different uses at the EAFs: scrap, charge carbon (bucket fed and top fed), and injection carbon. Each of these carbon types acts differently in the operation. While there is some minor substitutability, none of these types can truly be a substitute for any of the others.

Scrap
This is carbon inherent in the scrap charge fed to the furnace. This carbon is consumed in the liquid phase of the steel. As such, it has a very high heating efficiency and the majority of the sulfur remains dissolved in the steel.

Charge Carbon (Bucket Fed) ~500 NT/Yr

This carbon is used to increase the amount of carbon in the liquid steel bath. While not as efficient as carbon already in the scrap, approximately 35 – 50% of the fixed carbon can be picked up in the bath depending on many variables. The balance of the fixed carbon acts on the slag (reducing FeO similar to injection carbon, but without the foaming effect) or burns in the top space. Because of slag and metal mixing during charging, about one-half of this sulfur leaves as SO_x while the remainder stays in the steel and slag.

Charge Carbon (Top Fed) ~3500 NT/Yr

This carbon is used to reduce the FeO in the slag. It has a relatively high efficiency, with approximately 75% of the fixed carbon reducing FeO. Reaction in the top of the slag layer means that approximately 2/3 of the sulfur leaves as SO_x, while the remainder stays in the steel and slag.

Injection Carbon ~60,000 NT/Yr

This is a carbon media that is injected into the slag layer where it reduces FeO and generates CO gas. This foams the slag and improves electrical efficiency. It has a relatively high efficiency, with approximately 65 – 85% of the fixed carbon reducing FeO. Reaction in the middle of the slag layer means that approximately one-half of the sulfur leaves as SO_x, while the remainder stays in the steel and slag.

CARBON SOURCES

The sources of this carbon can take many forms. We are dealing with the chemically active "fixed" carbon and not the total carbon or BTU value. Volatiles in the carbon are flash distilled in the top space and play very little part in the furnace. Typical carbon sources are coal, metallurgical coke and petroleum coke.

Petroleum Coke

For many years petroleum coke was the preferred injection carbon source. This material was very high in fixed carbon, relatively low in sulfur (~1%), less abrasive, low in ash, and inexpensive. Since it was only available in small sizes (<1/4") it was not usable as charge carbon. In recent years low sulfur petroleum coke has been in high demand, costs have increased and availability is limited. Most places have tried substituting some blend of low and high (2-3%) sulfur petroleum cokes. As the supply tightened, more anthracite coal and metallurgical coke were blended to compensate for reduced availability of petroleum coke. The coal has a different density and does not transport well with petroleum coke in pneumatic systems. The metallurgical coke is very abrasive and erodes pipe and hoses at an unacceptable rate.

Metallurgical Coke

Metallurgical coke has been used both as charge and injection carbon. As charge carbon, the material works well. The high fixed carbon content and large piece size makes a good combination. The only drawback is that the coke tends to retain water. Excess water can be an explosion hazard, and precautions to drain water and avoid ice are vital. As mentioned above, the abrasive nature of metallurgical coke with the 10 – 20% ash content causes many problems as an injection carbon.

Coal

Anthracite coal is the primary coal used in EAF steelmaking. Bituminous coal can be used but has some serious problems. Due to higher volatile content, bituminous coal has lower ignition and flash points. This means that it can ignite and even explode under certain storage conditions. Some bituminous coal is used as charge carbon, but other than brief experiments, bituminous coal is not used as an injection carbon.

SUPPLY TRENDS

Petroleum coke has been rising in sulfur content for the past several years. As more of the world's available crude is heavier and higher in sulfur content, the sulfur levels in petroleum coke will continue to increase. Most domestic petroleum coke supplies are projected to be around 3-3.5% sulfur next year. The majority of the 2-2.5% sulfur is currently imported from Venezuela, a very politically unstable source. Lower sulfur petroleum cokes are essentially unavailable at the present time.

Metallurgical coke is currently both manufactured in the U.S. and imported from overseas. Many of the U.S. producers are at least partially dependent on foreign coal. In the early part of this decade over supply from China severely damaged domestic production capability and, when the Chinese government restricted the export of coke, a severe shortage developed. Metallurgical coke producers in the U.S. are also heavily dependent on a very few coking coal deposits in the Northeast. The Pinnacle Mine fire and subsequent production difficulties imposed a *force majeure* situation that severely impacted the U.S. steelmaking industry.

Bituminous coal, while plentiful, is not suited to many steelmaking situations. The supply of low volatile low sulfur bituminous coal is not much better than that of the low sulfur anthracite discussed below. The low fixed carbon levels mean that much larger quantities are required to meet the carbon requirements of the EAF. These coals also pose a safety hazard in many existing storage and handling systems.

Anthracite coal is the mainstay of the low sulfur EAF carbon supply. U.S. production is confined almost exclusively to central Pennsylvania. The main alternative use of this material is home and industrial heating. This means that price and availability varies seasonally, and even within the seasons, weather conditions can drastically affect market conditions. This was demonstrated earlier this year when the State of Pennsylvania decided to keep heating with coal for an extra 2 months because oil and gas prices remained high. China, Russia, and Vietnam are major foreign suppliers of this material. In the last 3 years, the high ocean freights costs and market disruptions caused by expansion in China have made this imported material prohibitively expensive. Occasionally spot cargos have been offered when local demand temporarily drops, but these cargos disappear as soon as the local demand returns. Traders that do extensive business with China have been informed that the Chinese government plans to continue increasing tariffs and export restrictions to make China a net importer of coal and conserve both future reserves and limited infrastructure, which is tied up moving coal to the coast, instead of expanding their domestic economy. Thus, Chinese coal will not be available on the market in the reasonably foreseeable future.

Assessment

Because of the factors outlined above, continued availability of low sulfur carbon sources used in the Crawfordsville facility in the past is increasingly in question. Petroleum coke sulfur concentrations are increasing and low sulfur petroleum cokes are essentially unavailable. Metallurgical coke is limited in supply, not useable as an injection carbon, and is used for other critical industrial operations besides steelmaking, making it difficult to consistently obtain and subject to periodic price spikes. Bituminous coals are largely unsuited to steelmaking, leaving anthracite as the remaining major source. Anthracite sulfur concentrations are also increasing and the supply of the lower sulfur coals is diminishing both domestically and in the world market. Therefore, continued availability of low sulfur sources of carbon cannot be assured.

The fixed carbon is another important variable. As the percent of fixed carbon diminishes, correspondingly more of the carbon source must be used to achieve the same result.

EFFICIENCY AND SULFUR EMISSIONS

Due to the differences in “fixed carbon,” where a lower fixed carbon source requires corresponding greater usage, usage rates vary and are shown in the table below as “equivalent cost” and “sulfur content” to petroleum coke (#1 on the chart above).

Carbon #*	Eqv % Sulfur	Other Problems
#1	2.75%	
#2	1.25%	Pipe Wear
#3	0.77%	Pipe Wear
#4	0.73%	Low Availability
#5	0.83%	Pipe Wear
#6	1.03%	Safety

*Carbon # refers to list under “Current Pricing” by carbon type

Nucor is presently using #4 and #5 as injection carbon (0.73%S - 0.83%S) and #3 as charge carbon (0.77%S). These are the lower end %S materials available today. Of these compounds, #1 and #6 could potentially substitute for the current injection carbon (#4 and #5) and #2 could substitute for #3. Unfortunately, #6 is of limited availability. Therefore, only #1 and #2 are realistic options for long term operation.

Because of the combined problems caused by decreasing availability and the difficulty in relying upon the lower sulfur feedstocks including carbon sources, it is not feasible to maintain compliance with a much lower SO_2 limit than the current limit of 0.25 lb/ton. Instead, BACT must be set at a level that will allow Nucor to use reasonably available feedstocks in the future. Typical feedstock sulfur percentages are as follows:

Data for average S content for raw materials

Steel Scrap	0.02-0.1%
Pig Iron	0.026%
HBI	0.005%
Coal	included in BACT discussion above

Due to uncertain availability of lower sulfur content injection carbon (decreasing supply), Nucor is proposing a combined emission limit of 0.25 lb/ton from the EAFs baghouses 1 and 2, including the new LMF.

(b) Flue Gas Desulfurization - FGD systems currently in use for SO_2 abatement can be classified as wet and dry systems. Note that based on a review of the RBLC database and discussions with various individuals knowledgeable about steel mill operations, it was revealed that control technologies for SO_2 abatement have not been successfully implemented for EAFs. However, FGD options which have been traditionally applied to utility boilers may be available to control SO_2 from the EAFs. Therefore, the application of these technologies to the existing EAFs will be examined further.

For FGD controls in general, the expected variability and low SO_2 concentrations in the gas stream are not amenable to responsive FGD treatment which is typically geared for high sulfur fuel combustion systems. In addition, the relatively large gas flow and the large amplitude temperature variations will play havoc with reaction kinetics as there are no available pre-concentration or uniform load scheme that would temper the perturbations. In conclusion, the effective SO_2 control efficiencies would be significantly impaired.

(1) Wet Scrubbing -- Wet scrubbers are regenerative processes which are designed to maximize contact between the exhaust gas and an absorbing liquid. The exhaust gas is scrubbed with a 5 - 15 percent slurry, comprised of lime (CaO) or limestone

($CaCO_3$) in suspension. The SO_2 in the exhaust gas reacts with the CaO or $CaCO_3$ to form calcium sulfite ($CaSO_3.2H_2O$) and calcium sulfate ($CaSO_4$). The scrubbing liquor is continuously recycled to the scrubbing tower after fresh lime or limestone has been added.

The types of scrubbers which can adequately disperse the scrubbing liquid include packed towers, plate or tray towers, spray chambers, and venturi scrubbers. In addition to calcium sulfite/sulfate, numerous other absorbents are available including sodium solutions and ammonia-based solutions.

There are various potential operating problems associated with the use of wet scrubbers. First, particulates are not acceptable in the operation of wet scrubbers because they would plug spray nozzles, packing, plates and trays. Thus, the scrubber would have to be located downstream of the EAFs baghouses. This would substantially increase the capital cost of the wet scrubber, which is typically two to three times more expensive than the capital cost for a dry scrubber. Wet scrubbers also require handling, treatment, and disposal of a sludge by-product. In this case, air emissions would be exchanged for a large-scale water pollution problem. Treatment of wet scrubber wastes requires advanced wastewater treatment including frequent maintenance by an experienced operator. Finally, the current volumetric exhaust gas flow rate from the EAFs is approximately 2,727,960 acfm. When coupled with the relatively low SO_2 emission rates, a relatively small SO_2 concentration of around 1 - 20 ppmv is in the exhaust. The SO_2 concentration will also vary widely over the EAFs cycle which operates as a batch process. This will preclude efficient application of wet scrubbing.

Based on discussions with major wet scrubber vendors (i.e., Wheelabrator Air Pollution Control Inc., Bionomic Industries Inc., Beco Engineering Company, Ducon Technologies Inc.), it was clearly evident that there was a lack of experience in applying wet scrubbing technology for an EAF application. This fact corroborated the findings from the review of the RBLC database and discussions with various individuals knowledgeable about steel mill operations that control technologies for SO_2 abatement have not been successfully implemented for EAFs for the following reasons:

(i) Intrinsic nature of EAF operations on a batch basis;

(ii) Inability to efficiently control SO_2 due to cyclic nature of process, timing of SO_2 evolution from the furnace, and duration of SO_2 emissions;

(iii) Variability of SO_2 emissions and low SO_2 concentrations;

(iv) Variability of gas flow and temperature with unpredictable thermal cycling; and

(v) Unable to provide credible and sustained SO_2 removal guarantees due to above reasons.

Thus, the wet scrubber option is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(2) Spray Dryer Absorption (SDA) -- An alternative to wet scrubbing is a process known as dry scrubbing, or spray-dryer absorption (SDA). As in wet scrubbing, the gas-phase SO_2 is removed by intimate contact with a suitable absorbing solution. Typically, this may be a solution of sodium carbonate (Na_2CO_3) or slaked lime

[$Ca(OH)_2$]. In SDA systems the solution is pumped to rotary atomizers, which create a spray of very fine droplets. The droplets mix with the incoming SO_2-laden exhaust gas in a very large chamber and subsequent absorption leads to the formation of sulfites and sulfates within the droplets. Almost simultaneously, the sensible heat of the exhaust gas which enters the chamber evaporates the water in the droplets, forming a dry powder before the gas leaves the spray dryer. The temperature of the desulfurized gas stream leaving the spray dryer is now approximately 30 - 50 ^{o}F above its dew point.

The exhaust gas from the SDA system contains a particulate mixture which includes reacted products. Typically, baghouses employing teflon-coated fiberglass bags (to minimize bag corrosion) are utilized to collect the precipitated particulates.

The SDA process would not have many of the potential operating problems associated with the wet scrubbing systems. Currently, the volumetric exhaust gas flow rate from the meltshop(s) is approximately 2,727,960 acfm. When coupled with the relatively low SO_2 emission rates, a relatively small SO_2 concentration of around 1 - 20 ppmv is in the exhaust. The SO_2 concentration will also vary widely over the EAFs cycle. Based on discussions with a major SDA vendor (Wheelabrator Air Pollution Control Inc.), this control alternative has significant limitations for effective technical applicability for an EAF application:

(i) The very low SO_2 concentration of around 1 - 20 ppmv in the influent coupled with a relatively large gas flow of 2,727,960 acfm would retard the adequate contact interface with the reagent. The vendor noted that the inlet SO_2 concentrations would be lower than the outlet concentrations that most SDAs are designed for;

(ii) The variations in the SO_2 concentration during and between heats would severely impair the control system's capability to respond adequately. SDA systems are not designed for adept load-follow flexibility;

(iii) The low temperature of the exhaust gas of around 250 ^{o}F and the low gas moisture would not allow sufficient thermal gradient for an appropriate approach to saturation which typically specifies that the temperature of the desulfurized gas stream leaving the spray dryer be around 30 – 50 ^{o}F above its dew point;

(iv) Thermal cycling during the regular batch operation of the EAFs in conjunction with the melting and refining heats could potentially result in less than desirable temperature approaches to saturation, thereby, raising the prospect of wet fouling. The system would be hard to control with attendant near-loss of SO_2 control efficiencies; and

(v) Unable to provide credible and sustained SO_2 removal guarantees due to above reasons.

Thus, SDA dry scrubbing option is considered technically infeasible for this application and will be not be considered any further in this BACT analysis.

(3) Dry Sorbent Injection (DSI) -- This control option typically involves the injection of dry powders into either the furnace or post-furnace region of utility-sized boilers. This process was developed as a lower cost option to conventional FGD technology. Since the sorbent is injected directly into the exhaust gas stream, the

mixing offered by the dry scrubber tower is not realized. The maximum efficiency realized for this SO_2 control technology is estimated to be fairly nominal. It is felt that if sufficient amounts of reactants are introduced into the flue gas, there is a possibility of some degree of mixing and reaction. The science is inexact and the coupling of reactant dosage and in-flue mixing which impacts the SO_2 control efficiency is susceptible to variability in SO_2 concentrations.

The dry sorbent injection process would not have many of the potential operating problems associated with the wet scrubbing systems. Currently, the volumetric exhaust gas flow rate from the EAFs is approximately 2,727,960 acfm. When coupled with the relatively low SO_2 emission rates, a relatively small SO_2 concentration of 1 - 20 ppmv is in the exhaust. The SO_2 concentration will also vary widely over the EAFs cycle. The injection dose of sorbent materials would be hard to control in order to match variability in SO_2 concentrations. Similar control systems are fraught with chronic operational problems with the sensors requiring frequent maintenance and calibration.

Based on discussions with a major scrubbing vendor (Wheelabrator Air Pollution Control Inc.), this control alternative has significant limitations for effective technical applicability for an EAF application which were discussed earlier in the context of a dry scrubbing (SDA) system:

(i) The very low SO_2 concentration of around 1 - 20 ppmv in the influent coupled with a relatively large gas flow of 2,727,960 acfm would retard the adequate contact interface with the reagent. The vendor noted that the inlet SO_2 concentrations would be lower than the outlet concentrations that most DSIs are designed for;

(ii) The variations in the SO_2 concentration during and between heats would severely impair the control system's capability to respond adequately. DSI systems are not designed for adept load-follow flexibility and variable reactant dose control with fast response times comparable to anticipated process conditions;

(iii) Due to the anomalies of mixing afforded by the process, the reaction kinetics are not very flexible and rather time-dependent. Unlike the SDA system, the mixing uncertainty can potentially reduce DSI technology to a sheer brute-force proposition resulting in unstable and unpredictable performance;

(iv) In a DSI-fabric filter coupled system configuration, whereby most of the reaction takes place on the filter cake on the bags, the vendor felt that adequate residence time simply would not be available since the attendant higher particulate load would necessitate a higher cleaning frequency of the fabric filter; and

(v) Unable to provide credible and sustained SO_2 removal guarantees due to above reasons.

Thus, DSI dry scrubbing option is considered technically infeasible for this application and will be not be considered any further in this BACT analysis.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Various control alternatives were reviewed for technical feasibility in controlling SO_2 emissions from the EAFs. With the exception of using a scrap management program, which is already being implemented at the source, the applicability of the remaining control alternatives identified were determined to be technically infeasible. Since, only a single control alternative was ascertained to be technically feasible, no ranking of control alternatives has been provided.

Step 4 – Evaluate the Most Effective Controls and Document Results

Implementation of a scrap management program, was the only technically feasible control option for controlling the SO_2 emissions from the LMFs. Based on a review of the information resources referenced earlier, it has been determined that these control alternatives have not been successfully implemented to reduce SO_2 emissions from EAFs.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to Meltshop - EAFs:

Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**SO_2 Control Technology/ SO_2 Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	0.25 lb/ton
Current limit: Nucor Steel - Crawfordsville	PSD/SSM 107-16823-00038	11/21/2003	502 tons/hr and 4,397,520 tons/yr	0.25 lb/ton
STEEL MILLS WITH CONTINUOUS FEED (CONSTEEL) PROCESS				
Gerdau Ameristeel -Knoxville	-	(Tennessee)	capacity - unknown	**0.20 lb/ton**
Ameristeel – Charlotte	19-99v-567	4/29/1999 (North Carolina)	569,400 tons/yr	**0.23 lb/ton**
Nucor Steel – Darlington	0820-0001-CW	1/8/1998 (South Carolina)	300 tons/hr	0.25 lb/ton/0.675[a] lb/ton
Nucor Steel - Hertford County	08680T09	11/23/2004 (North Carolina)	capacity unknown	0.35 lb/ton
New Jersey Steel	-	- (New Jersey)	capacity unknown	no limit
STEEL MILLS WITH BATCH PROCESS				
Nucor-Yamato Steel – Blytheville		Arkansas	450 tons/hr	**0.15 lb/ton**
SDI – Butler, IN	CP033-8091-00043	6/25/1997 (Indiana)	200 tons/hr	**0.20 lb/ton**
Nucor Steel – Hickman	1139-AOP-R5	6/9/2003 (Arkansas)	capacity – 425 tons/hr	**0.20 lb/ton** **0.33[**] lb/ton (LMF & EAF)**
SeverCorr – Columbus	1680-00064	3/31/2005 Mississippi	capacity unknown	**0.20 lb/ton**
Nucor Steel –Berkeley County	-	- (South Carolina)	capacity unknown	**0.35 lb/ton**
Roanoke Electric Steel – Roankoe, VA	20131	11/6/1998 (Virginia)	100 tons/hr	**0.23 lb/ton**
Nucor Auburn Steel	7-0501-00044/00007	6/22/2004 (New York)	110 tons/hr	0.25 lb/ton
Beta Steel	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	0.25 lb/ton
SDI – Columbia City	PSD 183-10097-00030	7/9/1999 (Indiana)	200 tons/hr	0.25 lb/ton
Nucor Steel - Memphis	0710-04PC	11/6/2000 (Tennessee)	150 tons/hr	0.35 lb/ton /1.75[a] lb/ton
Nucor Steel – Tuscaloosa, Inc.	413-0033	6/6/2006 (Alabama)	300 tons/hr	0.46 lb/ton
Gallatin – Ghent	-	- (Kentucky)	capacity - unknown-	0.49 lb/ton
SDI - Pittsboro	PSD 063-16628-00037	8/29/2003 (Indiana)	125 tons/hr	Combined limits with the LMF: 0.25 lb/ton - low sulfur grade production series

Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**SO_2 Control Technology/ SO_2 Emissions Limit**
				1.5 lb/ton - 1100 SBQ series 1.8 lb/ton - 1200 SBQ series
Nucor Steel – Decatur, (formerly Trico Steel)	712-0037	7/11/2002 (Alabama)	440 tons/hr	0.50 - 0.62 lb/ton
IPSCO – Axis	503-8065	10/16/1998 (Alabama)	200 tons/hr	0.70 lb/ton
Chaparral Steel – Petersburg	51264	4/24/1998 (Virginia)	215 tons/hr	0.70 lb/ton
IPSCO – Montpelier, IA	-	(Iowa)	capacity unknown	0.70 lb/ton*
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	50 tons/hr	0.70 lb/ton
Nucor Steel – Jewett	PSD-1029	1/5/2003 (Texas)	240 tons/hr	1.06 lb/ton
Nucor Steel – Norfolk	35677RC3	6/22/2004 (Nebraska)	EAF - (capacity unknown) - NOx emissions limit of 0.54 lb/ton	2.25 lb/ton
Nucor Steel - Plymouth	-	Utah	capacity unknown	194.96 lbs/3 hrs 137.07 lbs/24 hrs 322 tons/yr
Charter Steel – Saukville, WI	00DCF041	6/9/2000 (Wisconsin)	550,000 tons/yr	no limit

The following eight sources from the above table of BACT requirements for EAFs have the most stringent SO_2 limits:

Nucor Yamato Steel - has a SO_2 limit of 0.15 lb/ton, which was based on a production rate of 450 tons/hr, while Nucor's proposed limit of 0.25 lb/hr was based on a higher production rate of 502 tons/yr. However, Nucor Yamato produces steel beams that requires a higher sulfur content, while Nucor - Indiana products (steel sheets) require a lower sulfur content. As a result Nucor – Indiana must remove more sulfur from its steel than Nucor Yamato. This sulfur is lost or emitted as sulfur dioxide. Therefore, Nucor Yamato will not be considered in this BACT analysis.

Gerdau Ameristeel, Knoxville, Tennessee - This source has a SO_2 limit of 0.20 lb/ton. Gerdau Ameristeel uses a Consteel ® process (see previous page 14 for discussion on the Consteel ® process) in producing their products and it is not comparable to the Batch melting process Nucor - Indiana utilizes in their steel sheet metal production. Therefore, Gerdau Ameristeel will not be considered in this BACT analysis.

Ameristeel, Charlotte, North Carolina - This source has a BACT limit of 0.23 lb/ton. Ameristeel Charlotte uses a Consteel ® process (see previous page 14 for discussion on the Consteel ® process) in producing their products and it is not comparable to the Batch melting process Nucor - Indiana utilizes in their steel sheet metal production. Therefore, Ameristeel will not be considered in this BACT analysis.

SDI - Butler, Indiana - This source has a limit of 0.20 lb/ton which was based on a combined limit for the two (2) EAFs and LMF, while Nucor proposes to continue using the same limit of 0.25 lb/ton, which is a combined limit for the two (2) EAFs, Argon Oxygen Decarburization (AOD), Continuous Casters, including the new LMF emissions. SDI and Nucor are not comparable, since they have a completely different control system. Therefore, SDI will not be considered in this BACT analysis.

Nucor Steel – Hickman, Arkansas - This source has a SO_2 limit of 0.20 lb/ton, which was based on production rate of 425 tons/hr, while Nucor's proposed limit of 0.25 lb/hr was based on a higher production rate of 502 tons/yr. However, Nucor Steel Hickman produces steel beams, which require low sulfur injection carbon, which is different from the charged materials used to produce Nucor Indiana products (steel sheets) which have variable sulfur content. Some product specifications require the removal of more sulfur than other products due to the requirements in the hardness, malleability, and other physical/chemical characteristics. SO_2 emissions are attributable to sulfur content of the charge materials and the required sulfur content of the final product. Therefore, Nucor Hickman will not be considered in this BACT analysis.

SeverCorr – Columbus, Mississippi - This source has a SO_2 limit of 0.20 lb/ton, which is more stringent than Nucor Steel's proposed limit of 0.25 lb/ton. However, this source is not yet in production. Therefore, it will not be considered in this BACT analysis.

Nucor Steel –Berkeley County, South Carolina - The RBLC indicates that this source has a SO_2 limit of 0.20 lb/ton and that indicated that Nucor - Berkeley washes the metal scrap prior to melting to reduce the SO_2 emissions. However, based on the information acquired from Nucor - Berkeley "scrap washing" was not required in their permit and the SO_2 limit in their permit is 0.35 lb/ton. Therefore, Nucor -Berkeley is less stringent than the Nucor - Indiana proposed limit of 0.25 lb/ton.

Roanoke Electric Steel - This source has a limit of 0.23 lb/ton which was based on a production capacity of 100 tons/hr. Nucor Steel proposed limit of 0.25 lb/ton is based on production capacity of 502 tons/hr. Roanoke Electric Steel has no requirement in the permit to perform stack test to determine compliance, and has never demonstrated compliance with this limit. Therefore, it will not be considered in this BACT analysis.

None of the steel mill sources as reflected in the above table have proposed or successfully implemented any add on control devices to control SO_2 emissions from EAFs operation.

Nucor is proposing the same SO_2 BACT as it currently has, except SO_2 emissions from the new LMF will be included in this limit, since the new LMF will vent into the EAFs baghouses. Therefore, the BACT has been determined to be the following:

(a) The total SO_2 emissions from the meltshop EAFs baghouses 1 and 2, which control the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and the new LMF, shall be limited to 0.25 lb/ton of steel produced.

Meltshop - LMFs

The source of SO_2 emissions from the LMFs, which includes the new LMF is attributable to the sulfur content of the raw materials added at the LMFs, and to a lesser extent, the residual sulfur carried over in the molten metal matrix from the melting process. The present emission limit is 0.185 lb/ton. Nucor is proposing to increase the emission limit to 0.42 lb/ton. The SO_2 emission increase based on maximum potential minus past actual emission is estimated at 465.5 tons/year.

Step 1 – Identify Control Options

The following are the control alternatives are potentially available to control SO_2 from LMFs:

(a) Lower-Sulfur Charge Substitution; and

(b) Flue Gas Desulfurization (FGD) options
  (1) Wet scrubbing
  (2) Spray Dryer Absorption (SDA)
  (3) Dry Sorbent Injection (DSI)

Step 2 – Eliminate Technically Infeasible Control Options

The test for technical feasibility of any control option is whether it is both available and applicable to reducing SO_2 emissions from the LMF. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

(a) Lower Sulfur Charge Substitution -- Based on discussions with plant personnel, charge substitution with lower sulfur-bearing alloys is not practical due to inconsistent availability as explained in the EAF SO_2 discussion from page 27 through 30 of this Appendix B and will not be considered further in this BACT analysis.

(b) Flue Gas Desulfurization -- FGD systems currently in use for SO_2 abatement can be classified as wet and dry systems. Note that based on a review of the RBLC database and discussions with various individuals knowledgeable about steel mill operations, it was revealed that control technologies for SO_2 abatement have not been successfully implemented for LMFs. However, FGD options which have been traditionally applied to utility boilers may be available to control SO_2 from the existing LMF.

For FGD controls in general, the expected variability and low SO_2 concentrations in the gas stream are not amenable to responsive FGD treatment which is typically geared for high sulfur fuel combustion systems. In addition, the relatively large gas flow and the large amplitude temperature variations will play havoc with reaction kinetics as there are no available preconcentration or uniform-load scheme that would temper the perturbations. In conclusion, the effective SO_2 control efficiencies would be significantly impaired.

(1) Wet Scrubbing -- Wet scrubbers are regenerative processes which are designed to maximize contact between the exhaust gas and an absorbing liquid. The exhaust gas is scrubbed with a 5-15 percent slurry, comprised of lime (CaO) or limestone ($CaCO_3$) in suspension. The SO_2 in the exhaust gas reacts with the CaO or $CaCO_3$ to form calcium sulfite ($CaSO_3.2H_2O$) and calcium sulfate ($CaSO_4$). The scrubbing liquor is continuously recycled to the scrubbing tower after fresh lime or limestone has been added.

The types of scrubbers which can adequately disperse the scrubbing liquid include packed towers, plate or tray towers, spray chambers, and venturi scrubbers. In addition to calcium sulfite/sulfate, numerous other absorbents are available including sodium solutions and ammonia-based solutions.

There are various potential operating problems associated with the use of wet scrubbers. First, particulates are not acceptable in the operation of wet scrubbers because they would plug spray nozzles, packing, plates and trays. Thus, the scrubber would have to be located downstream of the LMF baghouse. Wet scrubbers also require handling, treatment, and disposal of a sludge byproduct. In this case, air emissions would be exchanged for a large-scale water pollution problem. Treatment of wet scrubber wastes requires advanced wastewater treatment including frequent maintenance by an experienced operator. Finally, the current volumetric exhaust gas flow rate from the LMF is approximately 200,000 acfm. The SO_2 concentration varies widely over the LMF cycle (0 - 55 ppm), which operates as a batch process. This will preclude efficient application of wet scrubbing.

Thus, there are significant reservations regarding effective technical applicability of this control alternative for the LMF application. Due to the large gas flows, the equipment would have to be over-sized with care for corrosion resistance. Besides the issues pertaining to pollutant concentration cycling and lack of compensatory system response, there are concerns about handling, treatment and disposal of sludge-phase and liquid-phase wastes which have the potential of being classified as hazardous wastes. In view of the above limitations, this control technology is considered infeasible and will not be considered further in this BACT analysis.

(2) Spray Dryer Absorption (SDA) -- An alternative to wet scrubbing is a process known as dry scrubbing, or spray-dryer absorption (SDA). As in wet scrubbing, the gas-phase SO_2 is removed by intimate contact with a suitable absorbing solution. Typically, this may be a solution of sodium carbonate (Na_2CO_3) or slaked lime [$Ca(OH)_2$]. In SDA systems the solution is pumped to rotary atomizers, which create a spray of very fine droplets. The droplets mix with the incoming SO_2-laden exhaust gas in a very large chamber and subsequent absorption leads to the formation of sulfites and sulfates within the droplets.

Almost simultaneously, the sensible heat of the exhaust gas which enters the chamber evaporates the water in the droplets, forming a dry powder before the gas leaves the spray dryer. The temperature of the desulfurized gas stream leaving the spray dryer is now approximately 30 - 50°F above its dew point.

The exhaust gas from the SDA system contains a particulate mixture which includes reacted products. Typically, baghouses employing teflon-coated fiberglass bags (to minimize bag corrosion) are utilized to collect the precipitated particulates. The SDA process would not have many of the potential operating problems associated with the wet scrubbing systems. However, the volumetric exhaust gas flow rate from the LMF will be approximately 200,000 acfm.

The SO_2 concentration varies widely (0 – 55 ppm) over the LMF cycle. This control alternative has significant limitations for effective technical applicability for a LMF application:

(i) The variations in the SO_2 concentration during and between heats would severely impair the control system's capability to respond adequately. SDA systems are not designed for adept load-follow flexibility.

(ii) The low temperature of the exhaust gas of around 165°F and the low gas moisture would not allow sufficient thermal gradient for an appropriate approach to saturation which typically specifies that the temperature of the desulfurized gas stream leaving the spray dryer be around 30 - 50°F above its dew point.

(iii) Thermal cycling during the regular batch operation of the LMF in concert with the melting and refining heats could potentially result in less than desirable temperature approaches to saturation, thereby, raising the prospect of wet fouling. The system would be hard to control with attendant near-loss of SO_2 control efficiencies.

Thus, there are significant reservations regarding effective technical applicability of this control alternative for the LMF application. In addition to the above issues, there are concerns about handling, treatment and disposal of large amounts of dry solid wastes which have the potential of being classified as hazardous wastes. In view of the above limitations, this control technology is considered infeasible and will not be considered further in this BACT analysis.

(3) Dry Sorbent Injection (DSI) -- This control option typically involves the injection of dry powders into either the furnace or post-furnace region of utility-sized boilers. This process was developed as a lower cost option to conventional FGD technology. Since the sorbent is injected directly into the exhaust gas stream, the mixing offered by the dry scrubber tower is not realized. The maximum efficiency realized for this SO_2 control technology is estimated to be fairly nominal. It is felt that if sufficient amounts of reactants are introduced into the flue gas, there is a

possibility of some degree of mixing and reaction. The science is inexact and the coupling of reactant dosage and in-flue mixing which impacts the SO_2 control efficiency is susceptible to variability in SO_2 concentrations.

The dry sorbent injection process would not have many of the potential operating problems associated with the wet scrubbing systems. However, the current volumetric exhaust gas flow rate from the LMF is approximately 200,000 acfm. The SO_2 concentration varies widely (0 – 55 ppm) over the LMF cycle. The injection dose of sorbent materials would be hard to control in order to match variability of SO_2 concentrations.

Similar control systems are fraught with chronic operational problems with the sensors requiring frequent maintenance and calibration. In view of the above limitations, the dry sorbent injection option for LMF application is considered technically infeasible and will not be considered further in the BACT analyses.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Various control alternatives were reviewed for technical feasibility in controlling SO_2 emissions from the LMFs. All control alternatives identified in Step 2 were eliminated as not technical feasibility in controlling SO2 emissions from the LMFs, with the exception of proper operation to meet the BACT SO_2 limit. Based on a review of the information referenced earlier, it has been determined that the potential control alternatives have not been successfully implemented to reduce SO_2 emissions from LMFs.

Step 4 – Evaluate the Most Effective Controls and Document Results

Good operating practices of the LMFs along with a proposed limit of SO_2 emissions were the only technically feasible control option in controlling the SO_2 emissions from the LMFs.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Meltshop - LMFs:

Meltshop - LMFs				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**LMF Capacity**	**SO_2 Control Technology/NOx Emissions Limit**
Proposed: Nucor Steel Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	210 lbs/hr averaged over a 24- hr period, using CEMS
Current limit: Nucor Steel - Crawfordsville	PSD/SSM 107-16823-00038	11/21/2003	502 tons/hr and 4,397,520 tons/yr	0.185 lb/ton and 92.87 lbs/hr
Roanoke Electric Steel – Roanoke	20131	11/6/1998 (Virginia)	100 tons/hr	**0.06 lb/ton**
SteelCorr, Inc.	2062-AOP-RO	7/22/2004 (Arkansas)	350 tons/hr -	**0.08 lb/ton**
SDI – Butler, IN	CP033-8091-00043	6/25/1997 (Indiana)	200 tons/hr	**0.20 lb/ton**
Beta Steel - Portage	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	**0.33 lb/ton**
Nucor-Yamato Steel – Blytheville		Arkansas	250 tons/hr	**0.36 lb/ton**
Charter Manufacturing Co., Inc.	13-04176	4/14/2003 (Ohio)	110 tons/hr	Minor for SO_2
SDI - Pittsboro	PSD 0633-16628-00037	8/29/2003 (Indiana)	125 tons/hr	Combined limits with the EAF: 0.25 lb/ton - low sulfur

Meltshop - LMFs				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**LMF Capacity**	**SO_2 Control Technology/NOx Emissions Limit**
				grade production series 1.5 lb/ton - 1100 SBQ series 1.8 lb/ton - 1200 SBQ series
Nucor Steel – Jewett	PSD-1029	1/5/2003 (Texas)	capacity unknown	337.68 lbs/hr
Republic Engineered Products, Inc. or Republic Technologies International, LLC	15-76-05-0694	4/24/2002 (Ohio)	220 tons/hr	39.6 lbs/hour
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	50 tons/hr -	NO SO_2 limit

The following sources from the above table have the most stringent SO_2 limits:

Roanoke Electric Steel - Roanoke, Virginia - has the most stringent BACT limit (0.06 lb/ton) from among the sources in the above table. However, it has no requirement in the permit to perform stack testing to determine compliance, with this limit. Therefore, it will not be considered in this BACT analysis.

SteelCorr, Inc. – This source has a BACT limit 0.08 lb/ton on its LMF operation, which was based on production capacity of 350 tons/hr. This limit is more stringent than Nucor's proposed limit of 0.42 lb/ton. However, based on Arkansas Department of Environmental Management information and e-mail to IDEM, SteelCorr, Inc, which was a greenfield source has never been built and it has not demonstrated compliance with this limit and therefore, it will not be considered in this BACT analysis.

Beta Steel - Portage, Indiana – This source has a BACT limit of 0.33 lb/ton, which was based on a combined limit for the meltshop stack (EAF, LMF, Caster and natural gas combustion units), while Nucor Steel proposed limit of 0.42 lb/ton is based on the LMFs process alone. Therefore, Beta Steel and Nucor are not comparable. Therefore, Beta Steel will not be considered in this BACT analysis.

SDI – Butler, Indiana- has a BACT limit of 0.20 lb/ton, which was based on production capacity of 200 tons/hr and a combined limit for the two (2) EAFs and three (3) LMFs, while Nucor Steel's proposed limit of 0.42 lb/ton is based on the three (3) LMFs process alone. However, Nucor does not produce the same grades of steel that SDI produces. Nucor produces lower residual sulfur grades of steel, hence, must remove additional sulfur from its product, resulting in higher SO2 emissions than SDI. Therefore, SDI and Nucor are not comparable. Therefore, SDI will not be considered in this BACT analysis.

Nucor Yamato Steel – Arkansas – This source has a BACT limit of 0.36 lb/ton, based on LMF capacity of 160 tons. Nucor –Indiana considers Nucor Yamato to be similar to the Crawfordsville mill with a similar LMF capacity (130 tons). However, Nucor – Indiana produces lower residual sulfur grades of steel, hence, must remove additional sulfur from its product, resulting in higher SO2 emissions than Nucor - Yamato. Based on mass-balance calculations presented for both sources' sulfur contents below, Nucor –Indiana SO_2 emissions would be expected anywhere from 10% to 63% greater than Nucor – Yamato.

	Nucor - Yamato	Nucor - Indiana
Ladle Capacity	160 tons	130 tons
EAF sulfur content %	0.05%	0.0125 - 0.05%
Average LMF sulfur content %	0.027%	0.004 -.01%

Note: Sulfur content percentages are determined at the end of processing. Nucor –Yamato will reduce sulfur by 0.023% at the LMF, which translates as 73.6 pounds sulfur per ladle or 147.2 pounds SO_2 per ladle. Nucor – Indiana will reduce sulfur from 0.015% to 0.046% at the LMFs, with more steel produced at the lower sulfur residual. Choosing an intermediate value of 0.031%, Nucor – Indiana generates 80.6 pounds sulfur per ladle or 161.2 pounds SO2 per ladle, which is approximately 10% more sulfur dioxide on average than Nucor- Yamato.

In addition, approximately 29 hours of stack testing done on the LMFs demonstrated that Nucor - Indiana cannot consistently attain the SO_2 BACT limit of 0.185 lb/ton for the LMFs as required in the PSD/SSM 107-16823-00038, issued on November 21, 2003, when operating within the normal operating range of the LMFs. The stack test results are as follows:

Values Obtained from the Tests	Stack Test Data	Hand Held Monitor Data + Test Data
Maximum	0.41 lb/ton	0.51 lb/ton
Mean	0.19 lb/ton	0.13 lb/ton
Median	0.19 lb/ton	0.11 lb/ton
Standard Deviation	0.10 lb/ton	0.09 lb/ton

The data show that LMF operation is highly variable, with a standard deviation of 53% of the mean of the stack test data and 69% of the hand held monitor plus stack test data.

In establishing the BACT limit, the limit must meet the Best Available Control Technology and at the same time be consistently achievable allowing continuous compliance.

Therefore, to account for this difference in sulfur removal, and based on the data from the stack tests at Nucor – Indiana, the BACT limit for the LMFs will be changed from 0.185 lb/ton and 92.87 pounds/hour to 210.84 pounds/hour, since the source agreed to install SO_2 CEMS for the LMFs. Therefore, the SO_2 BACT shall be as follows:

(a) The total SO_2 emissions from the two (2) LMFs, identified as EU-13, venting to the LMF baghouse stack S-13 shall be limited to 210.84 pounds per hour averaged over a -24-hour block period.

Note: The new LMF SO_2 BACT limit has been included with the EAFs SO_2 BACT since the new LMF vents into the EAFs stacks.

Cold Mill Boiler (CMB #2)

The proposed boiler will be fired on natural gas (propane back up) with a maximum heat input rate of 40 MMBtu/hr and a SO_2 PTE of 0.10 ton/year.

The source of SO_2 emissions from the boiler is attributable to the sulfur content of the natural gas fuel combusted in the boiler. The SO_2 emission rate is 0.0006 lb/MMBtu resulting in a very nominal increase (0.1 ton/year) of SO_2 emissions.

Step 1 – Identify Control Options, Step 2 – Eliminate Technically Infeasible Control Options, Step 3 – Rank Remaining Control Technologies by Control Effectiveness and Step 4 – Evaluate the Most Effective Controls and Document Results

There are no control options identified, that are technically feasible to control SO_2 emissions of 0.1 ton/yr.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, including Indiana air permits and sources permitted by other states agencies, identified the following with respect to boilers:

Cold Mill Boiler (CMB #2)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**Boiler Heat input Rate (MMBtu/hr)**	**SO_2 Control Technology/ SO_2 Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	40	0.0006 lb/MMBtu
Existing Boiler: Nucor Steel - Crawfordsville	PSD 107-16823-00038	11/21/2003 (Indiana)	34	0.0006 lb/MMBtu
SDI, Hendricks, IN	PSD 063-16628-00037	8/29/2003 (Indiana)	48.4	0.0006 lb/MMBtu
Mustang Power, Ok	2001-132-C PSD	02/12/2002 (Oklahoma)	31	no limit
Merck, Rahway Plant	PCP -020003	9/18/2003 (New Jersey)	99.5	0.0010 lb/MMBtu
Duke Energy Luna	PSD-NM-2450	12/29/2000 (new Mexico)	44.1	0.003 lb/MMBtu
Hawkeye Generating LLC, IA	01-687	07/23/2002 (Iowa)	48.5	no limit
Duke Energy Hanging Rock	07-00503	12/28/2004 (Ohio)	30.60	0.035 lb/MMBtu
Duke Energy Vermillion, LLC	PSD 165-10476-00022-	03/13/2003 (Indiana)	46.6	0.0006 lb/MMBtu
Interstate Power, IA	02-357	12/20/2002 (Iowa)	68	0.0006 lb/MMBtu
Tenaska, IN	MSOP125-12760-00039	11/12/2002 (Indiana)	40	0.0006 lb/MMBtu
SDI, Whitley, IN	PSD183-15170-00030	05/31/2002 (Indiana)	41.8	0.0006 lb/MMBtu
Redbud	2000-090-C PSD	08/15/2001 (Oklahoma)	20	0.0006 lb/MMBtu
NRG, OK	99-213-C M-1 PSD	10/25/2001 (Oklahoma)	22	0.001 lb/MMBtu
US Army, AL	301-0050	1/5/2001 (Alabama)	13.4	0.001 lb/MMBtu
US Army, AL	301-0050	1/5/2001 (Alabama)	11.7	0.001 lb/MMBtu
GenPower	-	(South Carolina)	38	0.001 lb/MMBtu
Cabot, MA	-	(Massachusetts)	26.6	0.002 lb/MMBtu
Sithe Mystic Development	-	-	96	0.003 lb/MMBtu
Duke Energy Luna	PSD-NM-2605	06/27/2002 (New Mexico)	33	0.003 lb/MMBtu
Duke, AL	604-0023-X001, X002	12/11/2001 (Alabama)	35	0.0057 lb/MMBtu
Cogentrix	MSOP 093-12432-00021	10/05/2001 (Indiana)	35	0.006 lb/MMBtu
Blount	402-0010-X001 AND X002	02/05/2001 (Alabama)	40	0.006 lb/MMBtu
Smith Cogen, OK	2000-115-C PSD	08/16/2001 (Oklahoma)	48	0.012 lb/MMBtu
Ameripol, TX	PSD-TX-957	04/03/2000 (Texas)	54	0.014 lb/MMBtu

None of the sources in the above table found in the RACT/BACT/AER Clearinghouse, including sources permitted by other states agencies have proposed or successfully implemented any add on control devices to control SO_2 emissions from boilers with sizes less than 100 MMBtu/hr or from non utility boilers.

Nucor Steel is proposing the most stringent SO2 BACT for the Cold Mill Boiler (CMB #2). Therefore, the following is the SO_2 BACT determined for the Cold Mill Boiler:

(a) The Sulfur Dioxide (SO_2) emissions from the Cold Mill Boiler (CMB #2), shall be limited to 0.0006 lb/MMBtu.

(b) The Permittee shall perform good combustion practices for the Cold Mill Boiler (CMB #2).

Various Natural Gas Combustion Units (preheaters, Dryout, Regenerator and Dryers)

Nucor requested to change the BACT limits from the following existing natural gas combustion units (tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer) to reflect the new U.S. EPA AP-42 emission factors (AP-42, July 1998). None of these natural gas-fired combustion units is being physically modified.

Natural Gas Combustion Units	Heat Input Rate (MMBtu/hr)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each
1 Acid Regeneration	5.6
2 Tundish Dryout Station (TD1 and TD2)	9.0 each
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each
5 Tundish Preheaters (TP1 - TP5)	6.0 each
1 Ladle Dryer	5.0

The SO_2 emissions from the tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer are attributable to the sulfur content of the natural gas fuel combusted.

<u>Step 1 – Identify Control Options, Step 2 – Eliminate Technically Infeasible Control Options, Step 3 – Rank Remaining Control Technologies by Control Effectiveness and Step 4 – Evaluate the Most Effective Controls and Document Results</u>

There are no control options identified, that are technically feasible to control negligible SO_2 emissions from these emission units. See below table for summary of SO_2 emissions:

Natural Gas Combustion Units	SO_2 Emissions (tons/year)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.0021 each
1 Acid Regenerator	0.015
2 Tundish Dryouts (TD1 and TD2)	0.047 each
5 Ladle Preheaters (LP1 - LP5)	0.026 each
5 Tundish Preheaters (TP1 - TP5)	0.016 each
1 Ladle Dryer	0.013

<u>Step 5 - Select BACT</u>

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to SO_2 emissions from tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator.

Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator			
Plant	**RBLC ID or Permit # / Date Issued**	**Heat Input Rate (MMBtu/hr)**	**SO_2 Control Technology/ Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	0.8 to 10	0.0006 lb/MMBtu
Existing Limit - Nucor Steel - Crawfordsville	PSD 107-16823-00038 11/21/2003	0.8 to 10	0.0006 lb/MMBtu
SDI, Whitley, IN	PSD 183-10097-00030 (7/7/1999) and Proposed PSD 183-23905-00030	10	0.0006 lb/MMBtu
Steel Dynamics, Hendricks, IN	PSD 063-16628-00037 8/29/2003	7.5	0.0006 lb/MMBtu

Nucor Crawfordsville proposed SO_2 BACT for each of the existing tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator to remain at 0.0006 lb/MMBtu, which is identical to the sources identified in the above table. Therefore, the SO_2 BACT for these existing natural gas emission units are as follows:

(a) The SO_2 BACT shall be:

Emission Units/ID	Heat Input Rate (MMBtu/hr)	Existing SO_2 BACT	Proposed SO_2 BACT Limit
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each	0.0006 lb/MMBtu	0.0006 lb/MMBtu
1 Acid Regeneration	5.6	0.0006 lb/MMBtu	0.0006 lb/MMBtu
2 Tundish Dryout Station (TD1 and TD2)	9.0 each	0.0006 lb/MMBtu	0.0006 lb/MMBtu
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each	0.0006 lb/MMBtu	0.0006 lb/MMBtu
5 Tundish Preheaters (TP1 - TP5)	6.0 each	0.0006 lb/MMBtu	0.0006 lb/MMBtu
1 Ladle Dryer	5.0	0.0006 lb/MMBtu	0.0006 lb/MMBtu

BACT for Volatile Organic Compound (VOC)

The proposed modification has a net increase of 40 tons of VOC per year or greater. Therefore, all VOC emission units affected by the modification, which are as follows are required to apply Best Available Control Technology (BACT):

- Meltshop - Electric Arc Furnaces (EAFs)
- Meltshop - Ladle Metallurgical Furnaces (LMFs)
- Proposed one (1) 40 MMBtu/hr natural gas-fired Cold Mill Boiler (CMB #2)
- Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator

Meltshop - EAFs

VOC emissions from the EAFs will be intermittent and limited to the brief period during EAFs charging when organic compounds such as oil or paint present in the scrap are volatilized. The VOC emission increase from the EAFs based on maximum potential minus past actual emission is estimated at 99.10 tons per year.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control VOC emissions from the Meltshop - EAFs:

(a) Catalytic Oxidation;

(b) Thermal Oxidation

(b) Degreasing of scrap metal prior to charging in the EAFs; and

(c) Scrap management program.

Step 2 – Eliminate Technically Infeasible Control Options

The test for technical feasibility of any control option is whether it is both available and applicable to reducing VOC emissions from the existing EAFs. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

(a) Catalytic Oxidation - In a catalytic oxidizer, a catalyst is used to lower the activation energy for oxidation. When a preheated gas stream is passed through a catalytic oxidizer, the catalyst bed initiates and promotes the oxidation of VOCs without being permanently altered itself. In catalytic oxidization, combustion occurs at significantly lower temperatures than that of direct flame units and can also achieve a destruction efficiency of 95%. However, steps must be taken to ensure complete combustion. The types of catalysts used include platinum, platinum alloys, copper chromate, copper oxide, chromium, manganese and nickel. These catalysts are deposited in thin layers on an inert substrate, usually a honeycomb shaped ceramic.

Based upon a review of the previously listed information resources, there is no known application of CO oxidation catalysts to control VOC emissions from an EAF. The optimal working temperature range for VOC oxidation catalysts is approximately 850 ^{o}F - 1,100 ^{o}F with a minimum exhaust gas stream temperature of 500 ^{o}F for minimally acceptable VOC control. Exhaust gases from the EAF will undergo rapid cooling as they are ducted from the furnace. Thus, the temperature will be far below the minimum 500 ^{o}F threshold for effective operation of the oxidation catalyst system. Additionally, the particulate loading in the exhaust gas stream is anticipated to be too high for efficient operation of a VOC oxidation catalyst. Masking effects such as plugging and coating of the catalyst surface would almost certainly result in impractical maintenance requirements, and would significantly degrade the performance of the catalyst. Consequently, this control alternative is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(b) Thermal Oxidation - An efficient thermal oxidizer design must provide adequate residence time for complete combustion, sufficiently high temperatures for VOC destruction and adequate velocities to ensure proper mixing without quenching combustion. The type of burners and their arrangement affect combustion rates and residence time. The more thorough the contact between the flame and VOC, the shorter the time required for complete combustion. Natural gas is required to ignite the flue gas mixtures and maintain combustion temperatures. Typically, a heat exchanger upstream of the oxidizer uses the heat content of the oxidizer flue gas to preheat the incoming VOC-laden stream to improve the efficiency of the oxidizer. Potentially, there are two locations where the incinerator can be installed, i.e., upstream or downstream of the EAF baghouse. Locating upstream of the baghouse would take advantage of slightly elevated temperatures in the exhaust gas stream. However, at this location, the post combustion chamber would be subject to high particulate loading. Thus, installation of the VOC control at this location would make it technically infeasible. Alternatively, the post combustion chamber can be installed downstream of the EAF baghouse. However, even at this location, fouling due to particulate matter will occur and more importantly, cooler temperatures would be encountered. These cooler temperatures would greatly increase the auxiliary fuel usage requirements, which would result in higher collateral emissions from the combustion of fuel. In addition there are no known applications of this control option in the steel mill industry. This control option is not technically feasible and will be eliminated from further consideration in this BACT analysis,

(c) Degreasing - degreasing of scrap metal prior to charging in the EAF is impractical. The amount of pollution generated by degreasing scrap would be greater than the amount of pollution generated by melting the scrap. There would be thousands of gallons required to degrease the large amount of scrap used annually in the EAFs. Thus, this control option is considered technically infeasible and will be precluded from further consideration in this BACT analysis.

(d) Scrap Management -The mill will utilize a scrap management program to eliminate the purchase of scrap steel that is heavily oiled. A broker or a Nucor representative will be responsible for inspecting shipments of scrap received. The foreman visually inspects the shipments and determines the category of the scrap. Typically, lathe turnings require the greatest amount of attention due to the higher probability of encountering oil or grease.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

All control alternatives identified in Step 2 were eliminated as not technical feasibility in controlling VOC emissions from the EAFs, with the exception of a scrap management to meet the BACT requirements for VOC emissions.

Step 4 – Evaluate the Most Effective Controls and Document Results

Scrap management will be utilized along with a proposed limit of VOC emissions were the only technically feasible control option for controlling VOC emissions from the Meltshop EAFs operation.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Meltshop - EAFs operation:

Meltshop -Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**VOC Control Technology/VOC Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	0.088 lb/ton
Current limit: Nucor Steel - Crawfordsville	PSD/SSM 107-16823-00038	11/21/2003	502 tons/hr and 4,397,520 tons/yr	0.09 lb/ton
STEEL MILLS WITH CONTINUOUS FEED (CONSTEEL) PROCESS				
Nucor Steel - Hertford County	08680T09	11/23/2004 (North Carolina)	capacity unknown	0.13 lb/ton
Nucor Steel – Darlington, SC	0820-0001-CW	1/8/1998 (South Carolina)	300 tons/hr	0.35 lb/ton
New Jersey Steel -Sayreville	-	- (New Jersey)	capacity unknown	0.46 lb/ton
Ameristeel – Charlotte, NC	19-99v-567	4/29/1999 (North Carolina)	569,400 tons/yr	0.50 lb/ton

Meltshop -Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**VOC Control Technology/VOC Emissions Limit**
STEEL MILLS WITH BATCH PROCESS				
Nucor Steel – Hickman	1139-AOP-R5	6/9/2003 (Arkansas)	capacity – 425 tons/hr	**0.088 lb/ton**
Nucor Steel - Memphis	0710-04PC	11/6/2000 (Tennessee)	150 tons/hr	0.09 lb/ton (LAER) and 0.005 lb/ton for 1 EAF
SDI – Columbia City	PSD 183-10097-00030	7/9/1999 (Indiana)	200 tons/hr	0.09 lb/ton
Gerdau AmeriSteel – Duval County	031057-007-AC (PSD-FL-349)	9/25/2005 (Florida)	1,192,800 tons/yr	0.13 lb/ton
Nucor Steel – Tuscaloosa, Inc.	413-0033	6/6/2006 (Alabama)	300 tons/hr	0.13 lb/ton
SDI - Pittsboro	PSD 063-16628-00037	8/29/2003 (Indiana)	125 tons/hr	0.13 lb/ton*
Beta Steel	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	0.13 lb/ton
Nucor Steel –Berkeley County	-	- (South Carolina)	capacity unknown	0.13 lb/ton
SeverCorr – Columbus	1680-00064	3/31/2005 Mississippi	capacity unknown	0.13 lb/ton
Nucor-Yamato Steel – Blytheville		Arkansas	450 tons/hr	0.13 lb/ton
SDI – Butler, IN	CP033-8091-00043	6/25/1997 (Indiana)	200 tons/hr	0.13 lb/ton
Gallatin – Ghent	-	- (Kentucky)	capacity - unknown-	0.13 lb/ton
Nucor Auburn Steel	7-0501-00044/00007	6/22/2004 (New York)	110 tons/hr	0.14 lb/ton
Nucor Steel - Norfolk	35677RC3	6/22/2004 (Nebraska)	EAF - (capacity unknown) - NOx emissions limit of 0.54 lb/ton	0.17 lb/ton*
IPSCO – Montpelier, IA	94-A-548-S1	03/13-1996 & 2002 (Iowa)	capacity unknown	0.18 lb/ton
Nucor Steel – Decatur, (formerly Trico Steel)	712-0037	7/11/2002 (Alabama)	440 tons/hr	0.20 lb/ton
Nucor Steel – Jewett	PSD-1029	1/5/2003 (Texas)	240 tons/hr	0.2906 lb/ton
Gerdau Ameristeel -Knoxville	-	(Tennessee)	500,000 tons/yr	0.30 lb/ton
Roanoke Electric Steel – Roanoke, VA	20131	11/6/1998 (Virginia)	100 tons/hr	030 lb/ton
IPSCO – Axis	503-8065	10/16/1998 (Alabama)	200 tons/hr	0.35 lb/ton
Chaparral Steel – Petersburg	51264	4/24/1998 (Virginia)	215 tons/hr	0.35 lb/ton
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	50 tons/hr	0.35 lb/ton
Nucor Steel - Plymouth	-	(Utah)	capacity unknown	22.2 lb/hr proposed
Charter Steel – Saukville, WI	00DCF041	6/9/2000 (Wisconsin)	550,000 tons/yr	no limit

Nucor Steel - Hickman, Arkansas - This source has a combined BACT limit of 0.088 lb/ton for two (2) EAFS and two (2) LMFs and a third LMF has a limit of 0.005 lb/ton, which is a total VOC limit of 0.093 lb/ton. Nucor is proposing a limit of 0.088 lb/ton, for the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and the new LMF which is comparable to Nucor Steel - Hickman.

None of the steel mill sources in the above table have proposed or successfully implemented any add on control devices to control VOC emissions from EAFs operation. Therefore, the following is the VOC BACT for the EAFs:

(a) The total VOC emissions from the meltshop EAFs baghouses 1 and 2, which control the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and the new LMF shall be a limit of 0.088 lb/ton of steel produced.

Meltshop -LMFs

There are minimal emissions of VOCs associated with the LMFs, which includes the new LMF. The LMFs are presently permitted at 0.0086 lb/ton. The VOC emission increase is estimated at 9.5 tons per year.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control VOC emissions from the Meltshop - LMFs:

(a) Catalytic Oxidation;

(b) Thermal Oxidation

Step 2 – Eliminate Technically Infeasible Control Options

(a) Catalytic Oxidation - In a catalytic oxidizer, a catalyst is used to lower the activation energy for oxidation. When a preheated gas stream is passed through a catalytic oxidizer, the catalyst bed initiates and promotes the oxidation of VOCs without being permanently altered itself. In catalytic oxidization, combustion occurs at significantly lower temperatures than that of direct flame units and can also achieve a destruction efficiency of 95%. However, steps must be taken to ensure complete combustion. The types of catalysts used include platinum, platinum alloys, copper chromate, copper oxide, chromium, manganese and nickel. These catalysts are deposited in thin layers on an inert substrate, usually a honeycomb shaped ceramic.

Based upon a review of the previously listed information resources, there is no known application of CO oxidation catalysts to control VOC emissions from an LMF. The optimal working temperature range for VOC oxidation catalysts is approximately 850 ^{o}F - 1,100 ^{o}F with a minimum exhaust gas stream temperature of 500 ^{o}F for minimally acceptable VOC control. Exhaust gases from the LMF will undergo rapid cooling as they are ducted from the furnace. Thus, the temperature will be far below the minimum 500 ^{o}F threshold for effective operation of the oxidation catalyst system. Additionally, the particulate loading in the exhaust gas stream is anticipated to be too high for efficient operation of a VOC oxidation catalyst. Masking effects such as plugging and coating of the catalyst surface would almost certainly result in impractical maintenance requirements, and would significantly degrade the performance of the catalyst. Consequently, this control alternative is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(b) Thermal Oxidation - An efficient thermal oxidizer design must provide adequate residence time for complete combustion, sufficiently high temperatures for VOC destruction and adequate velocities to ensure proper mixing without quenching combustion. The type of burners and their arrangement affect combustion rates and residence time. The more thorough the contact between the flame and VOC, the shorter the time required for complete combustion. Natural gas is required to ignite the flue gas mixtures and maintain combustion temperatures. Typically, a heat exchanger upstream of the oxidizer uses the heat content of the oxidizer flue gas to preheat the incoming VOC-laden stream to improve the efficiency of the oxidizer. Potentially, there are two locations where the incinerator can be installed, i.e., upstream or downstream of the EAF baghouse. Locating upstream of the baghouse would take advantage of slightly elevated temperatures in the exhaust gas stream. However, at this location, the post combustion chamber would be subject to high particulate loading. Thus, installation of the VOC control at this location would make it technically infeasible. Alternatively, the post combustion chamber can be installed downstream of the EAF baghouse. However, even at this location, fouling due to particulate matter will occur and more importantly, cooler temperatures would be encountered. These cooler temperatures would greatly increase the auxiliary fuel usage requirements, which would result in higher collateral emissions from the combustion of fuel. In addition there are no known applications of this control option in the steel mill industry.

This control option is not technically feasible and will be eliminated from further consideration in this BACT analysis,

Step 3 – Rank Remaining Control Technologies by Control Effectiveness and Step 4 – Evaluate the Most Effective Controls and Document Results

All the control options identified, in Step 1 and Step 2 were eliminated, since they are not technically feasible to control VOC emissions from the LMFs operation.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, including Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Meltshop -LMF operation:

Meltshop - LMFs				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**LMF Capacity**	**VOC Control Technology/VOC Emissions Limit**
Proposed: Nucor Steel Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	0.0086 lb/ton
Current limit: Nucor Steel - Crawfordsville	PSD/SSM 107-16823-00038	11/21/2003	502 tons/hr and 4,397,520 tons/yr	0.0086 lb/ton
SteelCorr, Inc.	2062-AOP-RO	7/22/2004 (Arkansas)	350 tons/hr -	**0.005 lb/ton**
SDI – Butler	CP033-9187-00043	3/24/1998 (Indiana)	capacity - 200 tons/hr -	0.013 lb/ton
Beta Steel -Portage	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	0.04 lb/ton
SDI - Pittsboro	PSD 063-16628-00037	8/29/2003 (Indiana)	125 tons/hr	0.09 lb/ton combined with EAF
Charter Manufacturing Co., Inc.	13-04176	4/14/2003 (Ohio)	110 tons/hr	0.22 lb/hr
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	capacity - 50 tons/hr -	0.1 lb/hr
Roanoke Electric Steel – Roanoke, VA	20131	11/6/1998 (Virginia)	capacity -100 tons/hr	0.20 lb/hr
Republic Engineered Products, Inc. or Republic Technologies International, LLC	15-76-05-0694	4/24/2002 (Ohio)	220 tons/hr	0.8 lb/hr
Nucor Steel – Jewett	PSD-1029	1/5/2003 (Texas)	capacity unknown	1.44 lbs/hr
Nucor-Yamato Steel – Blytheville		Arkansas	capacity -250 tons/hr	No VOC emissions limit

Republic Engineered Products, Inc. or Republic Technologies International, LLC. - The RBLC listed this source with the most stringent BACT limit for VOC at 0.0036 lb/ton. However, based on the actual permit the source's LMF VOC emission is limited to 0.8 lbs/hr. It is not appropriate to compare the pounds per hour limits to a limit that has a different unit of measurement such as lb/ton. Therefore, this source will not be included in the BACT analysis.

SteelCorr, Inc. - has a VOC emission limit of 0.005 lb/ton, which is more stringent than Nucor Steel - Indiana. However, according to ADEQ, State of Arkansas Department of Environmental Quality, this plant was never built. Therefore, it will not be considered in this BACT analysis.

None of the steel mill sources in the above table have proposed or successfully implemented any add on control devices to control VOC emissions from LMF operation. Therefore, the following is the VOC BACT for the LMFs:

(a) The total VOC emissions from the two (2) LMFs, identified as EU-13, venting to the LMF baghouse stack S-13 shall be limited to 0.0086 lb/ton of steel produce.

Note: The new LMF VOC BACT limit has been included with the EAFs VOC BACT since the new LMF vents into the EAFs stacks.

Cold Mill Boiler (CMB #2)

The proposed boiler will be fired on natural gas (propane back up) with a maximum heat input rate of 40 MMBtu/hr and a VOC PTE of 1.0 ton/year.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control VOC emissions from the Cold Mill boiler (CMB #2):

(a) Good Combustion:

(b) Oxidation Catalyst:

Step 2 - Eliminate Technically Infeasible Control Options

(a) Good Combustion - VOC emissions from the combustion facilities primarily result from combustion by-product of the fuel. The RACT/BACT/LAER Clearinghouse database does not show boilers with sizes less than 100 MMBtu/hr or any non utility boiler with any add-on control device to control VOC emissions. It only identified "good combustion" as the only control technology that has been applied for the control of VOC and CO emissions. This technology will be evaluated for further consideration in this BACT analysis.

(b) Oxidation Catalyst - The only other technology capable of reducing VOC emissions below those obtained through good combustion control is an oxidation catalyst. Oxidation catalysts have been used to reduce VOC as a post combustion control system on large scale combustion turbines. The VOC and CO reduction is effective only within given temperature ranging from 400 ^{0}F - 1100 ^{0}F, with the optimum temperature range of 850 ^{0}F - 1250 ^{0}F. Below 600 ^{0}F, a greater catalyst volume would be required to achieve the same reduction. Typical catalyst control efficiencies for VOC are 50% to 90% and 25% to 50%, respectively. Although, the proposed Cold Mill Boiler exhaust temperature will be approximately 400 ^{0}F, this control device is not technically feasible for this boiler due to its relatively low VOC emissions (1 ton/year), the application of add-on controls is considered impractical and will be precluded from further consideration in this BACT analysis.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The only technically feasible control option for the Cold Mill Boiler (CMB #2) is "good combustion control."

Step 4 – Evaluate the Most Effective Controls and Document Results

The only technically feasible control option for the Cold Mill Boiler (CMB #2) is "good combustion control".

Combustion control is accomplished primarily through boiler design and operation. Combustion efficiency is often related to the three (3) "T's" of combustion: Time, Temperature and Turbulence. These components of combustion efficiency are designed into the boiler to maximize fuel efficiency and reduce operating costs.

Good combustion generally requires the following:

(a) High temperature;

(b) Good Air/Fuel Mixing;

(c) Sufficient Excess Air; and

(d) Sufficient Residence Time.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, including Indiana air permits and sources permitted by other states agencies, identified the following with respect to boilers. The following VOC BACT limits previously determined are arranged in the order of control effectiveness, the top being the most stringent:

Cold Mill Boiler (CMB #2)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**Boiler Heat input R (MMBtu/hr)**	**VOC Control Technology/ VOC Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	40	0.0026 lb/MMBtu
Existing Boiler: Nucor Steel - Crawfordsville	PSD 107-16823-00038	11/21/2003 (Indiana)	34	0.0026 lb/MMBtu
SDI, Pittsboro, IN	PSD 063-16628-00037	8/29/2003 (Indiana)	48.4	**0.0026 lb/MMBtu**
SDI, Whitley, IN	PSD183-15170-00030	05/31/2002 (Indiana)	41.8	**0.0026 lb/MMBtu**
Merck, Rahway Plant	PCP -020003	9/18/2003 (New Jersey)	99.5	0.0033 lb/MMBtu
Hawkeye Generating LLC, IA	01-687	07/23/2002 (Iowa)	48.5	0.005 lb/MMBtu
Redbud	2000-090-C PSD	08/15/2001 (Oklahoma)	20	0.005 lb/MMBtu
Duke Energy Vermillion, LLC	PSD 165-10476-00022-	03/13/2003 (Indiana)	46.0	0.0054 lb/MMBtu
Interstate Power, IA	02-357	12/20/2002 (Iowa)	68	0.0054 lb/MMBtu
Tenaska, IN	MSOP125-12760-00039	11/12/2002 (Indiana)	40	0.0054 lb/MMBtu
Mustang Power, Ok	2001-132-C PSD	02/12/2002 (Oklahoma)	31	0.0055 lb/MMBtu
Cogentrix	MSOP 093-12432-00021	10/05/2001 (Indiana)	35	0.011 lb/MMBtu
Duke, AL	604-0023-X001, X002	12/11/2001 (Alabama)	35	0.0140 lb/MMBtu
Duke Energy Luna	PSD-NM-2450	12/29/2000 (new Mexico)	44.1	0.0160 lb/MMBtu
Duke Energy Hanging Rock	07-00503	12/28/2004 (Ohio)	30.60	0.016 lb/MMBtu
Cabot, MA	-	(Massachusetts)	26.6	0.0160 lb/MMBtu
Blount	402-0010-X001 AND X002	02/05/2001 (Alabama)	40	0.020 lb/MMBtu
Smith Cogen, OK	2000-115-C PSD	08/16/2001 (Oklahoma)	48	0.055 lb/MMBtu
Sithe Mystic Development	-	(Massachusetts)	96	0.080 lb/MMBtu
Ameripol, TX	PSD-TX-957	04/03/2000 (Texas)	54	0.29 lb/hr
NRG, OK	99-213-C M-1 PSD	10/25/2001 (Oklahoma)	22	no limit
US Army, AL	301-0050	1/5/2001 (Alabama)	13.4	no limit

Cold Mill Boiler (CMB #2)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**Boiler Heat input R (MMBtu/hr)**	**VOC Control Technology/ VOC Emissions Limit**
US Army, AL	301-0050	1/5/2001 (Alabama)	11.7	no limit

The Nucor Steel -Indiana proposed VOC BACT limit for the boiler is comparable with SDI - Pittsboro, Indiana and SDI -Whitley, Indiana, which are the most stringent BACT limits for boilers from the above table.

None of the sources in the above table have proposed or successfully implemented any add on control devices to control SO_2 emissions from boilers with sizes less than 100 MMBtu/hr or from non utility boilers. Therefore, the VOC BACT limit for the Cold Mill Boiler (CMB #2) is as follows:

(a) The VOC emissions from the Cold Mill Boiler (CMB #2) shall be limited to 0.0026 lb/MMBtu.

(b) The Permittee shall perform good combustion practices for the Cold Mill Boiler (CMB #2).

Various Natural Gas Combustion Units (preheaters, Dryout, Regenerator and Dryers)

Nucor requested to change the BACT limits from the following existing natural gas combustion units (tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer) to reflect the new U.S. EPA AP-42 emission factors (AP-42, July 1998). None of these natural gas-fired combustion units is being physically modified.

Natural Gas Combustion Units	Heat Input Rate (MMBtu/hr)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each
1 Acid Regeneration	5.6
2 Tundish Dryout Station (TD1 and TD2)	9.0 each
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each
5 Tundish Preheaters (TP1 - TP5)	6.0 each
1 Ladle Dryer	5.0

The existing tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer are fired by natural gas fuel.

<u>Step 1 – Identify Control Options, Step 2 – Eliminate Technically Infeasible Control Options, Step 3 – Rank Remaining Control Technologies by Control Effectiveness and Step 4 – Evaluate the Most Effective Controls and Document Results</u>

There are no control options identified, that are technically feasible to control VOC that is emitted at a small quantity from each combustion unit. See below table for summary of VOC emissions:

Natural Gas Combustion Units	VOC Emissions (tons/year)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.0185 each
1 Acid Regenerator	0.13
2 Tundish Dryouts (TD1 and TD2)	0.21 each
5 Ladle Preheaters (LP1 - LP5)	0.232 each
5 Tundish Preheaters (TP1 - TP5)	0.14 each
1 Ladle Dryer	0.12

Step 5 - Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to VOC emissions from tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator.

Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator			
Plant	**RBLC ID or Permit # / Date Issued**	**Heat Input Rate (MMBtu/hr)**	**VOC Control Technology/ Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038 (Indiana)	0.8 to 10	5.5 lb/MMCF or 0.0055 lb/MMBtu
Existing Limit - Nucor Steel - Crawfordsville	PSD 107-16823-00038 11/21/2003 (Indiana)	0.8 to 10	5.3 lb/MMCF or 0.0053 lb/MMBtu
SDI, Whitley	PSD 183-18426-00030 (11/21/2005) (Indiana)	10	0.0054 lb/MMBtu
	Proposed PSD 183-23905-00030	10	0.0055 lb/MMBtu
Steel Dynamics Hendricks	PSD 063-16628-00037 8/29/2003 (Indiana)	7.5	0.0055 lb/MMBtu
Charter Steel, Inc.	OH-0276 (4/14/2003) (Ohio)	20	0.0055 lb/MMBtu

While Nucor's existing BACT limit of 0.0053 lb/MMBtu is the most stringent VOC BACT limitation established for a nearly-identical unit, based on new emissions data for these sizes of natural gas combustion units EPA changed the VOC emission factor from 0.0053 lb/MMBtu or 5.3 lb/MMCF to 0.0055 lb/MMBtu or 5.5 lb/MMCF. Therefore, 0.0055 lb/MMBtu or 5.5 lb/MMCF is the most practically achievable VOC limit for the tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator. A more stringent limit is not obtainable without the use of add-on controls; which are technically infeasible at these levels of emissions. Therefore, the BACT for these existing natural gas emission units are as follows:

(a) The VOC BACT shall be:

Emission Units/ID	Heat Input Rate (MMBtu/hr)	Existing VOC BACT	Proposed VOC BACT Limit
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each	5.3 lb/MMCF	5.5 lb/MMCF
1 Acid Regeneration	5.6	5.3 lb/MMCF	5.5 lb/MMCF
2 Tundish Dryout Station (TD1 and TD2)	9.0 each	5.3 lb/MMCF	5.5 lb/MMCF
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each	5.3 lb/MMCF	5.5 lb/MMCF
5 Tundish Preheaters (TP1 - TP5)	6.0 each	5.3 lb/MMCF	5.5 lb/MMCF
1 Ladle Dryer	5.0	5.3 lb/MMCF	5.5 lb/MMCF

BACT for Carbon Monoxide (CO):

The proposed modification has a net increase of 100 tons of CO per year or greater. Therefore, all CO emission units affected by the modification, which are as follows, are required to apply Best Available Control Technology (BACT):

- Meltshop - Electric Arc Furnaces (EAFs)
- Meltshop - Ladle Metallurgical Furnaces (LMFs)
- One (1) 40 MMBtu/hr natural gas-fired Cold Mill Boiler (CMB #2)
- Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator

Meltshop - EAFs

CO will be emitted as a byproduct of incomplete combustion from the following sources -- charged and injected carbon, scrap steel, electrodes, and "foaming slag" operating practice. EAFs generate CO as a result of oxidation of carbon introduced into the furnace charge to refine the steel and as a result of the sublimation/oxidation of the carbon electrode. The CO emission increase from the EAFs based on maximum potential minus past actual emission is estimated at 2,216.8 tons/year.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control CO emissions from the Meltshop - EAFs:

(a) Operating Practice Modifications;
(b) Flaring of CO Emissions;
(c) CO Oxidation Catalysts;
(d) Post-Combustion Reaction Chamber;
(e) Catalytic Incineration;
(f) Oxygen Injection; and
(g) Direct Evacuation Control (DEC).

Step 2 – Eliminate Technically Infeasible Control Options

The test for technical feasibility of any control option is whether it is both available and applicable to reducing CO emissions from the existing EAFs. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

(a) Operating Practice Modifications -- Due to customer demands on quality and to stay competitive in the marketplace, the mill incorporates an improved foamy process to produce steel. In this process, carbon and oxygen will be blown into the furnaces below the slag line, creating an expanding "foam". The process will utilize charge and injection carbon to produce a competitive, marketable product. In this process, additional chemical energy is produced along with CO (due to oxidation of carbon) and that is intrinsically related to product quality. This process reduces electrical usage and extends the equipment life.

Due to marketplace demands on the type of products to be manufactured at the mill and the required product quality, Nucor does not propose any additional operating practice modifications that will alter CO emissions from the existing EAFs. Therefore, this control option will be eliminated for further evaluation in this BACT analysis.

(b) Flaring of CO Emissions -- Based upon a review of the previously listed information resources, there is no known application of flaring EAF exhaust gases. Flaring of emissions for CO destruction would require raising the exhaust gas temperature to 1,300 ^{o}F at a residence time of 0.5 second. The exhaust gas stream will be approximately 2,727,960 acfm at 250 ^{o}F. Thus, based on the relatively large gas volumetric flow at a substantial temperature differential, the auxiliary fuel requirements needed to operate the flare would be overwhelmingly large. Additionally, it can be speculated as to whether the flare would actually result in a decrease of CO emissions or increase thereof from supplemental fuel combustion, which would also result in an increase of NO_x emissions. Consequently, this control alternative is considered technically infeasible for EAF exhausts and thus, will not be considered any further in this BACT analysis.

(c) CO Oxidation Catalysts -- Based upon a review of the previously listed information resources, there is no known application of CO oxidation catalysts to control CO emissions from an EAF. The optimal working temperature range for CO oxidation catalysts is approximately 850 ^oF - 1,100 ^oF with a minimum exhaust gas stream temperature of 500 ^oF for minimally acceptable CO control. Exhaust gases from the EAF will undergo rapid cooling as they are ducted from the furnace. Thus, the temperature will be far below the minimum 500 ^oF threshold for effective operation of CO oxidation catalysts. Additionally, the particulate loading in the exhaust gas stream is anticipated to be too high for efficient operation of a CO oxidation catalyst. Masking effects such as plugging and coating of the catalyst surface would almost certainly result in impractical maintenance requirements, and would significantly degrade the performance of the catalyst. Consequently, this control alternative is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(d) Post-Combustion Reaction Chambers -- Based upon a review of the previously listed information resources, there is no known successful application of duct burners or thermal incinerators to control CO emissions from an EAF. It should be noted that this type of technology has recently been proposed for EAFs in the United States; however, the feasibility of these units to effectively reduce CO emissions, without resulting in severe operational problems, is unknown. Further, such units are expected to consume large quantities of natural gas and oxygen; resulting in excessive annual operating costs.

The principle of destruction within post combustion chambers is to raise the EAF exhaust gases to a sufficiently high temperature and for a minimum amount of time to facilitate oxidation. The combustion chamber configuration must provide effective mixing within the chamber with an acceptable residence time. Recuperative heat exchangers can be used with these systems to recover a portion of the exiting exhaust gas heat and reduce the auxiliary fuel consumption.

The amount of CO which could be oxidized with post combustion systems is uncertain, and precise performance guarantees are expected to be difficult to obtain from equipment manufacturers because of the lack of operating experience. In addition, there is the potential for additional emissions of NO_x from auxiliary fuel combustion. Further, due to the heat and particulate loading, the burners would have a short life expectancy, and may sustain severe maintenance and reliability problems. Additionally, a single or multiple duct burner system would not be able to heat the relatively cool gases from the EAF during cold cycling.

Potentially, there are two locations where post combustion chambers can be installed, i.e., upstream or downstream of an EAF baghouse. Locating upstream of the baghouse would take advantage of slightly elevated temperatures in the exhaust gas stream. However, at this location, the post combustion chamber would be subject to high particulate loading. The units would be expected to foul frequently from the particulate accumulation, and the burners would have severe maintenance and reliability problems. Thus, the installation of the post combustion chamber upstream of the baghouse is considered technically infeasible. Alternatively, the post combustion chamber could be installed downstream of the EAF baghouse. However, even at this location, fouling due to particulate matter can occur and more importantly, even cooler exhaust temperatures would be encountered. These cooler temperatures would greatly increase the auxiliary fuel requirements. The associated combustion of additional auxiliary fuel will result in an unacceptable increase in operating costs. Further, the combustion of additional fuel will result in increases in emissions to the atmosphere.

The only known proposed use of post combustion for CO was the initial minor source permit application (early 1990's) for Gallatin Steel, located in Ghent, Kentucky. This was proposed to control CO emissions less than 100 tons per year. This control application was unsuccessful and the standard Direct Evacuation Control (DEC) was subsequently proposed and accepted as BACT (2.0 lbs/ton) for the PSD permit.

Based upon the above discussions, the use of a post combustion chamber is considered technically infeasible for the existing EAFs and will not be considered any further in this BACT analysis.

(e) Catalytic Incineration -- Based upon a review of the previously listed information resources, there is no known application of catalytic incineration to control CO emissions from EAFs. Catalytic incinerators use a bed of catalyst that facilitates the overall combustion of combustible gases. The catalyst increases the reaction rate and allows the conversion of CO to CO_2 at lower temperatures than a thermal incinerator. The catalyst is typically a porous noble metal material which is supported in individual compartments within the unit. An auxiliary fuel-fired burner ahead of the bed heats the entering exhaust gases to 500 ^oF – 600 ^oF to maintain proper bed temperature. Recuperative heat exchangers are used to recover the exiting exhaust gas heat and reduce the auxiliary fuel consumption. Secondary energy recovery is typically 70 percent.

Catalytic incineration systems are limited in application due to potential poisoning, deactivation, and/or blinding of the catalyst. Lead, arsenic, vanadium, and phosphorus are generally considered poisons to catalysts and deactivate the available reaction sites on the catalyst surface. Particulate can also build up on the catalyst, effectively blocking the porous catalyst matrix and rendering the catalyst inactive. In cases of significant levels of poisoning compounds and particulate loading, catalyst replacement costs are significant.

As in the thermal incineration discussion, potentially, there are two locations where the incinerator can be installed, i.e., upstream or downstream of the EAF baghouse. For the same reasons discussed earlier (e.g., fouling due to particulate matter), the upstream location is considered technically infeasible. Alternatively, the incinerator can be installed downstream of the EAF baghouse. However, even at this location, fouling due to particulate matter can occur, and further, the exhaust will be at a lower temperature. These cooler temperatures would greatly increase the auxiliary fuel requirements. The associated combustion of additional auxiliary fuel will result in an unacceptable increase in operating costs. Further, the combustion of additional fuel will result in increases in emissions to the atmosphere.

Due to the lack of application of catalytic incineration in the steel industry and potentially adverse technology applicability issues, this control alternative is considered technically infeasible and will not be considered any further in this BACT analysis.

(f) Oxygen Injection -- Based upon a review of the previously-listed information resources, there is no known application of oxygen injection for controlling CO emissions from an EAF. A theoretical means of reducing CO would be oxygen injection at the entrance of the ductwork to increase oxidation of the available CO to CO_2. The increase in CO oxidation which could be achieved, however, is unknown. This approach would be purely experimental and is a procedure that is currently not conducted in EAF operations in steel mills in the United States. Oxygen injection directly into the furnace is an experimental operating practice in Europe used to increase the heat input to the melt, but the practice has not been demonstrated to reduce CO emissions.

Typically, the DSE system will draw air into the duct, creating an oxygen-rich mixture of EAF exhaust gases where CO is oxidized. The addition of oxygen is expected to provide little if any additional conversion of CO. The capability is also limited due to the cyclic operating schedule (i.e., hot-cold cycling). Exhaust gas temperatures will fluctuate during each melt and at times, drop below 1,350 ^{o}F. It is estimated that this will occur for 5 to 10 minutes during each melt. The minimum temperature encountered is estimated at approximately 350 ^{o}F. Thus, during these periods, the thermal destruction efficiency is expected to decrease, resulting in elevated CO emissions. Consequently, this control alternative is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

(g) Direct Evacuation Control (DEC) -- In the steel industry, there are generally two principal capture systems employed during EAF operation to control the process emissions generated during melting and refining. One is the DEC system and the other is the side draft hood system. Side draft hoods require higher air flow rates than a DEC system and are not widely used. Based upon a review of the previously listed information resources, DEC system continues to be the primary control technology for controlling CO emissions from an EAF. The existing EAFs is equipped with a DEC system for mitigation of CO emissions.

A DEC system is connected to the meltshop canopy collector system which further directs exhaust gases to the EAF baghouse. During melting and refining, a slight negative pressure is maintained within the furnace to withdraw exhaust gases through the DEC duct. The DEC system allows excellent process emissions capture and combustion of CO, and requires the lowest air volume of other EAF capture devices.

Without manifestation of a DEC system on the EAF, a greater quantity of CO would exit the furnace. Also, during operation, the furnace shell would develop a negative pressure, thus preventing an indraft of air/oxygen at the doors which facilitates CO oxidation in the furnace shell. The lack of negative pressure would also prevent the indraft of air/oxygen at the gap between the fourth-hole elbow and duct, thereby preventing additional CO oxidation in the water-cooled evacuation ductwork.

Step 4 – Evaluate the Most Effective Controls and Document Results

Various control alternatives were reviewed for technical feasibility in controlling CO emissions from the existing EAFs and none of the control options were determined to be technically feasible, except for the DEC, which is already being used by the existing EAF operation.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, including Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Meltshop Electric Arc Furnaces (EAFs):

Meltshop -Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**CO Control Technology/CO Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	2.0 lb/ton
Current limit: Nucor Steel - Crawfordsville	PSD/SSM 107-16823-00038	11/21/2003	502 tons/hr and 4,397,520 tons/yr	2.0 lb/ton
STEEL MILLS WITH CONTINUOUS FEED (CONSTEEL) PROCESS				

Meltshop -Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**CO Control Technology/CO Emissions Limit**
Nucor Steel – Darlington, SC	0820-0001-CW	1/8/1998 (South Carolina)	300 tons/hr	2.76 lb/ton/3.13[b] lb/ton
Nucor Steel - Hertford County	08680T09	11/23/2004 (North Carolina)	capacity unknown	2.3 lb/ton
Ameristeel – Charlotte, NC	19-99v-567	4/29/1999 (North Carolina)	569,400 tons/yr	6.0 lb/ton
New Jersey Steel- Sayreville	-	- (New Jersey)	capacity unknown	5.8 lb/ton
STEEL MILLS WITH BATCH PROCESS				
IPSCO – Montpelier, IA	94-A-548-S3	03/13/1996 (Iowa)	164 tons/hr	**1.93 lb/ton***
Gerdau Ameristeel -Knoxville	-	(Tennessee)	500,000 tons/yr	2.0 lb/ton
Nucor Steel - Memphis	0710-04PC	11/6/2000 (Tennessee)	150 tons/hr	2.0 lb/ton
Nucor Auburn Steel	7-0501-00044/00007	6/22/2004 (New York)	110 tons/hr	2.0 lb/ton
Gerdau AmeriSteel – Duval County	031057-007-AC (PSD-FL-349)	9/25/2005 (Florida)	1,192,800 tons/yr	2.0 lb/ton
Nucor Steel – Tuscaloosa, Inc.	413-0033	6/6/2006 (Alabama)	300 tons/hr	2.0 lb/ton
SDI - Pittsboro	PSD 063-16628-00037	8/29/2003 (Indiana)	125 tons/hr	2.0 lb/ton*
Nucor Steel –Berkeley County	-	- (South Carolina)	capacity unknown	2.0 lb/ton
SeverCorr – Columbus	1680-00064	3/31/2005 Mississippi	capacity unknown	2.0 lb/ton
SDI – Columbia City	PSD 183-10097-00030	7/9/1999 (Indiana)	200 tons/hr	2.0 lb/ton
Nucor-Yamato Steel – Blytheville		Arkansas	450 tons/hr	2.0 lb/ton
IPSCO – Axis	503-8065	10/16/1998 (Alabama)	200 tons/hr	2.0 lb/ton
Nucor Steel – Hickman	1139-AOP-R5	6/9/2003 (Arkansas)	capacity – 425 tons/hr	2.0 lb/ton
Nucor Steel – Decatur, (formerly Trico Steel)	712-0037	7/11/2002 (Alabama)	440 tons/hr	2.0 lb/ton
SDI – Butler, IN	CP033-8091-00043	6/25/1997 (Indiana)	200 tons/hr	2.0 lb/ton
Gallatin – Ghent	-	- (Kentucky)	capacity - unknown-	2.0 lb/ton
Charter Steel – Saukville, WI	00DCF041	6/9/2000 (Wisconsin)	550,000 tons/yr	3.83 lb/ton
Chaparral Steel – Petersburg	51264	4/24/1998 (Virginia)	215 tons/hr	4.0 lb/ton combined limit for EAF and LMF
Nucor Steel – Norfolk	35677RC3	6/22/2004 (Nebraska)	EAF - (capacity unknown) - NOx emissions limit of 0.54 lb/ton	4.74 lb/ton
Quanex Corporation -MacSteel Division	693-AOP-RO	2/18/1998- Arkansas)	86 tons/hr	5.0 lb/ton
Nucor Steel – Jewett	PSD-1029	1/5/2003 (Texas)	240 tons/hr	5.0214 lb/ton
Beta Steel	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	5.4 lb/ton
Roanoke Electric Steel – Roanoke, VA	20131	11/6/1998 (Virginia)	100 tons/hr	6.0 lb/ton
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	50 tons/hr	6.0 lb/ton
Nucor Steel - Plymouth	-	Utah	capacity unknown	1200 lbs/hr

The Nucor – Indiana's proposed CO limit of 2.0 lb/ton for the EAFs is comparable with most of the sources in the above table, except for IPSCO which is more stringent.

IPSCO, Iowa - In the previous permit, IPSCO was limited in terms of pound per hour. In permit 94-A548-S3, issued on March 13, 1996, the EAF operation was limited to CO emissions of 1.93 lbs/ton. IPSCO employs different operating practices using a twin shell furnace that only allows one furnace to operate at a time, while Nucor's limit was based on two (2) EAFs,an AOD, desulfurization station, two continuous casters, and an LMF . Therefore, IPSCO is not comparable with Nucor – Indiana and will not be considered in this BACT analysis.

No other mills have proposed or successfully implemented any controls besides DEC combustion. All the other control options have been shown to be technically infeasible. Therefore, the following is the CO BACT determined for the EAFs.

(a) The total CO emissions from the meltshop EAFs baghouses 1 and 2, which control the two (2) EAFs, AOD, desulfurization station, two (2) Continuous Casters and the new LMF shall be limited to 2.0 pounds per ton.

Meltshop - LMFs

CO will be emitted as a byproduct of incomplete or inefficient combustion of the molten matrix in the LMF. Typically, CO emissions from combustion sources depend on the oxidation efficiency of the fuel. By controlling the combustion process carefully, CO emissions can be minimized. The CO emission increase from the LMFs, including the new LMF based on maximum potential minus past actual emission is estimated at 79.0 tons/year.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control CO emissions from the Meltshop - LMFs:

(a) Flaring of CO Emissions;

(b) CO Oxidation Catalysts; and

(c) Catalytic Incineration.

Step 2 – Eliminate Technically Infeasible Control Options

The test for technical feasibility of any control option is whether it is both available and applicable to reducing CO emissions from the LMF. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

(a) Flaring of CO Emissions -- Based upon a review of the previously listed information resources including the RBLC database, there are no known applications of flaring for similar LMF exhaust gases for CO control. Flaring of emissions for CO destruction would require raising the exhaust gas temperature to 1,300°F at a residence time of 0.5 second. Presently, the exhaust gas stream from the LMF is around 200,000 acfm. Thus, based on the relatively large gas volumetric flow at a substantial temperature differential, the auxiliary fuel requirements needed to operate the flare would be overwhelmingly large. Additionally, it can be speculated as to whether the flare would actually result in a decrease of CO emissions or increase thereof from supplemental fuel combustion, which would also result in an increase of NO_x emissions. Consequently, this control alternative is considered technically infeasible for the LMF exhaust and thus, will not be considered any further in this BACT analysis.

(b) CO Oxidation Catalyst -- Based upon a review of the previously listed information resources including the RBLC database, there are no known applications of CO oxidation catalysts to control CO emissions from an LMF exhaust.

The optimal working temperature range for CO oxidation catalysts is approximately 850°F - 1,100°F with a minimum exhaust gas stream temperature of 500°F for minimally acceptable CO control. Exhaust gas temperature from the LMF is below the minimum threshold for effective operation of CO oxidation catalysts. Additionally, the particulate loading in the exhaust gas stream may be a detriment to efficient operation of a CO oxidation catalyst. Masking effects such as plugging and coating of the catalyst surface would almost certainly result in impractical maintenance requirements, and would significantly degrade the performance of the catalyst. Thus, this control alternative is considered technically infeasible for the LMF exhaust and will not be considered any further in this BACT analysis.

(c) Catalytic Incineration -- Based upon a review of the previously listed information resources including the RBLC database, there are no known applications of catalytic incineration to control CO emissions from LMF operations.

Catalytic incinerators use a bed of catalyst that facilitates the overall combustion of combustible gases. The catalyst increases the reaction rate and allows the conversion of CO to CO_2 at lower temperatures than a thermal incinerator.

The catalyst remains susceptible to particulate interference from the LMF exhaust. Further, this technology performs best under stable gas flows with nominal perturbations in pollutant concentrations and temperature - conditions that may not be always sustained under all phases of LMF operation.

Thus, this control alternative is considered technically infeasible for the LMF exhaust and will not be considered any further in this BACT analysis.

Step 4 – Evaluate the Most Effective Controls and Document Results

Various control alternatives were reviewed for technical feasibility in controlling CO emissions from the LMF exhaust. Based on a review of similar operations, the present operation of the LMF constitutes the best available control technology.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, including Indiana air permits and sources permitted by other state agencies, identified the following with respect to the Meltshop Ladle Metallurgical Furnaces (LMFs):

Meltshop - LMFs				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**LMF Capacity**	**CO Control Technology/CO Emissions Limit**
Proposed: Nucor Steel Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	0.07125 lb/ton
Current limit: Nucor Steel Indiana	PSD/SSM 107-16823-00038	11/21/2003	502 tons/hr and 4,397,520 tons/yr	0.07125 lb/ton
SteelCorr, Inc.	2062-AOP-RO	7/22/2004 (Arkansas)	350 tons/hr -	**0.05 lb/ton**
Nucor-Yamato Steel – Blytheville	883-AOP-R4	4/6/2005 (Arkansas)	250 tons/hr	0.28 lb/ton
SDI – Butler, IN	CP033-8091-00043	6/25/1997 (Indiana)	200 tons/hr	0.1 lbs/ton
Charter Manufacturing Co., Inc.	13-04176	4/14/2003 (Ohio)	110 tons/hr	33 lbs/hr (equivalent to 0.3 lb/ton)
Roanoke Electric Steel – Roanoke	20131	11/6/1998 (Virginia)	100 tons/hr	48 lb/hr (equivalent to 0.48 lb/ton)
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	50 tons/hr -	0.6 lb/ton
SDI - Pittsboro	PSD 063-16628-00037	8/29/2003 (Indiana)	125 tons/hr	2 lbs/ton combined limit with the EAF:
Beta Steel - Portage	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	817 lbs/hr combined limits for LMF, EAF, caster and natural gas combustion (equivalent to 5.4 lbs/ton)
Republic Engineered Products,	15-76-05-0694	4/24/2002	220 tons/hr	4.2 lbs/hr

Meltshop - LMFs				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**LMF Capacity**	**CO Control Technology/CO Emissions Limit**
Inc or Republic Technologies International, LLC.		(Ohio)		
Nucor Steel – Jewett	PSD-1029	1/5/2003 (Texas)	capacity unknown	57.89 lbs/hr

Nucor Steel - Indiana - Nucor is proposing to maintain its current LMFs CO limit of 0.07125 lb/ton.

Republic Engineered Products, Inc. or Republic Technologies International, LLC. - The RBLC listed this source with the most stringent BACT limit for CO at 0.019 lb/ton. However, based on the actual permit the source's LMF CO emission is limited to 4.2 lbs/hr. It is not appropriate to compare the pounds per hour limits to a limit that has a different unit of measurement such as lb/ton. Therefore, this source will not be included in the BACT analysis.

SteelCorr, Inc. - This source has a VOC emission limit of 0.05 lb/ton, which is more stringent than Nucor Steel - Indiana. However, according to ADEQ, State of Arkansas Department of Environmental Quality, this plant was never built. Therefore, it will not be considered in this BACT analysis.

The CO BACT limit for the Meltshop - LMFs is as follows:

(a) The total CO emissions from the two (2) LMFs, identified as EU-13, venting to the LMF baghouse stack S-13 shall be limited to 0.07125 lb/ton.

Note: The new LMF CO BACT limit has been included with the EAFs CO BACT since the new LMF vents into the EAFs stacks.

Cold Mill Boiler (CMB #2)

CO will be emitted as a byproduct of incomplete or inefficient combustion of natural gas in the boiler. Typically, CO emissions from combustion sources depend on the oxidation efficiency of the fuel. By controlling the combustion process carefully, CO emissions can be minimized. CO emissions result when there is an insufficient residence time at high temperature to complete the final step in hydrocarbon oxidation. The new cold mill boiler would have a PTE of 10.7 tons/year of CO

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control CO emissions from boilers:

(a) Fuel Spec: Clean-Burn Fuel;
(b) Good Combustion Practice
(c) Flaring of CO Emissions;
(d) CO Oxidation Catalysts;
(e) Post-Combustion Reaction Chamber; and
(f) Catalytic Incineration.

Step 2 – Eliminate Technically Infeasible Control Options

The test for technical feasibility of any control option is whether it is both available and applicable to reducing CO emissions from the boiler.

(a) Fuel Spec: Clean-Burn Fuel -- In order to reduce CO emissions from the boiler, combustion of a clean burning fuel such as natural gas is almost imperative. Among traditional fuels, natural gas is considered a clean-burn fuel since it has a very low potential for generating CO emissions. The proposed new boiler will utilize only natural gas as the primary fuel, and propane for back up fuel only. Based on a review of the RBLC database, natural gas is the clean burn fuel of choice for similar boilers.

(b) Good Combustion Practice -- Based upon a review of the RBLC database, good combustion practice and combustion control has been listed as the means of reducing CO emissions from similar boilers. Combustion control is accomplished primarily through boiler "design and operation". Combustion efficiency is often related to the three (3) "T's" of combustion: Time, Temperature and Turbulence. These components of combustion efficiency are designed into the boiler to maximize fuel efficiency and reduce operating costs.

Good combustion generally requires the following:

(1) High temperature;

(2) Good Air/Fuel Mixing;

(3) Sufficient Excess Air; and

(4) Sufficient Residence Time.

(c) Flaring of CO Emissions -- Based upon a review of the RBLC database, there are no known applications of flaring for similar boiler exhaust gases for CO control. Flaring of emissions for CO destruction would require raising the exhaust gas temperature to 1,300 ^{o}F at a residence time of 0.5 second. Presently, the exhaust gas stream is around 30,000 acfm at 580 ^{o}F. Thus, based on the relatively large gas volumetric flow at a substantial temperature differential, the auxiliary fuel requirements needed to operate the flare would be overwhelmingly large. Additionally, it can be speculated as to whether the flare would actually result in a decrease of CO emissions or increase thereof from supplemental fuel combustion, which would also result in an increase of NO_x emissions. Consequently, this control alternative is not considered technically feasible for the boiler and thus, is precluded from further consideration in this BACT analysis.

(d) CO Oxidation Catalysts - The only other technology capable of reducing CO emissions below those obtained through good combustion control is an oxidation catalyst. Oxidation catalysts have been used to reduce CO emissions as a post combustion control system on large scale combustion turbines. The optimal working temperature range for CO oxidation catalysts is approximately 850 ^{o}F - 1,100 ^{o}F with a minimum exhaust gas stream temperature of 500 ^{o}F for minimally acceptable CO control. Typical catalyst control efficiencies for CO are 25% to 50%.

The proposed Cold Mill Boiler exhaust temperature will be approximately 400 ^{0}F which is below 500 ^{0}F. Therefore, this control technology is therefore not technically feasible to control the CO emissions from the boiler.

Based upon review of the RBLC database, Interstate Power & Light, now Iowa Power & Light employs a CO oxidation catalyst to control CO emissions from a boiler. However, this boiler is used as a cogeneration system to turbines to generate electric.

Therefore, this control option is not considered technically feasible for the proposed Cold Mill Boiler and thus, is precluded from further consideration in this BACT analysis.

(e) Post-Combustion Reaction Chambers -- Based upon a review of the RBLC database, there are no known successful applications of duct burners or thermal incinerators to control CO emissions from a boiler. Such units are expected to consume large quantities of natural gas and oxygen; resulting in excessive annual operating costs.

The principle of destruction within post-combustion chambers is to raise the furnace exhaust gases to a sufficiently high temperature and for a minimum amount of time to facilitate oxidation. The combustion chamber configuration must provide effective mixing within the chamber with an acceptable residence time. Recuperative heat exchangers can be used with these systems to recover a portion of the exiting exhaust gas heat and reduce the auxiliary fuel consumption.

The amount of CO, which could be oxidized with post combustion systems, is uncertain, and precise performance guarantees are expected to be difficult to obtain from equipment manufacturers because of the lack of operating experience. Further, due to the heat and particulate loading, the burners would have a short life expectancy, and may sustain severe maintenance and reliability problems. Additionally, a single or multiple duct burner system would not be able to heat the relatively cool gases from the boiler during cold cycling. Based upon the above discussion, the use of a post combustion chamber is not considered viable for the boiler and is precluded from further consideration in this BACT analysis.

(f) Catalytic Incineration -- Based upon a review of the RBLC database, there are no known applications of catalytic incineration to control CO emissions from boilers.
Catalytic incinerators use a bed of catalyst that facilitates the overall combustion of combustible gases. The catalyst increases the reaction rate and allows the conversion of CO to CO_2 at lower temperatures than a thermal incinerator. The catalyst is typically a porous noble metal material, which is supported in individual compartments within the unit. An auxiliary fuel-fired burner ahead of the bed heats the entering exhaust gases to 500 ^{o}F – 600 ^{o}F to maintain proper bed temperature. Recuperative heat exchangers are used to recover the exiting exhaust gas heat and reduce the auxiliary fuel consumption. Secondary energy recovery is typically 70 percent.

Catalytic incineration systems are limited in application due to potential poisoning, deactivation, and/or blinding of the catalyst. Lead, arsenic, vanadium, and phosphorus are generally considered poisons to catalysts and deactivate the available reaction sites on the catalyst surface. Particulate can also build up on the catalyst, effectively blocking the porous catalyst matrix and rendering the catalyst inactive. In cases of significant levels of poisoning compounds and particulate loading, catalyst replacement costs are significant.

Due to the lack of application of catalytic incineration in the steel industry and potentially adverse technology applicability issues, this control alternative is considered not technically feasible and will be precluded from further consideration in this BACT analysis.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The only technically feasible control option for the Cold Mill Boiler (CMB #2) is "good combustion practice and the use of natural gas as primary fuel.

Step 4 – Evaluate the Most Effective Controls and Document Results

Various control alternatives were reviewed for technical feasibility in controlling CO emissions from the boiler. With the exception of natural gas combustion and good combustion practice, the applicability of the remaining control options was determined to be technically infeasible. Based on a review of the information resources referenced earlier, it is revealed that these control options have not been successfully implemented to reduce CO emissions from similar boilers.

Combustion control is accomplished primarily through boiler design and operation. Combustion efficiency is often related to the three (3) "T's" of combustion: Time, Temperature and Turbulence. These components of combustion efficiency are designed into the boiler to maximize fuel efficiency and reduce operating costs.

Good combustion generally requires the following:

(a) High temperature;

(b) Good Air/Fuel Mixing;

(c) Sufficient Excess Air; and

(d) Sufficient Residence Time.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, including Indiana air permits and sources permitted by other states agencies, identified the following with respect to boilers:

Cold Mill Boiler (CMB #2)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**Boiler Heat input F (MMBtu/hr)**	**CO Control Technology/ CO Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	40	0.061 lb/MMBtu
Existing Boiler: Nucor Steel - Crawfordsville	PSD 107-16823-00038	11/21/2003 (Indiana)	34	0.061 lb/MMBtu
Iowa Power & Light	02-357	12/20/2002 (Iowa)	68	**0.0164 lb/MMBtu**
Duke Energy Luna	PSD-NM-2450	12/29/2000 (new Mexico)	44.1	**0.022 lb/MMBtu**
Merck, Rahway Plant	PCP -020003	9/18/2003 (New Jersey)	99.5	**0.036 lb/MMBtu**
Duke Energy Hanging Rock	07-00503	12/28/2004 (Ohio)	30.60	**0.037 lb/MMBtu**
SDI, Pittsboro, IN	PSD 063-16628-00037	8/29/2003 (Indiana)	48.4	0.061 lb/MMBtu
Hawkeye Generating LLC, IA	01-687	07/23/2002 (Iowa)	48.5	0.073 lb/MMBtu
Tenaska, IN	MSOP125-12760-00039	11/12/2002 (Indiana)	40	0.073 lb/MMBtu
Sithe Mystic Development	-	(Massachusetts)	96	0.08 lb/MMBtu
Ameripol, TX	PSD-TX-957	04/03/2000 (Texas)	54	0.08 lb/MMBtu
Redbud	2000-090-C PSD	08/15/2001 (Oklahoma)	20	0.082 lb/MMBtu
Duke Energy Vermillion, LLC	PSD 165-10476-00022-	03/13/2003 (Indiana)	46.0	0.082 lb/MMBtu
Cogentrix	MSOP 093-12432-00021	10/05/2001 (Indiana)	35	0.082 lb/MMBtu
SDI, Whitley, IN	PSD183-15170-00030	05/31/2002 (Indiana)	41.8	0.084 lb/MMBtu
Mustang Power, Ok	2001-132-C PSD	02/12/2002 (Oklahoma)	31	0.084 lb/MMBtu
Smith Cogen, OK	2000-115-C PSD	08/16/2001 (Oklahoma)	48	0.084 lb/MMBtu
Duke, AL	604-0023-X001, X002	12/11/2001 (Alabama)	35	0.1350 lb/MMBtu

Cold Mill Boiler (CMB #2)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**Boiler Heat input R (MMBtu/hr)**	**CO Control Technology/ CO Emissions Limit**
Cabot, MA	-	(Massachusetts)	26.6	0.15 lb/MMBtu
Blount	402-0010-X001 AND X002	02/05/2001 (Alabama)	40	0.08 lb/MMBtu
NRG, OK	99-213-C M-1 PSD	10/25/2001 (Oklahoma)	22	no limit
US Army, AL	301-0050	1/5/2001 (Alabama)	13.4	no limit
US Army, AL	301-0050	1/5/2001 (Alabama)	11.7	no limit

Four sources from the above table have CO limits that are more stringent than the proposed Nucor Steel - Crawfordsville limit.

Interstate Power & Light, now Iowa Power & Light (IPL)– This source has a limit of 0.0164 lb/MMBtu for a 68 MMBtu/hr boiler, which employs a CO oxidation catalyst to control CO emissions from this boiler. This boiler is not comparable to the Nucor – Indiana Cold Mill Boiler #2, because IPL's boiler is used as a cogeneration system for turbines to generate electricity, while the Cold Mill Boiler is used to generate steam for process heating. Therefore, IPL will not be considered in this BACT analysis.

Duke Energy Luna – This source has a limit of 0.022 lb/MMBtu for a 44.1 MMBtu/hr boiler. However, this boiler is used as a cogeneration system for the turbines to generate electric. Therefore, this boiler is not comparable to the Nucor CMB #2 boiler since it is used to generate steam for process heating. Therefore, Duke Energy Luna will not be considered in this BACT analysis.

Merck, Rahway Plant, New Jersey - This source has a CO limit of 0.036 lb/MMBtu for a 99.5 MMBtu/hr boiler. This boiler uses natural gas co-fired with the waste solvents generated by the plant. This boiler is controlled by a Selective Catalytic Reduction (SCR) system. Based on the information from New Jersey Environmental Protection Agency, this boiler is used as a control device to burn Merck's Pharmaceutical waste solvents generated from all its production processes, instead of hauling the waste solvents for disposal offsite as hazardous wastes. Therefore, if not for this function Merck's boiler would not be controlled by a SCR. Merck's boiler is not comparable with the Nucor - Crawfordsville CMB #2 boiler since Nucor's boiler is used specifically to generate steam for process heating. Therefore, Merck will not be considered in this BACT analysis.

Duke Energy Hanging Rock - This source has a limit of 0.037 lb/MMBtu for a 30.60 MMBtu/hr boiler. However, this boiler is used as a cogeneration system for the turbines to generate electricity. Therefore, this boiler is not comparable to the Nucor CMB #2 boiler since it is used to generate steam for process heating. Therefore, Duke Energy Luna will not be considered in this BACT analysis.

The following CO BACT has been determined for the Cold Mill Boiler:

(a) The CO emissions from the Cold Mill Boiler (CMB #2) shall be limited to 0.061 lb/MMBtu.

(b) The Permittee shall perform good combustion practices for the Cold Mill Boiler (CMB #2).

Various Natural Gas Combustion Units (preheaters, Dryout, Regenerator and Dryers)

Nucor requested to change the BACT limits from the following existing natural gas combustion units (tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer) to reflect the new U.S. EPA AP-42 emission factors (AP-42, July 1998). None of these natural gas-fired combustion units is being physically modified.

Natural Gas Combustion Units	Heat Input Rate (MMBtu/hr)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each
1 Acid Regeneration	5.6
2 Tundish Dryout Station (TD1 and TD2)	9.0 each
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each
5 Tundish Preheaters (TP1 - TP5)	6.0 each
1 Ladle Dryer	5.0

The existing tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer are fired by natural gas fuel.

Step 1 – Identify Control Options, Step 2 – Eliminate Technically Infeasible Control Options, Step 3 – Rank Remaining Control Technologies by Control Effectiveness and Step 4 – Evaluate the Most Effective Controls and Document Results

There are no control options identified, that are technically feasible to control CO that is emitted at such a small quantity from each combustion unit. See below table for summary of CO emissions:

Natural Gas Combustion Units	CO Emissions (tons/year)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.07 each
1 Acid Regenerator	0.49
2 Tundish Dryouts (TD1 and TD2)	0.79 each
5 Ladle Preheaters (LP1 - LP5)	0.876 each
5 Tundish Preheaters (TP1 - TP5)	0.526 each
1 Ladle Dryer	0.44

Step 5 - Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to VOC emissions from tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator.

Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator			
Plant	**RBLC ID or Permit # / Date Issued**	**Heat Input Rate (MMBtu/hr)**	**CO Control Technology/ Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038 (Indiana)	0.8 to 10	84 lb/MMCF or 0.084 lb/MMBtu
Existing Limit - Nucor Steel - Crawfordsville	PSD 107-16823-00038 11/21/2003 (Indiana)	0.8 to 10	20 lb/MMCF or 0.02 lb/MMBtu
SDI, Whitley	PSD 183-18426-00030 (11/21/2005) (Indiana)	10	0.084 lb/MMBtu

Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator			
Plant	RBLC ID or Permit # / Date Issued	Heat Input Rate (MMBtu/hr)	CO Control Technology/ Emissions Limit
	Proposed PSD 183-23905-00030	10	0.084 lb/MMBtu
Steel Dynamics Hendricks	PSD 063-16628-00037 8/29/2003 (Indiana)	7.5	0.084 lb/MMBtu
Charter Steel, Inc.	OH-0276 (4/14/2003) (Ohio)	20	0.082 lb/MMBtu

While Nucor's existing BACT limit of 20 lb/MMCF or 0.02 lb/MMBtu is the most stringent CO BACT limitation established for a nearly-identical unit, based on new emissions data for these sizes of natural gas combustion units, EPA changed the CO emission factor from 0.02 lb/MMBtu or 20 lb/MMCF to 0.084 lb/MMBtu or 84 lb/MMCF. Therefore, 0.084 lb/MMBtu or 84 lb/MMCF is the most practically achievable CO limit for the tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator. A more stringent limit is not obtainable without the use of add-on controls; which are technically infeasible at these levels of emissions. Therefore, the BACT for these existing natural gas emission units are as follows:

(a) The CO BACT shall be:

Emission Units/ID	Heat Input Rate (MMBtu/hr)	Existing CO BACT	Proposed CO BACT Limit
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each	20 lb/MMCF	84 lb/MMCF
1 Acid Regeneration	5.6	20 lb/MMCF	84 lb/MMCF
2 Tundish Dryout Station (TD1 and TD2)	9.0 each	20 lb/MMCF	84 lb/MMCF
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each	20 lb/MMCF	84 lb/MMCF
5 Tundish Preheaters (TP1 - TP5)	6.0 each	20 lb/MMCF	84 lb/MMCF
1 Ladle Dryer	5.0	20 lb/MMCF	84 lb/MMCF

BACT for Particulate Matter (PM/PM10)

The proposed modification has a net increase of 25 tons of PM per year or greater and 15 tons of PM10 per year or greater. Therefore, all CO emission units affected by the modification, which are as follows, are required to apply Best Available Control Technology (BACT):

- Meltshop - Electric Arc Furnaces (EAFs)
- Meltshop - Ladle Metallurgical Furnaces (LMFs)
- Proposed one (1) 40 MMBtu/hr natural gas-fired Cold Mill Boiler (CMB #2)
- Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator

Meltshop - EAFs

Particulate emissions from the EAFs will be captured by the Direct Evacuation Control (DEC) and a roof exhaust system and ultimately exhausted through two baghouses. The maximum flow rate through the baghouse is estimated at approximately 2,727,960 acfm at 250 ^{o}F. The PM emission increase is 153.3 tons/year and the PM10 emission increase is 61.3 tons/year.

Note: Although the AOD is being modified, its emissions are combined with the EAFs emissions, since it is ducted into the EAFs stack. Therefore, the BACT analysis will be conducted for this combined airstream. In addition, there are no separate AOD BACT limits established for similar sources.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control PM/PM10 emissions from the Meltshop - EAFs:

(a) Electrostatic Precipitator (ESP),
(b) High Efficiency Cyclones,
(c) High Energy Scrubbers, and
(d) Fabric Filters (i.e., baghouses).

Step 2 – Eliminate Technically Infeasible Control Options

The test for technical feasibility of any control option is whether it is both available and applicable to reducing PM/PM10 emissions from the existing EAFs. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

(a) ESPs - use an electrostatic field to charge particulate matter contained in the gas stream and then attract and collect the particles on a collection surface of opposite charge. While ESPs have a very high removal efficiency (99% or better) for many sources of particulate, they have been proven as unsuitable for applications involving particulate with a high concentration of iron compounds such as those emitted from EAFs. Due to the electromagnetic properties of small charged particles of iron compounds in an electric field, the particles adhere very strongly to the collection plates of an ESP and are extremely difficult to dislodge, resulting in an in-effectivity of the ESP. In addition, the exhaust gas stream from an EAF contains high levels of zinc (10% - 20%) and other metal compounds which can foul ESP electrodes. Thereby, making the ESP ineffective. Therefore, ESP is considered technically infeasible for controlling particulate emissions from EAFs. The OAQ is not aware of a steel mill where an ESP has been operated to control particulate emissions from an EAF.

(b) High Efficiency Cyclones - Particulate removal in cyclone collectors is achieved through the action of inertial forces, especially centrifugal. As the gas stream enters the top of the cyclone, a vortex is induced as it is forced to travel a circular path. Centrifugal forces cause the heavier particles to concentrate near the outer wall of the cyclone and particle of lesser mass to remain closer to the center of the vortex. Frictional and gravitational forces then act on the particles closest to the wall, causing them to fall toward the bottom of the cyclone, where they are collected in a hopper. Within the lower segment of the cyclone, the direction of the gas-flow vortex is reversed, and an inner ascending vortex is formed. The inner vortex consists of comparatively particulate-free air, which is collected through an outlet duct at the top of the cyclone. Cyclone collectors are considered technically feasible. However, they achieve the lowest particulate removal efficiencies (less than 90%) of all particulate control devices, especially for submicron particulates that will be emitted from the EAF. The OAQ is not aware of a steel mill where a cyclone collector has been operated to effectively control particulate emissions from an EAF.

(c) High Energy Scrubbers - High energy wet scrubbers are technically feasible and can achieve a high particulate collection efficiency (90% or better), but at the expense of a punitive pressure drop (ranging from 6 - 20 inches of water), higher operational utilities, generation of large quantities of sludge along with the associated problem of sludge handling, de-watering, and disposal. The OAQ is not aware of a steel mill where a high energy wet scrubber has been operated to control particulate emissions from an EAF.

(d) Fabric filters or baghouses are technically feasible for collecting fine particulate matter emissions associated with metals from EAFs or other types of furnaces that have high particulate emissions. They can also achieve the highest control efficiency, among other particulate control devices, as applied to EAFs. Positive pressure baghouses or negative pressure baghouses have been used in the steelmaking industry.

(i) Positive pressure baghouses operate at internal pressures greater than the atmospheric pressure. Typically, the fans are located before the fabric filters, (as Nucor would say the fans are on the dirty side) This allows the fans to pull air from the EAF and push the dust laden air through the fabric filters and into the ambient air via a continuous ridge vent (old design) rather than a stack. The discharge area of a ridge vent is on the order of four times that of a single stack.

(ii) Negative pressure baghouses operate at internal pressure less than atmospheric. The fans are located after the fabric filters. This allows the fans to pull the gas laden air from the EAF, through the fabric filters, then push the air up through a central stack.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The following remaining control options are in order of descending control effectiveness:

(a) Fabric filters or baghouses - 99.9%.

(b) High Energy Scrubbers - 90% or more

(c) High Efficiency Cyclones - 50 to 90%,

Step 4 – Evaluate the Most Effective Controls and Document Results

Fabric filtration is the predominant control option for abatement of particulate emissions from an EAF application due to their effectiveness. Scrubbers and cyclones are not considered as effective as fabric filters or baghouses for controlling particulate emissions from EAF application.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Meltshop - EAFs:

Meltshop -Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**PM/PM10 Control Technology/PM/PM10 Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	Baghouses PM - 0.0018 gr/dscf PM10 - 0.0052 gr/dscf
Current limit: Nucor Steel - Crawfordsville	PSD/SSM 107-16823-00038	11/21/2003 (Indiana)	502 tons/hr and 4,397,520 tons/yr	Baghouses PM - 0.0018 gr/dscf PM10 - 0.0052 gr/dscfl
STEEL MILLS WITH CONTINUOUS FEED (CONSTEEL) PROCESS				
Nucor Steel – Darlington, SC	0820-0001-CW	1/8/1998 (South Carolina)	300 tons/hr	**PM/PM10 - 0.0015 gr/dscf**
Nucor Steel - Hertford County	08680T09	11/23/2004 (North Carolina)	capacity unknown	PM - 0.0018 gr/dscf PM10 - 0.0052 gr/dscf
Ameristeel – Charlotte, NC	19-99v-567	4/29/1999 (North Carolina)	569,400 tons/yr	PM/PM10 - 0.0052 gr/dscf
New Jersey Steel - Sayreville	-	- (New Jersey)	capacity unknown	no limit
STEEL MILLS WITH BATCH PROCESS				

Meltshop -Electric Arc Furnaces (EAFs)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**PM/PM10 Control Technology/PM/PM10 Emissions Limit**
Charter Steel – Ozaukee County	00DCF041	6/9/2000 (Wisconsin)	550,000 tons/yr	**PM - 0.0015 gr/dscf** **PM10 - 0.0015 gr/dscf**
Nucor Steel – Tuscaloosa, Inc.	413-0033	6/6/2006 (Alabama)	300 tons/hr	PM10 - 0.0018 gr/dscf
Gerdau AmeriSteel – Duval County	031057-007-AC (PSD-FL-349)	9/25/2005 (Florida)	1,192,800 tons/yr	PM - 0.0018 gr/dscf
Nucor Steel - Memphis	0710-04PC	11/6/2000 (Tennessee)	150 tons/hr	PM10 - 0.0020 gr/dscf
SDI - Pittsboro	PSD 063-16628-00037	8/29/2003 (Indiana)	125 tons/hr	PM - 0.0018 gr/dscf PM - 0.0052 gr/dscf
SeverCorr – Columbus	1680-00064	3/31/2005 (Mississippi)	capacity unknown	PM - 0.0018 gr/dscf PM10 - 0.0018 gr/dscf
Nucor-Yamato Steel – Blytheville		(Arkansas)	450 tons/hr	PM10 - 0.0018 gr/dscf
Nucor Steel – Hickman	1139-AOP-R5	6/9/2003 (Arkansas)	425 tons/hr	PM10 - 0.0018 gr/dscf
Gallatin – Ghent	-	- (Kentucky)	capacity - unknown-	PM/PM10 - 0.0018 gr/dscf
Chaparral Steel – Petersburg	51264	4/24/1998 (Virginia)	215 tons/hr	PM - 0.0018 gr/dscf PM10 - 0.0018 gr/dscf
Quanex Corporation -MacSteel Division	693-AOP-RO	2/18/1998- Arkansas)	86 tons/hr	PM - 0.0018 gr/dscf
Nucor Steel - Plymouth	-	Utah	capacity unknown	PM - 0.0033 gr/dscf PM10 -0.0026 gr/dscf
SDI – Butler, IN	CP033-8091-00043	6/25/1997 (Indiana)	200 tons/hr	PM - 0.0032 gr/dscf PM10 - 0.0032 gr/dscf
Nucor Steel – Decatur, (formerly Trico Steel)	712-0037	7/11/2002 (Alabama)	440 tons/hr	PM - 0.0032 gr/dscf
Nucor Steel – Jewett	PSD-1029	1/5/2003 (Texas)	240 tons/hr	PM - 0.0052 gr/dscf PM10 - 0.0052 gr/dscf
IPSCO – Axis	503-8065	10/16/1998 (Alabama)	200 tons/hr	PM - 0.0033 gr/dscf
IPSCO – Montpelier, IA	-	(Iowa)	capacity unknown	PM - 0.0033 gr/dscf PM10 - 0.0033 gr/dscf
Roanoke Electric Steel – Roanoke, VA	20131	11/6/1998 (Virginia)	100 tons/hr	PM - 0.0034 gr/dscf PM10 - 7.5 lbs/hr
Nucor Steel –Berkeley County	-	- (South Carolina)	capacity unknown	PM - 0.0035 gr/dscf PM10 - 0.0035 gr/dscf
Gerdau Ameristeel -Knoxville	-	(Tennessee)	500,000 tons/yr	PM -0.004 gr/dscf PM10 - 0.004 gr/dscf
Nucor Auburn Steel	7-0501-00044/00007	6/22/2004 (New York)	110 tons/hr	PM - .0052 gr/dscf PM10 - 0.0052 gr/dscf
Beta Steel	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	PM - - 0.0052 gr/dscf PM10 - 0.0052 gr/dscf
Nucor Steel – Norfolk	35677RC3	6/22/2004 (Nebraska)	EAF - (capacity unknown)	PM -0.0052 gr/dscf PM10 - 0.0052 gr/dscf
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	50 tons/hr	PM - 0.0052 gr/dscf

All the above sources use a fabric filtration system to control the particulate emissions from the EAF.

Nucor Steel - Darlington, South Carolina – This source has the most stringent PM/PM10 limit of 0.0015 gr/dscf for the EAF. Nucor Steel – Darlington uses a Consteel ® process (see previous page 13 for discussion on the Consteel ® process) in producing their products, and it is not comparable to the Batch Melting process Nucor - Indiana utilizes in their steel sheet metal production, which therefore, requires a lower grain loading bag filtration system. See discussion on Consteel ® process and Batch Melting process in previous page 13 of this Appendix B.

Charter Steel – Ozaukee, Wisconsin – The RBLC shows a limit 0.0015 gr/dscf for PM and PM10. However, upon further review of this source's permit it was determined that the permit requires only that the source was to comply with the primary limit of 6.5 pound per hour at 550,000 tons per year and an opacity limit of 20%. Therefore, it will not be considered in this BACT analysis.

All the sources in the above table have not proposed or successfully implemented any controls besides fabric filtration.

Therefore, the BACT for the EAFs is the following:

(a) The PM emissions from the EAFs, AOD, desulfurization station, two (2) Continuous Casters and the new LMF shall be the use of fabric filtration system and shall be a limit of 0.0018 grain per dry standard cubic foot.

(b) The total filterable and condensable PM10 emissions from the EAFs, AOD, desulfurization station, two (2) Continuous Casters and the new LMF shall be the use of fabric filtration system and shall be a limit of 0.0052 grain per dry standard cubic foot.

(c) The visible emissions from each Meltshop EAF Baghouse shall not exceed 3% opacity, based on a 6-minute average.

(d) Fugitive emissions generated at each EAF (EAF #1 and EAF #2) during each complete cycle from tap to tap shall not exceed 3% opacity when emitted from any roof monitor or building opening, based on a 6-minute average.

(e) Good working practices shall be observed such as following various tapping, melting and refining practices.

Meltshop - LMFs

The ladle metallurgy furnace is considered as the buffer between the melting furnace and the caster. Molten metal is tapped into ladles and transported by electric overhead traveling cranes to the LMFs. At the LMFs, a sample of the molten steel is taken and analyzed for its various constituents. Additional alloying materials may be added to meet the required product specifications. After the alloy addition, the molten metal is mixed and reheated in the ladle by electrodes. Due to the nature of these operations, there is potential for generation of emissions from the LMFs, which include the new LMF. Fumes are evacuated to the LMF baghouse, considered as BACT for PM emissions. A small amount of fugitive emissions may be emitted from the meltshop building. The existing roof canopy system has a high capture efficiency of the dust generated inside the meltshop building.

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control PM/PM10 emissions from the Meltshop - EAFs:

(a) Electrostatic Precipitator (ESP),
(b) High Efficiency Cyclones,
(c) High Energy Scrubbers, and
(d) Fabric Filters (i.e., baghouses).

Step 2 – Eliminate Technically Infeasible Control Options

The test for technical feasibility of any control option is whether it is both available and applicable to reducing PM/PM10 emissions from the existing LMFs and proposed new LMF. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

(a) ESPs - use an electrostatic field to charge particulate matter contained in the gas stream and then attract and collect the particles on a collection surface of opposite charge. While ESPs have a very high removal efficiency (99% or better) for many sources of particulate, they have been proven as unsuitable for applications involving particulate with a high concentration of iron compounds such as those emitted from LMFs. Due to the electromagnetic properties of small charged particles of iron compounds in an electric field, the particles adhere very strongly to the collection plates of an ESP and are extremely difficult to dislodge, resulting in an in-effectivity of the ESP. Thereby, making the ESP ineffective. Therefore, ESP is considered technically infeasible for controlling particulate emissions from LMFs. The OAQ is not aware of a steel mill where an ESP has been operated to control particulate emissions from an LMF.

(b) High Efficiency Cyclones - Particulate removal in cyclone collectors is achieved through the action of inertial forces, especially centrifugal. As the gas stream enters the top of the cyclone, a vortex is induced as it is forced to travel a circular path. Centrifugal forces cause the heavier particles to concentrate near the outer wall of the cyclone and particle of lesser mass to remain closer to the center of the vortex. Frictional and gravitational forces then act on the particles closest to the wall, causing them to fall toward the bottom of the cyclone, where they are collected in a hopper. Within the lower segment of the cyclone, the direction of the gas-flow vortex is reversed, and an inner ascending vortex is formed. The inner vortex consists of comparatively particulate-free air, which is collected through an outlet duct at the top of the cyclone. Cyclone collectors are considered technically feasible. However, they achieve the lowest particulate removal efficiencies (less than 90%) of all particulate control devices, especially for submicron particulates that will be emitted from the LMF. The OAQ is not aware of a steel mill where a cyclone collector has been operated to effectively control particulate emissions from an LMF.

(c) High Energy Scrubbers - High energy wet scrubbers are technically feasible and can achieve a high particulate collection efficiency (90% or better), but at the expense of a punitive pressure drop (ranging from 6 - 20 inches of water), higher operational utilities, generation of large quantities of sludge along with the associated problem of sludge handling, de-watering, and disposal. The OAQ is not aware of a steel mill where a high energy wet scrubber has been operated to control particulate emissions from an LMF.

(d) Fabric filters or baghouses are technically feasible for collecting fine particulate matter emissions associated with metals from LMFs or other types of furnaces that have high particulate emissions. They can also achieve the highest control efficiency, among other particulate control devices, as applied to LMFs. Positive pressure baghouses or negative pressure baghouses have been used in the steelmaking industry.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The following remaining control options are in order of descending control effectiveness:

(a) Fabric filters or baghouses - 99.9%.

(b) High Energy Scrubbers - 90% or more

(c) High Efficiency Cyclones - 50 to 90%,

Step 4 – Evaluate the Most Effective Controls and Document Results

Fabric filtration is the predominant control option for abatement of particulate emissions from an LMF application due to their effectiveness. Scrubbers and cyclones are not considered as effective as fabric filters or baghouses for controlling particulate emissions from LMF application.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Meltshop - LMFs:

Meltshop - LMFs				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**LMF Capacity**	**PM/PM10 Control Technology/PM/PM10 Emissions Limit**
Proposed: Nucor Steel Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	PM - 0.0018 gr/dscf PM10 - 0.0052 gr/dscf
Current limit: Nucor Steel - Crawfordsville	PSD/SSM 107-16823-00038	11/21/2003	502 tons/hr and 4,397,520 tons/yr	PM - 0.0018 gr/dscf PM10 - 0.0052 gr/dscf
Nucor Steel - Hickman	1139-AOP-R5	6/9/2003 (Arkansas)	capacity – 425 tons/hr	PM10 -0.0018 gr/dscf
SteelCorr, Inc.	2062-AOP-RO	7/22/2004 (Arkansas)	350 tons/hr -	PM10 - 0.0018 gr/dscf
Charter Manufacturing Co., Inc.	13-04176	4/14/2003 (Ohio)	110 tons/hr	PM10 -0.0024 gr/dscf
SDI - Pittsboro	PSD 063-16628-00037	8/29/2003 (Indiana)	125 tons/hr	PM10 - 0052 gr/dscf PM - 0018 gr/dscf
SDI – Butler, IN	CP033-9187-00043	3/24/1998 (Indiana)	200 tons/hr	PM -0.0032 gr/dscf PM10 - 0.0032 gr/dscf
Nucor-Yamato Steel – Blytheville	883-AOP-R4	6/11/2004 (Arkansas)	250 tons/hr	PM10 - 0.0052 gr/dscf
Roanoke Electric Steel – Roanoke	20131	11/6/1998 (Virginia)	100 tons/hr	PM - 0.0052 gr/dscf PM10 - 2.8 lbs/hr
Beta Steel - Portage	PSD 127-9642-00036	5/30/2003 (Indiana)	151 tons/hr	PM - 0.0052 gr/dscf PM10 - 0.0052 gr/dscf
Arkansas Steel – Newport	35-AOP-R3	1/5/2001 (Arkansas)	50 tons/hr -	PM - 0052 gr/dscf
Republic Engineered Products, Inc or Republic Technologies International, LLC.	15-76-05-0694	4/24/2002 (Ohio)	220 tons/hr	PM - 0.0018 gr/dscf & 37.7 lbs/hr PM10 - 28.7 lbs/hr

<u>Republic Engineered Products, Inc. or Republic Technologies International, LLC</u> - The RBLC listed this source with the most stringent BACT limit for PM10 at 0.0014 gr/dscf. However, based on the actual permit the PM emissions from the LMF are limited to 0.0018 gr/dscf and 37.7 lbs/hr, and PM10 is limited to 28.7 lbs/hr. Therefore, it is less stringent than Nucor -Indiana.

The PSD BACT for the Meltshop -LMFs is as follows:

(a) The filterable and condensible PM10 emissions from the two (2) LMFs, identified as EU-13, venting to the LMF baghouse stack S-13 shall be limited to 0.0052 gr/dscf.

(b) The filterable PM emissions from the two (2) LMFs, identified as EU-13, venting to the LMF baghouse stack S-13 shall be limited to 0.0018 gr/dscf.

(c) The Meltshop LMFs (EU-13) shall be equipped with side draft hoods that evacuate to a baghouse (identified as Meltshop LMF Baghouse) capturing the particulate matter (PM).

(d) The visible emissions from the Meltshop LMF Baghouse shall not exceed 3% opacity, based on a 6-minute average.

Note: The new LMF PM and PM10 BACT limits has been included with the EAFs PM and PM10 BACT since the new LMF vents into the EAFs stacks

Cold Mill Boiler (CMB #2)

Particulate matter emissions from the boiler primarily result from carryover of non-combustible trace constituents in the fuel. Typically, particulates are hard to detect with natural gas firing due to the low ash content. The USEPA reference AP-42 recommends that all particulate emissions from natural gas combustion are less than 1 micron in aerodynamic diameter, therefore, they are classified as PM_{10}. The PTE from the proposed boiler is 1.3 tons/yr for both PM and PM10.

<u>Step 1 – Identify Control Options</u>

The following are the control technologies and techniques in controlling PM and PM10 emissions from fuel combustion:

(a) Good work practices combined with natural gas combustion. and

(b) Traditional particulate controls include; fabric filters, mechanical collectors, electrostatic precipitators and venturi scrubber.

<u>Step 2 – Eliminate Technically Infeasible Control Options</u>

(a) The following traditional particulate controls; fabric filters, electrostatic precipitators and venturi scrubber were identified and evaluated to control particulate (PM/PM10) emissions from boilers. All of these control technologies are technically infeasible because the main fuel is natural gas, which is a cleaner fuel with a PM/PM10 emissions at 1.3 tons/yr. These control technologies have not been proposed for non utility boilers with sizes less than 100 MMBtu/hr or even greater, as reflected in the RACT/BACT/LAER Clearinghouse database.

(b) Natural gas combustion results in the lowest PM and PM10 emissions of 0.0076 lb/MMBtu when fired with good combustion practices.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

None of the traditional control technologies identified, are considered technically feasible to control particulate emissions from boilers.

The use of natural gas only for fuel and good combustion practices are the only control techniques technically feasible for boilers.

<u>Step 4 – Select BACT</u>

A review of USEPA’s RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Cold Mill Boiler (CMB#2):

Cold Mill Boiler (CMB #2)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**Boiler Heat Input Rate (MMBtu/hr)**	**PM/PM10 Control Technology/ PM/PM10 Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	40	PM - 0.0076 lb/MMBtu PM10 - 0.0076 lb/MMBtu
Existing Boiler: Nucor Steel - Crawfordsville	PSD 107-16823-00038	11/21/2003 (Indiana)	34	**PM - 0.0019 lb/MMBtu** PM10 - 0.0076 lb/MMBtu
SDI, Pittsboro, IN	PSD 063-16628-00037	8/29/2003 (Indiana)	48.4	Baghouse **PM - 0.0019 lb/MMBtu** PM10 - 0.0076 lb/MMBtu
Hawkeye Generating LLC, IA	01-687	07/23/2002 (Iowa)	48.5	Baghouse **PM - 0.0070 lb/MMBtu** **PM10 -0.0070 lb/MMBtu**
Sithe Mystic Development	-	(Massachusetts)	96	Baghouse **PM - 0.0070 lb/MMBtu** **PM10 - 0.0070 lb/MMBtu**
Ameripol, TX	PSD-TX-957	04/03/2000 (Texas)	54	Baghouse **PM - 0.0070 lb/MMBtu** **PM10 - 0.0070 lb/MMBtu**
Redbud	2000-090-C PSD	08/15/2001 (Oklahoma)	20	Baghouse **PM - 0.0074 lb/MMBtu** **PM10 - 0.0074 lb/MMBtu**
Duke Energy Vermillion, LLC	PSD 165-10476-00022-	03/13/2003 (Indiana)	46.0	Baghouse **PM - 0.0075 lb/MMBtu** **PM10 - 0.0075 lb/MMBtu**
Iowa Power & Light	02-357	12/20/2002 (Iowa)	68	**PM - 0.0075 lb/MMBtu** **PM10 - 0.0075 lb/MMBtu**
Merck, Rahway Plant	PCP -020003	9/18/2003 (New Jersey)	99.5	**PM - 0.0033 lb/MMBtu** PM10 - 0.014 lb/MMBtu
Tenaska, IN	MSOP125-12760-00039	11/12/2002 (Indiana)	40	Baghouse **PM - 0.0075 lb/MMBtu** **PM10 - 0.0075 lb/MMBtu**
SDI, Whitley, IN	PSD183-15170-00030	05/31/2002 (Indiana)	41.8	PM - 0.0076 lb/MMBtu PM10 - 0.0076 lb/MMBtu
Smith Cogen, OK	2000-115-C PSD	08/16/2001 (Oklahoma)	48	PM - 0.0076 lb/MMBtu PM10 - 0.0076 lb/MMBtu
US Army, AL	301-0050	1/5/2001 (Alabama)	13.4	PM - 0.0076 lb/MMBtu
US Army, AL	301-0050	1/5/2001 (Alabama)	11.7	PM - 0.0076 lb/MMBtu
Duke, AL	604-0023-X001, X002	12/11/2001 (Alabama)	35	PM - 0.009 lb/MMBtu PM10 - 0.009 lb/MMBtu
NRG, OK	99-213-C M-1 PSD	10/25/2001 (Oklahoma)	22	PM - 0.009 lb/MMBtu PM10 - 0.009 lb/MMBtu
Duke Energy Luna	PSD-NM-2450	12/29/2000 (new Mexico)	44.1	PM10 - 0.01 lb/MMBtu
Duke Energy Hanging Rock	07-00503	12/28/2004 (Ohio)	30.60	PM10 - 0.01 lb/MMBtu
Cogentrix	MSOP 093-12432-00021	10/05/2001 (Indiana)	35	PM - 0.020 lb/MMBtu PM10 - 0.020 lb/MMBtu
Cabot, MA	-	(Massachusetts)	26.6	PM - 0.010 lb/MMBtu PM10 - 0.010 lb/MMBtu
Blount	402-0010-X001 AND X002	02/05/2001 (Alabama)	40	PM - 0.020 lb/MMBtu PM10 - 0.020 lb/MMBtu

Cold Mill Boiler (CMB #2)				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**Boiler Heat Input Rate (MMBtu/hr)**	**PM/PM10 Control Technology/ PM/PM10 Emissions Limit**
Mustang Power, Ok	2001-132-C PSD	02/12/2002 (Oklahoma)	31	No PM and PM10 limits

<u>Entergy – Iowa, Ameripol – Texas, Sithe Mystic Development, Redbud, Duke Energy - Vermillion, and Interstate Power , now Iowa Power & Light</u> – All these sources have PM and PM10 limits more stringent than Nucor – Indiana's boiler CMB #2. However, the boilers from these sources are not comparable with Nucor's boiler CMB#2, because they are used as cogeneration system for turbines/heat recovery steam generators while Nucor's CMB #2 boiler is used to generate steam for process heating. Therefore, these sources will not be considered in this BACT analysis.

<u>Merck, Rahway Plant, New Jersey</u> - This source has a PM limit of 0.0033 lb/MMBtu for a 99.5 MMBtu/hr boiler. This boiler uses natural gas co-fired with the waste solvents generated by the plant. This boiler is controlled by a Selective Catalytic Reduction (SCR) system. Based on the information from New Jersey Environmental Protection Agency, this boiler is used as a control device to burn Merck's Pharmaceutical waste solvents generated from all its production processes, instead of hauling the waste solvents for disposal offsite as hazardous wastes. Therefore, if not for this function Merck's boiler would not be controlled by a SCR. Merck's boiler is not comparable with the Nucor - Crawfordsville CMB #2 boiler since Nucor's boiler is used specifically to generate steam for process heating. Therefore, Merck will not be considered in this BACT analysis.

<u>SDI - Pittsboro, Indiana</u> - This source has a PM limit of 0.0019 lb/MMBtu and PM10 limit of 0.0076 lb/MMBtu for the 48.4 MMBtu/hr boiler. This boiler is used to generate steam for process heating, which is similar to the function of the proposed Nucor's boiler, CMB #2. However, this SDI's boiler is no longer in operation and was not required to be tested to demonstrate compliance with these limits. Therefore, this source will not be considered in this BACT analysis.

<u>Tenaska, Indiana</u> - This source has a PM limit of 0.0075 lb/MMBtu and PM10 limit of 0.0075 lb/MMBtu for the 40 MMBtu/hr boiler. This boiler is used to generate steam for process heating, which is similar to the function of the proposed Nucor's boiler, CMB #2. However, Tenaska's boiler is not required to be tested to demonstrate compliance with these limits. Therefore, this source will not be considered in this BACT analysis.

None of the sources in the above table have proposed or successfully implemented any add on control devices to control NOx emissions for boilers with sizes less than 100 MMBtu/hr or from non utility boilers. Therefore, the BACT for the proposed boiler, CMB #2 shall be the following:

(a) The PM emissions from the Cold Mill Boiler #2 shall be limited to 0.0076 lb/MMBtu.

(b) The PM10 emissions from the Cold Mill Boiler #2 shall be limited to 0.0076 lb/MMBtu.

(c) Good combustion shall be practiced.

Various Natural Gas Combustion Units (preheaters, Dryout, Regenerator and Dryers)

Nucor requested to change the BACT limits from the following existing natural gas combustion units (tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer) to reflect the new U.S. EPA AP-42 emission factors (AP-42, July 1998). None of these natural gas-fired combustion units is being physically modified.

Natural Gas Combustion Units	Heat Input Rate (MMBtu/hr)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each
1 Acid Regeneration	5.6
2 Tundish Dryout Station (TD1 and TD2)	9.0 each
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each
5 Tundish Preheaters (TP1 - TP5)	6.0 each
1 Ladle Dryer	5.0

The existing tundish preheaters, acid regenerators, tundish dryout, ladle preheaters and ladle dryer are fired by natural gas fuel.

Step 1 – Identify Control Options, Step 2 – Eliminate Technically Infeasible Control Options, Step 3 – Rank Remaining Control Technologies by Control Effectiveness and Step 4 – Evaluate the Most Effective Controls and Document Results

There are no control options identified, that are technically feasible to control PM/PM10 that is emitted at a small quantity from each combustion unit. See below table for summary of PM/PM10 emissions:

Natural Gas Combustion Units	PM/PM10 Emissions (tons/year)
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.0105 each
1 Acid Regenerator	*
2 Tundish Dryouts (TD1 and TD2)	0.12 each
5 Ladle Preheaters (LP1 - LP5)	0.132 each
5 Tundish Preheaters (TP1 - TP5)	0.078 each
1 Ladle Dryer	0.066

* - Acid regenerator PM/PM10 from the process is controlled by a scrubber.

Step 5 - Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to PM/PM10 emissions from tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator.

Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator			
Plant	**RBLC ID or Permit # / Date Issued**	**Heat Input Rate (MMBtu/hr)**	**PM/PM10 Control Technology/ Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038 (Indiana)	0.8 to 10	PM/PM10 - 7.6 lb/MMCF or 0.0076 lb/MMBtu
Existing Limit - Nucor Steel - Crawfordsville	PSD 107-16823-00038 11/21/2003 (Indiana)	0.8 to 10	PM/PM10 - 3 lb/MMCF or 0.003 lb/MMBtu
SDI, Whitley	PSD 183-18426-00030 (11/21/2005) (Indiana)	10	PM (filterable) -0.0019 lb/MMBtu PM10 (filterable & condensible) - 0.0076 lb/MMBtu
	Proposed PSD 183-23905-00030	10	PM/PM10 - 0.0076 lb/MMBtu
Steel Dynamics Hendricks	PSD 063-16628-00037 8/29/2003 (Indiana)	7.5 to 9	PM (filterable) -0.0019 lb/MMBtu PM10 (filterable & condensible) - 0.0076 lb/MMBtu

Tundish Preheaters, Ladle Preheaters, Tundish Dryouts, Ladle Dryers and Acid Regenerator			
Plant	**RBLC ID or Permit # / Date Issued**	**Heat Input Rate (MMBtu/hr)**	**PM/PM10 Control Technology/ Emissions Limit**
Charter Steel, Inc.	OH-0276 (4/14/2003) (Ohio)	10	0.0740 lb/hr

While Nucor's existing BACT limit of 3 lb/MMCF or 0.003 lb/MMBtu is the most stringent PM/PM10 BACT limitation established for a nearly-identical unit, based on new emissions data for these sizes of natural gas combustion units, EPA changed the PM/PM10 emission factor from 0.003 lb/MMBtu or 3 lb/MMCF to 0.0076 lb/MMBtu or 7.6 lb/MMCF. Therefore, 0.0076 lb/MMBtu or 7.6 lb/MMCF is the most practically achievable PM/PM10 limit for the tundish preheaters, ladle preheaters, tundish dryouts, ladle dryers and acid regenerator. A more stringent limit is not obtainable without the use of add-on controls; which are technically infeasible at these levels of emissions. In addition none of the sources identified have proposed or successfully implemented any add-on control to control the PM/PM10 from combustion of natural gas. Therefore, the BACT for these existing natural gas emission units are as follows:

(a) The PM/PM10 BACT shall be:

Emission Units/ID	Heat Input Rate (MMBtu/hr)	Existing PM/PM10 BACT	Proposed PM/PM10 BACT Limit
4 Tundish Nozzle Preheaters (TPH1 - TPH4)	0.8 each	3 lb/MMCF	7.6 lb/MMCF
1 Acid Regeneration	5.6	* 2.2 lbs/hr using scubber	* 2.2 lbs/hr using scubber
2 Tundish Dryout Station (TD1 and TD2)	9.0 each	3 lb/MMCF	7.6 lb/MMCF
5 Ladle Preheaters (LP1 - LP5)	LD-1 - LP-5 10.0 each	3 lb/MMCF	7.6 lb/MMCF
5 Tundish Preheaters (TP1 - TP5)	6.0 each	3 lb/MMCF	7.6 lb/MMCF
1 Ladle Dryer	5.0	3 lb/MMCF	7.6 lb/MMCF

* - Acid regenerator PM/PM10 from the process is controlled by a scrubber.

BACT for Metallic Lead, Beryllium and Fluorides:

The proposed modification has a net increase of 0.6 tons of lead per year or greater, 0.0004 tons of Beryllium per year or greater, 3 tons of Fluorides per year or greater. Therefore, the following emission units affected by the modification that emit metallic lead, beryllium and fluorides are required to apply Best Available Control Technology (BACT):

- Meltshop - Electric Arc Furnaces (EAFs)
- Meltshop - Ladle Metallurgical Furnaces (LMFs)
- Castrip

Meltshop – EAFs, LMFs and Castrip

Metallic lead, beryllium and fluorides are derived from incoming scrap mix, alloys and other additives to the steel manufacturing process. These metals are emitted as a subset of the particulate emissions in the exhaust gas stream from the EAFs, LMFs and Castrip. Therefore, the following add-on controls used to address particulate emissions will be evaluated for these metals emissions control:

Step 1 – Identify Control Options

The following control technologies were identified and evaluated to control metallic lead, beryllium and fluorides emissions from the Meltshop - EAFs and LMFs and Castrip operations:

(a) Electrostatic Precipitator (ESP),
(b) High Efficiency Cyclones,
(c) High Energy Scrubbers, and
(d) Fabric Filters (i.e., baghouses).

<u>Step 2 – Eliminate Technically Infeasible Control Options</u>

The test for technical feasibility of any control option is whether it is both available and applicable to reducing particulate and metallic lead, beryllium and fluorides emissions from the existing EAFs, LMFs and Castrip. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

(a) ESPs - use an electrostatic field to charge particulate including metallic lead, beryllium and fluorides 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 including metallic lead, beryllium and fluorides such as those emitted from EAFs, LMFs and Castrip. Due to the electromagnetic properties of small charged particles of iron compounds in an electric field, the particles adhere very strongly to the collection plates of an ESP and are extremely difficult to dislodge, resulting in an in-effectivity of the ESP. In addition, the exhaust gas stream from an EAF, LMF and Castrip contains high levels of zinc (10% - 20%) and other metal compounds like metallic lead, beryllium and fluorides which can foul ESP electrodes. Thereby, making the ESP ineffective. Therefore, ESP is considered technically infeasible for controlling particulate metallic lead emissions from EAFs, LMFs and Castrip. The OAQ is not aware of a steel mill where an ESP has been operated to control particulate including metallic lead, beryllium and fluorides emissions from an EAF, LMF and Castrip.

(b) High Efficiency Cyclones - Particulate removal including metallic lead, beryllium and fluorides in cyclone collectors is achieved through the action of inertial forces, especially centrifugal. As the gas stream enters the top of the cyclone, a vortex is induced as it is forced to travel a circular path. Centrifugal forces cause the heavier particles to concentrate near the outer wall of the cyclone and particle of lesser mass to remain closer to the center of the vortex. Frictional and gravitational forces then act on the particles closest to the wall, causing them to fall toward the bottom of the cyclone, where they are collected in a hopper. Within the lower segment of the cyclone, the direction of the gas-flow vortex is reversed, and an inner ascending vortex is formed. The inner vortex consists of comparatively particulate-free air, which is collected through an outlet duct at the top of the cyclone. Cyclone collectors are considered technically feasible. However, they achieve the lowest particulate removal efficiencies (less than 90%) of all particulate control devices, especially for submicron particulates including metallic lead, beryllium and fluorides that will be emitted from the EAF, LMF and Castrip. The OAQ is not aware of a steel mill where a cyclone collector has been operated to effectively control particulate emissions including metallic lead, beryllium and fluorides from an EAF, LMF and Castrip.

(c) High Energy Scrubbers - High energy wet scrubbers are technically feasible and can achieve a high particulate, including metallic lead, beryllium and fluorides collection efficiency (90% or better), but at the expense of a punitive pressure drop (ranging from 6 - 20 inches of water), higher operational utilities, generation of large quantities of sludge along with the associated problem of sludge handling, de-watering, and disposal. The OAQ is not aware of a steel mill where a high energy wet scrubber has been operated to control particulate including metallic lead, beryllium and fluorides emissions from an EAF, LMF and Castrip.

(d) Fabric filters or baghouses are technically feasible for collecting fine particulate matter emissions including lead, beryllium and fluorides associated with metals from EAFs, LMFs and Castrip or other types of furnaces that have high particulate and metallic lead, beryllium and fluorides emissions. They can also achieve the highest control efficiency, among other particulate control devices, as applied to EAFs, LMFs and Castrip. Positive pressure baghouses or negative pressure baghouses have been used in the steelmaking industry.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

The following remaining control options are in order of descending control effectiveness:

(a) Fabric filters or baghouses - 99.9%.

(b) High Energy Scrubbers - 90% or more

(c) High Efficiency Cyclones - 50 to 90%,

Step 4 – Evaluate the Most Effective Controls and Document Results

Fabric filtration is the predominant control option for abatement of particulate emissions including metallic lead, beryllium and fluorides from an EAF, LMF and Castrip applications due to their effectiveness. Scrubbers and cyclones are not considered as effective as fabric filters or baghouses for controlling particulate including metallic lead, beryllium and fluorides emissions from EAF, LMF and Castrip applications.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Meltshop – EAFs, LMFs and Castrip:

Meltshop – EAFs, LMFs and Castrip				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**Metallic lead, beryllium and fluorides Control Technology/ Emissions Limit**
Proposed: Nucor Steel - Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	Lead – 0.00048 lb/ton and 0.24 lb/hr for combined EAFs baghouses 1 and 2, controlling 2 EAFs, AOD, continuous caster, and new LMF Lead – 0.00048 lb/ton and 0.24 lb/hr for the LMF baghouse controlling the 2 LMFs Lead for castrip - 0.00048 lb/ton and 0.13 lb/hr Use of Baghouses and scrap management program
				Beryllium - 0.002 lb/hr for combined EAFs baghouses 1 and 2 controlling 2 EAFs, AOD, continuous caster, and new LMF Beryllium - 0.002 lb/hr for the LMF baghouse controlling the 2 LMFs Beryllium - 0.002 lb/hr for the Castrip

Meltshop – EAFs, LMFs and Castrip				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**EAF Capacity**	**Metallic lead, beryllium and fluorides Control Technology/ Emissions Limit**
				Fluorides – 0.01 lb/ton and 5.02 lbs/hr for combined EAFs baghouses 1 and 2 controlling 2 EAFs, AOD, continuous caster, and new LMF. Using granular Fluorspar at the EAFs, and applied at a maximum rate of 250 lbs/heat at each EAF Fluorides – 0.01 lb/ton and 5.02 lbs/hr for for the LMF baghouse controlling the 2 LMFs. Using granular Fluorspar at the LMFs, and applied at a maximum rate of 500 lbs/heat at each LMF Fluorides for castrip - 0.01 lb/ton and 2.7 lb/hr. Using granular Fluorspar and applied at a maximum rate of 250 lbs/heat at the Castrip
				The limit for each pollutant is based on a three (3) hour block average.
STEEL MILLS WITH CONTINUOUS FEED (CONSTEEL) PROCESS				
Nucor Steel - Hertford County	08680T09	11/23/2004 (North Carolina)	capacity unknown	Lead - 0.0016 lb/ton
STEEL MILLS WITH BATCH PROCESS				
SDI, Whitley	PSD 183-18426-00030	11/18/2005 (Indiana)	300 tons/hr	Lead - 0.00048 pounds per ton of steel and 0.144 lb/hr for a two (2) single shell electric arc furnaces (EAFs),
				Beryllium - less than 8.6 x 10^{-5} pounds per hour combined limit from EAFs Baghouse stack (stack 1) and LMS Baghouse (note: this is not a PSD BACT limit it is for PSD minor limit)
				Fluorides - 0.01 pounds per ton of steel and 2.09 pounds/hr for a two (2) single shell electric arc furnaces (EAFs), using the granular Fluorspar to the EAFs,
				The limit for each pollutant is based on a three (3) hour block average, Scrap Management Program and the use of a baghouse
IPSCO – Montpelier, IA	94-A-548-S3	03/13/1996 (Iowa)	164 tons/hr	Lead - 0.11 lb/hr Beryllium - 0.000091 lb/hr Fluorides - 0.68 lb/hr combined limit for 2 EAFs and 2 LMF stack using baghouse as control *
Nucor Steel – Tuscaloosa, Inc.	413-0033	6/6/2006 (Alabama)	300 tons/hr	Lead - 0.6 lb/hr
Nucor Steel - Memphis	0710-04PC	11/6/2000 (Tennessee)	150 tons/hr	Lead - no limit Lead management and abatement program and use of baghouse

Steel Dynamics, Inc. (SDI), Whitley – This source has the most stringent BACT from among the listed sources in the above table, with a lead emissions limit of 0.00048 pound per ton and 0.144 pound per hour for the EAFs, combined limit for the EAFs Baghouse and LMS Baghouse, fluorides emissions limit of 0.01 pound per ton and 2.09 pounds per hour for the EAFs and the use of baghouses and scrap management program to meet these limits. The beryllium emissions limit of 8.6 x 10^{-5} pounds per hour is a limit to avoid PSD review requirements. This SDI beryllium limit will not be used in this BACT analysis. The pound per hour limit varies based on the capacity of the emission units, the higher the capacity, the higher the pound per hour limit, and vice-versa.

IPSCO, Montpelier, Iowa - has the most stringent BACT limit for beryllium at 9.1 $x10^{-5}$ pound per hour, which is a combined limit for two (2) EAFs and two (2) LMFs based on 164 tons/hr capacity. It is not accurate to compare Nucor's limit of 0.002 pound/hour because it is for a different combination of emission units (2 EAFs, AOD, desulfurization station, 2 continuous casters, and a new LMF), and it is also based on a higher capacity of 502 ton per hour. Another set of beryllium limits for Nucor are also not comparable at 0.002 pound/hour for two LMFs and 0.002 pound/hour for castrip operation, since they are not similar with the emission units combination at IPSCO. Therefore, the BACT has been determined to be the following BACT:

(a) BACT for Lead –

(1) The combined lead emissions from the EAFs baghouses 1 and 2, controlling the two (2) EAFs, AOD, desulfurization station, two (2) continuous casters, and the new LMF shall be limited to 0.00048 pound per ton and 0.24 pound per hour based on 502 tons/hour capacity.

(2) The lead emissions from the LMF baghouse controlling the two (2) LMFs, identified as EU-13 shall be limited to 0.00048 pound per ton and 0.24 pound per hour based on 502 tons/hour capacity.

(3) The lead emissions from the castrip shall be limited to 0.00048 pound per ton and 0.13 pound per hour based on 270 tons/hour capacity.

(4) Scrap management program shall be implemented.

(b) BACT for Beryllium –

(1) The combined beryllium emissions from the EAFs baghouses 1 and 2, controlling the two (2) EAFs, AOD, desulfurization station, two (2) continuous casters, and the new LMFshall be limited to 0.002 pound per hour.

(2) The beryllium emissions from the LMF baghouse controlling the 2 LMFs shall be limited to 0.002 pound per hour.

(3) The beryllium emissions from the castrip shall be limited to 0.002 pound per hour.

(c) BACT for Fluorides –

(1) The total fluorides emissions from the EAFs baghouses 1 and 2 controlling 2 EAFs, AOD, desulfurization station, two (2) continuous casters, and new LMF shall be limited to 0.01 pound per ton and 5.02 pound per hour based on 502 tons/hour capacity.

The fluorides emissions from the EAFs shall be minimized by using granular Fluorspar, and it shall be applied at a maximum rate of 250 pounds/heat at each EAFs.

(2) The total fluorides emissions from the LMF baghouse controlling the 2 LMFs shall be limited to 0.01 pound per ton and 5.02 pound per hour based on 502 tons/hour capacity.

The fluorides emissions from the LMFs shall be minimized by using granular Fluorspar, and it shall be applied at a maximum rate of 500 pounds/heat at each LMF.

(3) The fluorides emissions from the castrip shall be limited to 0.01 pound per ton and 2.7 pound per hour based on 270 tons/hour capacity.

The fluorides emissions from the Castrip shall be minimized by using granular Fluorspar, and it shall be applied at a maximum rate of 250 pounds/heat at the Castrip.

These limits shall be based on a 3-hour block average.

BACT for Mercury

The proposed modification has a net increase of 0.1 ton per year or greater. Therefore, the following emission units affected by the modification that emit mercury are required to apply Best Available Control Technology (BACT):

- Meltshop - Electric Arc Furnaces (EAFs)
- Meltshop - Ladle Metallurgical Furnaces (LMFs)
- Castrip

Meltshop – EAFs, LMFs and Castrip

Mercury is derived from incoming scrap mix, alloys and other additives to the steel manufacturing process. Mercury is emitted as metal and a subset of the particulate emissions in the exhaust gas stream from the EAFs and LMFs.

Step 1 – Identify Control Options

The following control technologies and practices were evaluated to control mercury emissions from the Meltshop EAFs and LMFs and Castrip operations:

(a) Fabric Filters or Baghouses
(b) Scrap Management Plan
(c) Carbon Injection and Carbon Bed Absorption
(d) Activated Carbon Injection
(e) Sodium Tetrasulfide Injection
(f) Lime Sorbent Injection

Step 2 – Eliminate Technically Infeasible Control Options

(a) Fabric Filters or Baghouse - A baghouse has been determined to be technically and economically feasible as control technology for controlling mercury emissions from EAFs, LMFs melt shops and Castrip. The existing baghouses used for particulate emissions control will also reduce mercury emissions from these operations.

(b) Scrap Management Plan -Since the mercury emissions from the EAFs, LMFs and Castrip are from the mercury switches used by the automobile industry, Nucor will inform automotive scrap suppliers that mercury switches will be removed from scrap wherever possible.

(c) Carbon Injection and Carbon Bed Absorption - Carbon injection and carbon bed absorption have been considered technically infeasible due to the following:

(1) The mercury emission levels vary throughout an EAF's LMF's and Castrip batch cycle, creating a constantly changing set of exhaust characteristics. A carbon

injection system would not have the ability to follow the widely variable gas characteristics. The high gas temperatures and the need for residence time to allow adsorption are expected to create carbon burning problems and generate additional SO_2 emissions since the injected carbon contains sulfur.

(2) Chlorides, which are present in the exhaust gases from sources, such as municipal solid waste and medical waste incinerators, combine with mercury to form a more easily collected compound. However, EAF, LMF and Castrip exhaust gases do not contain sufficient quantities of chlorides, making mercury control from an EAF, LMF and Castrip more problematic. The difference in scrap used and the variability of the mercury throughout an EAF's LMF's and Castrip batch cycle could not certainly rule out this control option as not technically feasible because Co-Steel has done a cost analysis for this control technology.

(d) Sodium Tetrasulfide Injection - This control measure requires the facility to inject dissolved sodium tetrasulfide into the flue gas stream. This system has a lower mercury removal efficiency, 87%. This control option cannot be certainly ruled out as not technically feasible because Co-Steel has done a cost analysis for this control technology.

(e) Lime Sorbent Injection -The final control measure requires the injection of dry lime absorbent utilizing a reactor to obtain intimate contact with the flue gas stream. As with the previous systems, it requires the installation of equipment such as a reactor, sorbent transfer system, and lime and ash storage silos including transfer equipment. In addition, the use of this system results in an increase in pressure-drop of the flue gas flow path that requires the facility to install new induced draft fans and motors. This control option cannot be certainly ruled out as not technically feasible because Co-Steel has done a cost analysis for this control technology.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

(a) Fabric Filters or Baghouses - 99%
(b) Scrap Management Plan -
(c) Lime Sorbent Injection - 93%
(d) Carbon Injection and Carbon Bed Absorption - 90%
(e) Sodium Tetrasulfide Injection - 87%

These control options were determined to be technically feasible in removing mercury emissions from an EAF, LMF and Castrip.

Step 4 – Evaluate the Most Effective Controls and Document Results

Economic evaluation have been made for the Lime Sorbent Injection, Carbon Injection and Carbon Bed Adsorption and Sodium Tetrasulfide Injection. Annualized costs were determined based on a previous economic analysis on a similar steel mill mercury sources.

Economic Analysis:

An economic analysis has been made utilizing the economic analysis prepared by Co-Steel of Sayreville, New Jersey, for EAF meltshop mercury emission reductions. Although the Co-Steel analysis was prepared in 2000, there has been no mercury control measures developed since that time. As a result, the Co-Steel economic analysis remains a reliable basis for an analysis. The primary difference between Nucor's operation and that of Co-Steel is the size of the meltshop baghouse. Co-Steel operated a baghouse with a maximum flow of 500,000 actual cubic feet per minute (acfm), while Nucor's baghouses have a flow rate of approximately 2.73 million acfm. Thus, Nucor exhausts 5.5 times as much air from its baghouse as does Co-Steel.

The Co-Steel analysis examined three control options for mercury emissions from the baghouse: lime sorbent injection, activated carbon injection and sodium tetrasulfide injection.

(a) Lime Sorbent Injection - The $5,289,249 capital investment alone makes this system cost prohibitive. Nevertheless, an estimated of the annual cost per pound of mercury removed as been made. Co-Steel calculated an annual direct O & M cost of $969,930. Using the 5.5 ratio, direct annual O & M costs at Nucor would be estimated as $5,334,615. The indirect annual O & M costs and annualized capital investment costs were calculated as $358,247 and $860,801 respectively. Thus, Nucor's total annual costs may be estimated as $6,553,663. Nucor's mercury stack tests resulted in a potential to emit of 0.16 tons per year of mercury. If Nucor installed this system with a 93% control efficiency, it would potentially eliminate 0.149 ton/year or 298 pounds per year of mercury. This results in a cost **$21,992 per pound of mercury** removed. Nucor's actual mercury emissions were 0.08 ton/year. Thus, a 93% control efficiency would eliminate 0.0744 ton/year or 149 pounds per year of mercury at a cost of $43,984 per pound. It should be noted that these per pound figures do not take into account the exorbitant initial capital investment cost of this system. See below table for the cost summary:

Lime Sorbent Injection Cost Analysis	
Capital Cost	$5,289,249
Total Direct Operating Cost including Operating and Maintenance Cost	$5,334,615
Total Indirect Cost including Operating and Maintenance Cost	$6,553,663
Control efficiency	93%
Mercury PTE, tons/year	0.16
Mercury Removed, tons/year (pounds/year)	0.149 (298)
Cost Effectiveness, $/pound Removed	**$21,992**

Therefore, at $21,992 per pound of mercury removed, it is cost prohibitive to install this control technology.

(b) Activated Carbon Injection - If Nucor were to install the same system, Nucor would have the same direct costs and indirect costs for installation. This represents a total capital investment of $513,228. The direct annual operating and maintenance (O & M) costs for the system, however, are not the same because of Nucor's larger operation. To achieve 90% control efficiency, Co-Steel calculated direct annual Operation & Maintenance (O&M) costs of $1,627,766. Using the 5.5 ratio calculated above, Nucor would expect to have direct annual O & M costs of $8,952,713. Also, Nucor is estimating the same indirect annual O & M costs ($64,869) and the same annualized capital investment costs ($83,526) as Co-Steel. Thus, Nucor's total annual costs would be $9,101,108. Nucor's mercury stack tests resulted in a potential to emit of 0.16 tons per year of mercury. If Nucor installed the Co-Steel 90% control efficiency system, it would potentially eliminate 0.144 ton/year or 288 pounds per year of mercury. This results in a cost of $31,601 per pound of mercury removed. Nucor's actual mercury emissions were 0.08 ton/year. Thus, a 90% control efficiency would eliminate 0.072 ton/year or 144 pounds per year of mercury at a cost of $63,202 per pound. It should be noted that these per pound figures do not take into account the initial capital investment of $513,228. See below table for the cost summary:

Activated Carbon Injection Cost Analysis	
Capital Cost	$513,228
Total Direct Operating Cost including Operating and Maintenance Cost	$8,952,713
Total Indirect Cost including Operating and Maintenance Cost	$9,101,108
Control efficiency	90%
Mercury PTE, tons/year	0.16
Mercury Removed, tons/year (pounds/year)	0.144 (288)
Cost Effectiveness, $/pound Removed	**$31,601**

Therefore, at $31,601 per pound of mercury removed, it is cost prohibitive to install this control technology.

(c) Sodium Tetrasulfide Injection - This system has a lower mercury removal efficiency, 87%, and a much greater capital investment at $1,627,239 than does the activated carbon injection measure. The direct annual O & M costs for this system at Co-Steel were calculated as $502,168. Thus, using the 5.5 ratio, direct annual O & M costs at Nucor would be estimated as $2,761,924. The indirect annual O & M costs and the annualized capital investment costs are calculated as $124,183 and $264,826 respectively. Thus, Nucor's total annual costs may be estimated as $3,150,933. Nucor's mercury stack tests resulted in a potential to emit of 0.16 tons per year of mercury. If Nucor installed this system with an 87% control efficiency, it would potentially eliminate 0.139 ton/year or 278 pounds per year of mercury. This results in a cost of $11,334 per pound of mercury removed. Nucor's actual mercury emissions were 0.08 ton/year. Thus, an 87% control efficiency would eliminate 0.0696 ton/year or 139 pounds per year of mercury at a cost of $22,669 per pound. It should be noted that these per pound figures do not take into account the excessively large initial capital investment for this system. See below table for the cost summary:

Sodium Tetrasulfide Injection Cost Analysis	
Capital Cost	$1,627,239
Total Direct Operating Cost including Operating and Maintenance Cost	$2,761,924
Total Indirect Cost including Operating and Maintenance Cost	$3,150,933
Control efficiency	87%
Mercury PTE, tons/year	0.16
Mercury Removed, tons/year (pounds/year)	0.139 (278)
Cost Effectiveness, $/pound Removed	**$11,334**

Therefore, at $11,334 per pound of mercury removed, it is cost prohibitive to install this control technology.

In addition, none of the above three control technologies are considered commercially available technologies for application in a meltshop operation. As a result, Co-Steel was not able to obtain any performance guarantees for mercury removal at its operation.

Step 5 – Select BACT

A review of USEPA's RACT/BACT/LAER Clearinghouse, Indiana air permits and sources permitted by other states agencies, identified the following with respect to the Meltshop – EAF, LMFs and Castrip:

Meltshop – EAF, LMFs and Castrip				
Plant	**RBLC ID or Permit #**	**Date Issued and State**	**LMF Capacity**	**Mercury Control Technology/Mercury Emissions Limit**
Proposed: Nucor Steel Crawfordsville	PSD 107-24348-00038	Proposed (Indiana)	502 tons/hr and 4,397,520 tons/yr	Meltshop EAFs baghouses 1 and 2, which control the two EAFs, AOD, desulfurization station, two (2) Continuous Casters and the new LMF – 0.04 lb/hr Two (2) LMFs, identified as EU-13, venting to the LMF baghouse stack S-13 – 0.04 lb/hr Castrip – 0.02 lb/hr Scrap Management and using baghouses
SDI, Whitley	PSD 183-18426-00030	11/18/2005 (Indiana)	300 tons/hr	EAF and LMF - 5.21 x 10^{-4} lb/ton and 0.1563 lb/hr Scrap Management and using baghouses
Republic Engineered Products	15-01591	8/30/2005 (Ohio)	183 tons/hr	EAF - 0.0610 lb/hr
Nucor Steel Marion, Inc.	03-16353	8/18/2005 (Ohio)	70 tons/hr	EAF – 0.0630 lb/hr
Wheeling Pittsburgh Steel Corp/	06-07507	1/6/2005 (Ohio)	250 tons/hr	EAF – 0.1190 lb/hr
Charter Manufacturing Co.	13-04176	4/14/2003	110 tons/hr	EAF – 0.0520 lb/hr

Nucor Crawfordsville is proposing the most stringent BACT for mercury from among the sources listed in the above table. Therefore, the BACT for mercury shall be as follows:

(a) The total mercury emissions from the meltshop EAFs baghouses 1 and 2, which control the two EAFs, AOD, desulfurization station, two (2) Continuous Casters and the new LMF shall be limited to 0.04 pound per hour based on 502 tons/hour capacity.

(b) The total mercury emissions from two (2) LMFs, identified as EU-13, venting to the LMF baghouse stack S-13 shall be limited to 0.04 pound per hour based on 502 tons/hour capacity.

Note: The new LMF mercury BACT limit has been included with the EAFs mercury BACT since the new LMF vents into the EAFs stacks.

(c) The mercury emissions from the castrip shall be limited to 0.02 pound per hour based on 270 tons/hour capacity

(d) Minimized mercury emissions by implementing Scrap Management Program (SMP)

(e) Use of a baghouse to control mercury emissions from the EAFs, LMFs and Castrip.

Air Quality Analysis -Appendix D

Nucor Steel - Crawfordsville, Indiana (Montgomery County)

Proposed Project

Nucor submitted a PSD application dated February 16, 2007, for a major modification to their steel plant. They also submitted a modeling addendum dated April 27, 2007 and August 20, 2007. The modification consists of various changes to the electric arc furnaces (EAFs), ladle metallurgy furnaces (LMFs), and Argon-Oxygen Decarburization (AOD) vessel; adding a third LMF; replacing like-kind burners in the tunnel furnace shuttles; and adding a natural gas-fired boiler to the cold mill.

ERM prepared the modeling portion of the permit application for Nucor. This technical support document provides the air quality analysis review of the submitted modeling by ERM for Nucor.

Analysis Summary

Based on the potential emissions after controls, a PSD air quality analysis was triggered for SO_2, PM_{10}, CO, Pb, and NOx. For VOCs, no analysis is required. The significant impact analysis was performed for NOx, CO, SO_2 and PM_{10}. PM_{10} and CO did not exceed significant impact levels. A refined analysis was required for NOx, $SO_{2,}$ and Pb, and it showed no violation of the NAAQS or the PSD increment.
(Pre-construction monitoring requirements are not necessary since nearby monitoring was available from Fountain and Marion Counties.) An additional impact analysis was conducted and showed no significant impact. A Hazardous Air Pollutant (HAP) analysis was performed. Based on the HAPs modeling results, the source will not pose a health concern.

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

VOCs, PM_{10}, NOx, SO_2, CO, Pb, Beryllium, Fluorides, and Mercury are the pollutants that will be emitted from Nucor and are summarized below in Table 1. PM_{10}, NOx, SO_2, and CO potential emissions after controls exceed the PSD significant emission rates and will require an air quality analysis.

TABLE 1
Significant Emission Rates for PSD

POLLUTANT	**SOURCE EMISSION RATE** (Facility totals in tons/year)	**SIGNIFICANT EMISSION RATE** (tons/year)	**PRELIMINARY AQ ANALYSIS REQUIRED**
VOC[1]	110.3	40	No[1]
PM_{10}	163.3	15	Yes
NOx	413.6	40	Yes
SO2	742.7	40	Yes
CO	2306.5	100	Yes
Pb	1.61	.6	Yes
Beryllium[2]	.27	.0004	Yes – See Footnote Below
Fluorides[2]	21.64	3	Yes – See Footnote Below
Mercury[2]	.24	.1	Yes – See Footnote Below

[1] An air quality analysis is not performed for VOCs because they are photochemically reactive Photochemical models like UAM-V are used in regulatory or policy assessments to simulate the impacts from all sources by estimating pollutant concentrations and deposition of both inert and chemically reactive pollutants over large spatial scales. Currently, U.S. EPA has no regulatory photochemical models which can take into account small spatial scales or single source PSD modeling for ozone.
[2] Beryllium, Fluorides, and Mercury have monitoring concentration thresholds listed in 326 IAC 2-2-4. There is no National Ambient Air Quality Standard for these pollutants.

These are Nucor permitted emission rates that are taken from Table 2-1 of their application and their addendum dated August 20, 2007. These are also the emission rates that were modeled.

Section B – Good Engineering Practice (GEP), Met Data, Model Used, Receptor Grid and Terrain

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 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)

New Stacks

Since the new stack heights for Nucor are 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 AERMOD consisted of 1988 through 1992 surface data from Indianapolis, Indiana, and upper air measurements taken at Peoria, Illinois. The meteorological data was downloaded from Lakes Environmental and preprocessed using AERMET.

Model Description

ERM used AERMOD, Version 07026. OAQ used the same model version 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 Register Part 51, Appendix W “Guideline on Air Quality Models”.

Receptor Grid

OAQ modeling used the same receptor grids generated by ERM. The grid consisted of 1,717 receptors extending to 10 kilometers from the mill. Receptors were closely spaced (100 meters) near the mill boundary to identify the influence of 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 would exceed the PSD significant impact levels (concentrations). If the source's concentrations exceed these levels, further air quality analysis is required. Refined modeling for SO_2, and NOx 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)	REFINED AQ ANALYSIS REQUIRED
NOx	Annual*	1.66	1	Yes
PM_{10}	Annual*	.41	1	No
PM_{10}	24 hour*	3.15	5	No
SO_2	3 hour*	97.66	25	Yes
SO_2	24 hour*	35.88	5	Yes
SO_2	Annual*	5.66	1	Yes
CO	1 hour*	497.50	2000	No
CO	8 hour*	167.50	500	No
Pb	Quarter*	.011	None	N/A

*First highest values per EPA NSR manual October 1990. Impacts are from Nucor only.

Pre-construction Monitoring Analysis

Applicability

The PSD rule, 326 IAC 2-2-4, requires an air quality analysis of the new source or the major modification to determine if the pre-construction monitoring threshold is triggered. In most cases, monitoring data taken from a similar geographic location can satisfy this requirement if the pre-construction monitoring threshold has been exceeded. Also, post construction monitoring could be required if the air quality in that area could be adversely impacted by the applicant’s emissions.

Modeling Results

A comparison of the modeling results was 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)	**DEMINIMIS LEVEL (ug/m3)**	**ABOVE DE MINIMIS LEVEL**
NOx	Annual[1]	1.66	14	No
SO_2	24 hour1	35.88	13	Yes
Pb	Quarter[1]	.011	.1	No
Mercury[2]	24 hour[1]	.010	.25	No
Beryllium[2]	24 hour[1]	.01	.001	Yes
Fluorides[2]	24 hour[1]	.93	.25	Yes

[1]First highest values per EPA NSR manual October 1990. Maximum modeled impacts are from Nucor only.
[2]No ambient air quality standard for this pollutant.

SO_2 did trigger the preconstruction monitoring threshold level. Nucor can satisfy the preconstruction monitoring requirement since there is air quality monitoring data representative of the area in Fountain, Marion, and Vigo Counties. Even though fluorides and beryllium exceed the preconstruction monitoring deminimis levels, there are no ambient air quality standards for fluorides and beryllium in Indiana. The Ambient Monitoring Guidelines for Prevention of Significant Deterioration [EPA 450/4-87-007, May 1987] states that as a general rule, modeling impacts are preferred and ambient monitoring for non-criteria pollutants should not be required. More recent guidance from EPA, including the 1990 New Source Review Workshop Manual, reiterates this guidance.

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
Background data was taken from the closest monitoring stations from Nucor. The closest SO_2 station is located in Fountain County. The closest NOx monitoring station is located in Marion County. Using background data from monitors located around industrialized areas represents a conservative approach since actual background values from rural Montgomery County would likely be lower. It was agreed between Nucor and IDEM that this approach be taken in place of the preconstruction monitoring requirement. Also, post-construction monitoring is not required since the modeling concentrations are well below the NAAQS standards.

For all 24-hour background concentrations, the averaged second highest monitoring values were used. Annual background concentrations were taken from the maximum annual values.

TABLE 4
Existing Monitoring Data Used For Background Concentrations *

Pollutant	Monitoring Site	Averaging Period	Concentration (ug/m3)
NOx	18-097-0073	Annual	33.84
SO_2	18-045-0001	3 hour	235.80
SO_2	18-045-0001	24 hour	89.08
SO_2	18-045-0001	Annual	18.3
Pb	18-097-0076	Quarter	.03

*OAQ used the most conservative values for the air quality analysis. It is standard policy to use the latest 3 years of data.

Section D - NAAQS and PSD Increment

NAAQS Compliance Analysis and Results

OAQ supplied emission inventories of all point sources within a 50-kilometer radius of Nucor. 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 and are compiled from permits issued by IDEM.

NAAQs modeling for the appropriate time-averaging periods for NOx and SO_2 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[3]
NAAQS Analysis

Pollutant	Year	Time-Averaging Period	Maximum Concentration ug/m3	Background Concentration ug/m3	Total ug/m3	NAAQS Limit ug/m3	NAAQS Violation
NOx	90	Annual[1]	40.81	33.84	74.65	100	NO
SO_2	89	3 Hour[2]	200.77	235.8	436.57	1300	NO
SO_2	89	24 hour[2]	71.45	89.08	160.53	365	NO
SO_2	90	Annual[1]	13.28	18.3	31.58	80	NO
Pb	88	Quarter[1]	.019	.03	.049	1.5	NO

[1] First highest values per EPA NSR manual October 1990.
[2] High 2nd high values per EPA NSR manual October 1990.
[3] Any differences between the maximum concentration numbers in Tables 5 and 6 are due to different sources used for the NAAQS and the increment inventories. Table 3 maximum concentrations are from Nucor only.

Analysis and Results of Source Impact on the PSD Increment

Applicability

Maximum allowable increases (PSD increments) are established by 326 IAC 2-2 for NOx, SO_2, and 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 NOx, and SO_2, modeled above significant impact levels, a PSD increment analysis for Nucor and surrounding sources was required. Results of the increment modeling are summarized in Table 6 below.

TABLE 6[3]
Increment Analysis

Pollutant	**Year**	**Time-Averaging Period**	**Maximum Concentration ug/m3**	**PSD Increment Ug/m3**	**Percent Impact on the PSD Increment**	Increment Violation
NOx	1990	Annual[1]	13.97	25	55.8%	NO
SO_2	1990	Annual[1]	11.95	20	59.8%	NO
SO_2	1986	3 hour[2]	183.6	512	35.8%	NO
SO_2	1990	24 hour[2]	71.2	91	78.2%	NO

[1] First highest value per EPA NSR manual October 1990.
[2] Highest second high per EPA NSR manual October 1990.
[3] Any differences between the maximum concentration numbers in Tables 5 and 6 are due to different sources used for the NAAQS and the increment inventories. Table 3 maximum concentrations are from Nucor only.

The results of the increment analysis show all pollutants for all averaging periods were below 80% of the available increment. No further analysis is required.

Part E – Qualitative Analysis

Additional Impact Analysis

All PSD permit applicants must prepare an additional impact analysis for each pollutant subject to regulation under the Act. This analysis assesses the impacts on growth, soils and vegetation, endangered species and visibility caused by any increase in emissions of any regulated pollutant from the source. The Nucor modeling submittal provided an additional impact analysis performed by ERM.

Economic Growth

The purpose of the growth analysis is to quantify project associated growth and estimate the air quality impacts from this growth either quantitatively or qualitatively.

Since the mill is an existing source, Nucor's proposed construction changes will be minimal and anticipated growth in the area will be minimal. Commercial growth is anticipated to occur at a gradual rate in the future.

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 Glacial Till.

Due to the agricultural nature of the land, crops in the Montgomery County area consist mainly of corn, sorghum, wheat, soybeans, and oats (2002 Agricultural Census for Montgomery County). The maximum modeled concentrations for Nucor 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 Pulaski County consist mainly of hogs, cattle, and sheep (2002 Agricultural Census for Montgomery County) and will not be adversely impacted from the facility. Trees in the area are mainly hardwoods. These are hardy trees and no significant adverse impacts are expected due to modeled concentrations.

Federal and State Endangered Species Analysis

Federal and state endangered or threatened species are listed by the U.S. Fish and Wildlife Service; Division of Endangered Species for Indiana and includes 5 amphibians, 27 birds, 10 fishes, 7 mammals, 15 mollusks, and 15 reptiles. Of the federal and state endangered species on the list 2 reptiles, 5 mollusks, 3 fish, 16 birds, and 4 mammals have habitat within Montgomery County. The mollusks, fish, amphibians and certain species of birds and mammals are found along rivers and lakes while the other species of birds and mammals are found in forested areas. 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, farming, and residential activities in the area.

Federal and state endangered or threatened plants are listed by the U.S. Fish and Wildlife Service, Division of Endangered Species for Indiana. They list 22 state significant species of plants. At this time 15 endangered, threatened, or rare plant species are found in Montgomery County. The endangered plants do not thrive in industrialized and residential areas. The facility is not expected to adversely affect any plant on the endangered species list.

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 basically to determine whether or not a plume is visible as an object itself. The visibility impairment analysis considers the impacts that occur within the impact area of the source as defined by the user distances. The user distances are determined by the nearest interstate or airport. EPA has defined these locations in guidance to the state.

The PM_{10} and NOx emissions limits were used to run a local visibility Level 1 and a 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 location along I-74 or at the Crawfordsville Municipal Airport.

Potential visibility impacts to Mammoth Cave National Park (further than 300 km from Nucor) would be insignificant. This is due to the distance from the Class 1 area and magnitude and characteristics of emission sources at Nucor.

Additional Analysis Conclusions

Finally, 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 are estimated to be over 25 tons per year.

For Nucor, a full HAP analysis was completed 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 at Nucor, 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 Nucor’s Hazard Index (HI).

This HAP screening analysis uses health protective assumptions that overestimate the actual risk associated with emissions from Nucor. 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 Nucor; rather it identifies possible avenues of risk.

The results of the HAP modeling are in Table 7.

TABLE 7
Hazardous Air Pollutant Modeling Results

		Annual Concentration	Cancer		Cancer Risk	Non-Cancer	Source of IDEM RfC	Hazard Quotient
Compound	CAS Number	(ug/m3)	URF, (ug/m3)-1	Source		Chronic RfC, ug/m3	Source	
Antimony Compounds	0	**0.0001868750**				0.20	TRI	0.001
Arsenic compounds	0	**0.0001943500**	4.3E-03	IRIS	8.36E-07	0.03	CAL	0.006
Beryllium compounds	0	**0.0010000000**	2.4E-03	IRIS	2.40E-06	0.02	IRIS	0.050
Cadmium compounds	7440439	**0.0007250750**	1.8E-03	IRIS	1.31E-06	0.02	CAL	0.036
Chromium (VI) compounds	18540299	**0.0038122500**	1.2E-02	IRIS	4.57E-05	0.10	IRIS	0.038
Cobalt	0	**0.0002840500**				0.10	ATSDR	0.003
Manganese compounds	0	**0.0151742500**				0.05	IRIS	0.303
Mercury compounds	0	**0.0010000000**				0.09	CAL	0.011
Nickel compounds	0	**0.0038870000**	2.4E-04	IRIS	9.33E-07	0.20	ATSDR	0.019
Phosphorous	7723140	**0.0059052500**				0.07	CAL	0.084
Propylene oxide	75569	**0.0001020000**	3.7E-06	IRIS	3.77E-10	30.00	IRIS	0.000
Selenium compounds	0	**0.0000672750**				20.00	CAL	0.000
Lead compounds	0	**0.0100000**	1.2E-05	CAL		0.15	CAL	0.067
Fluoride	16984488	**0.1000000**				13.00	CAL EPA	0.008
				Total Cancer Risk	5.1221E-05		**Hazard Index (HI)**	0.5530

* 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 5.12 additional cancer cases in one hundred thousand 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 5.12 in 100,000. 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, and 52 weeks a year for 70 years is minimal since the maximum impact occurs at the property fence line.

For this HAP risk assessment, IDEM assumed 100% of the chromium VI stayed in hexavalent form. Studies show through chemical reactions chromium VI will be reduced to chromium III in the ambient air. The 1996 National Air Toxics Assessment (NATA) assumed that only 34% of the emissions from coke plants are chromium VI. This determination was an arbitrary determination deemed to be conservative. The Michigan Department of Environmental Quality set up monitors with the purpose of determining the speciation of chromium VI to chromium III in the ambient air. Several of their monitor locations were within 2 miles of a coke plant. They found a range of 0.6-2.4% chromium VI in their sampling. The residual risk document for coke ovens published in December 2003 determined that since the formation of the chromium took place in a highly reducing environment that 0% of the chromium emitted would be in the hexavalent phase.

Part H - Summary of Air Quality Analysis

ERM prepared the modeling portion of the PSD application. Montgomery County is designated as attainment for all criteria pollutants. VOCs, PM_{10}, NOx, SO_2, Pb, and CO 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 SO_2 and NOx impacts were predicted to be greater than the significant impact levels. Nucor did trigger the preconstruction monitoring threshold level for SO_2 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 NOx, $SO_{2,}$ and Pb showed no violations of the standards. The nearest Class I area is Mammoth Cave National Park in Kentucky over 300 kilometers away from the source. An additional impact analysis was required but the operation of the proposed facility will have no significant impact. A Hazardous Air Pollutant (HAP) analysis was performed and showed no likely adverse impact.