STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit by

Mr. Donnie Shumake
Vice President and General Manager
AmeriSteel Corporation
P.O. Box 518
Baldwin, Florida 32234

DEP File No. 0310157-004-AC
Permit No. PSD-FL-261
Baldwin Mill Expansion
Duval County

Enclosed is the FINAL Permit Number PSD-FL-234A to make modifications necessary to increase production from 600,000 to 720,000 billet tons of steel per year. This permit is issued pursuant to Chapter 403, Florida Statutes and in accordance with Rule 62-212.400, F.A.C. – Prevention of Significant Deterioration (PSD) and Best Available Control Technology (BACT).

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

C.H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT (including the FINAL permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 9-28-99 to the person(s) listed:

Mr. Donnie Shumake *
Mr. Ernest E. Frye, NED
Mr. Daniel Haskell, RESD
Mr. Greg Worley, EPA
Mr. John Bunyak, NPS
Dr. Robert Sholtes, P.E.
Mr. Robert Geddis, APRSI

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kim Joken (Clerk) 9-28-99 (Date)

FINAL DETERMINATION
AMERISTEEL, INC.
Baldwin Mill Production Increase
Permit No. 0310157-004-AC
PSD-FL-261

An Intent to Issue Revised Air Construction Permit to AmeriSteel, Inc. for the modification of the applicant's steel recycling facility in Baldwin, Duval County, Florida was distributed on August 19, 1999. The proposed permit provided for process modifications necessary to increase the production rate from 600,000 to 720,000 tons per year (TPY).

The Public Notice of Intent to Issue Air Construction Permit was published in the Florida Times-Union on August 28, 1999 and proof of publication was received by the Department on September 10, 1999. Copies of the draft construction permit and related documents were available for public inspection at the Department's offices in Tallahassee and Jacksonville and at the City of Jacksonville Regulatory and Environmental Services Department (RESD). Comments were received from the National Park Service and the RESD. These comments are addressed below:

The National Park Service commented that its analysis indicated that Selective Catalytic Reduction (SCR) would be cost effective (below $3,000/ton) for removing 85% of the NOx emissions from the Reheat Furnace exhaust. AmeriSteel requested that the originally proposed NOx limit for the Reheat Furnace be increased from the former limit of 0.10 lb/MMBtu to 0.19 lb/MMBtu to reflect the increased potential for NOx formation anticipated by AmeriSteel due to higher furnace temperatures associated with the production increase.

The Department believes that the NOx emissions will probably not increase on a lb/MMBtu basis to the extent that AmeriSteel anticipates from only a 20% increase in the fuel firing rate. The additional BTUs generated will be absorbed by the higher charge rate and as long as the burner characteristics are unchanged, combustion zone temperatures should not increase substantially above present levels. However, the requested 0.019 limit is consistent with the approach used to set the PM/PM_{10} limit (100% above recent test results). This presumes, of course, that the equipment itself already reflects BACT and that it was properly operated when the tests were conducted. The Department is not aware of a similar facility in an attainment area with SCR controls. This modification involves only a 20% production increase and no changeout of the reheat furnace. Therefore, the existing Low NOx burners are deemed acceptable as BACT.

The RESD objected to language in the draft permit that, in its opinion, would have reduced its ability to assure compliance with the permit conditions. The language would have given AmeriSteel a very short time (72 hours) to repair or modify the baghouse should they fail to comply with the particulate emission limit. Instead the Department has set an initial emission limit which is lower than requested by AmeriSteel (0.0042 versus 0.0052 gr/dscf). Thereafter, AmeriSteel will comply with the BACT limit of 0.0034 gr/dscf. This will give AmeriSteel more time to correct any unlikely and unforeseen problems while preserving RESD's compliance assurance authority. RESD and AmeriSteel agreed with the revised language.

The final action of the Department will be to issue the permit as discussed above.

P 265 659 309

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PS Form **3800**, April 1995

C310157-004-AC

PSD-FL-261

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

PERMITTEE:

AmeriSteel Corporation
P.O. Box 518
Baldwin, Florida 32234

Authorized Representative:

Michael A. Leuck
Environmental Superintendent

File No.	0310157-004-AC
Permit No.	PSD-FL-261
SIC No.	3312
Project:	Production Increase
Expires:	December 31, 2000

PROJECT AND LOCATION:

Permit for the construction/modification of the Baldwin steel mill that produces reinforcing bars and rod from scrap steel. The project involves process modifications necessary to increase the production rate from 600,000 to 720,000 billet tons per year (TPY) overall. The project is located at the AmeriSteel facility, Highway 217 and Yellow Water Road, Baldwin, Duval County. UTM coordinates are Zone 17; 405.7 km E; 3350.2 km N.

STATEMENT OF BASIS:

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

ATTACHED APPENDICES ARE MADE A PART OF THIS PERMIT:

Appendix BD	BACT Determination
Appendix GC	Construction Permit General Conditions

Howard L. Rhodes, Director
Division of Air Resources
Management

SECTION I – FACILITY INFORMATION

FACILITY DESCRIPTION

AmeriSteel Corporation operates a scrap steel recycling facility near Baldwin, Duval County, Florida, producing steel reinforcing bars and rod. The company has applied to increase the production rate from 600,000 to 720,000 TPY (from 75 to 90 TPH for 8,000 hours/year) at its Baldwin Plant. The modifications will consist of installing larger current conducting arms for the electric arc furnace, construction of a new scrap building, installation of a new ladle metallurgy furnace, extension of the tapping pit, replacement of four oxy-fuel burners, modifications to the existing scrap loading crane, and enhancements to operating and maintenance practices. As a result of this production rate increase, significant increases in the emissions of particulate matter (PM), PM with an aerodynamic diameter of 10 microns or less (PM_{10}), lead (Pb), nitrogen oxides (NOx), carbon monoxide (CO) will occur.

REGULATORY CLASSIFICATION

The Baldwin Plant is classified as a "Major or Title V Source" per Rule 62-210.200, F.A.C., because it has the potential to emit at least 100 tons per year of PM/PM_{10}, NOx, and CO when potential fugitive emissions are included with potential controlled emissions.

Iron and steel mill plants are listed as a Major Facility Category in Table 62-212.400-1, F.A.C., "Major Facility Categories." Therefore, stack and fugitive emissions of over 100 TPY of a regulated pollutant are sufficient to classify the installation as a "Major Facility" per the definitions in Rule 62-210.200, F.A.C., subject to the Significant Emission Rates given in Table 62-212.400-2, F.A.C. and the requirements of Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) and Best Available Control Technology (BACT).

PERMIT SCHEDULE:

- 01-29-99: Original Application Received
- 04-12-99: Completed Application Received
- 06-24-99: Issued Intent to Issue Permit

RELEVANT DOCUMENTS:

The documents listed below are specifically related to this permitting action and form the basis of the permit. They are on file with the Department:

- Original application received 01-29-99
- Department's incompleteness letter dated 02-26-99
- Applicant's submittal received 03-19-99
- National Park Service's letter received 03-08-99
- Applicant's submittal received 04-12-99
- Technical Evaluation and Preliminary Determination dated 06-24-99
- Best Available Control Technology determination (issued concurrently with permit)

SECTION III – EMISSIONS UNIT(S) SPECIFIC CONDITIONS

ADMINISTRATIVE REQUIREMENTS

1. Regulating Agencies: All documents related to applications for permits to modify this PSD permit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, phone number 850/488-0114. All applications for operation permits, and documents related to reports, tests, minor modifications and notifications shall be submitted to the Department's Northeast District office at 7825 Baymeadows Way, Suite 200B, Jacksonville, Florida 32256-7590, and phone number 904-448-4300.

2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]

3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60 and Part 63, adopted by reference in the Florida Administrative Code (F.A.C.) regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

5. New or Additional Conditions: Pursuant to Rule 62-4.080, F.A.C., for good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Expiration: This air construction permit shall expire on December 31, 2000. The permittee, for good cause, may request that this construction and PSD permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rules 62-210.300(1), 62-4.070(4), 62-4.080, and 62-4.210, F.A.C]

   PSD Expiration: Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [40 CFR 52.21(r)(2)]

   BACT Determination: In conjunction with extension of the 18 month period to commence or continue construction, or extension of the permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of Best Available Control Technology (BACT) for the source. [40 CFR 52.21(j)(4)]

7. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit must be obtained prior to the beginning of construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

8. Title V Operation Permit Required: This permit authorizes construction and/or installation of the permitted emissions unit and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The owner or operator shall apply for and receive a Title V operation permit prior to expiration of this permit. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Northeast District office. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

SECTION III – EMISSIONS UNIT(S) SPECIFIC CONDITIONS

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
001	EAF (existing)
002	Billet Reheat Furnace (existing)
006	Ladle Metallurgy Furnace (new)
003	Slag Processing Operation (existing)
004	Melt Shop Building (existing)

1. Unless otherwise indicated, the modification and operation of the subject steel recycling facility shall be in accordance with the capacities and specifications stated in the application or in updated submittals. **[Rule 62-210.300, F.A.C.]**

2. Emissions units 001,004, and 006 shall comply with all applicable provisions of 40 CFR 60, Subpart AAa, Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 7, 1983. **[Rule 62-204.800 F.A.C.]**

3. Emission unit 001shall not produce more than 100 TPH of steel , maximum daily average, or 90 TPH, maximum monthly average, or 720,000 TPY of steel. Emission unit 002 shall not produce more than 120 TPH, maximum daily average, or 720,000 TPY of steel. Slag production/processing shall not exceed 100 TPH, 500 TPD, and 85,000 TPY. **[Rule 62-210.200, F.A.C.]**

4. Emission units 001, 004 and 006 are allowed to operate for up to 8,000 hours per year. Emission unit 002 shall not operate more than 8,500 hours per year. The slag processing plant shall not operate more than 2,000 hours per year. **[Rule 62-210.200, F.A.C.]**

5. Emissions from Baghouses 1-2 and 3-4 shall not exceed any of the following limits averaged according to 40 CFR 60.275a(e)(2): **[Rule 62-212.400, F.A.C.]**

   A. Particulate matter (PM/PM_{10}) – first annual compliance test: 0.0042 grains per dry standard cubic foot; thereafter: 0.0034 grains per dry standard cubic foot (gr/dscf).
   B. Carbon monoxide (CO) - 3 lbs/ton steel, 300 lbs/hr (24 hour average) and 1,080 TPY.
   C. Nitrogen oxides (NOx) - 0.33 lbs/ton steel, 330 lbs/hr, and 118.8 TPY.
   D. Lead - 0.70 lb/hr, 2.8 TPY.
   E. Volatile organic compounds (VOC) – 0.295 lbs/ton steel, 29.5 lbs/hr, and 106.2 TPY.
   F. Visible Emissions - 3 percent opacity.

6. Emissions from the reheat and ladle furnaces shall not exceed any of the following limits based on 8,500 hours per year operation: **[Rule 62-212.400, F.A.C.]**

   A. PM/PM_{10} - 2.4 lbs/hr and 10.2 TPY.
   B. CO - 0.035 lbs/MMBtu, 7.7 lbs/hr, and 33 TPY.
   C. NOx - 0.19 lbs/MMBtu and 179.3 TPY.
   D. Visible emissions - 15 percent opacity.

7. Visible emissions from any opening in the melt shop building shall not exceed 6 percent opacity. **[Rule 62-212.400, F.A.C.]**

8. Visible emissions from any part of the system handling the dust captured by Baghouses 1-2 and 3-4 shall not exceed 10 percent opacity. **[Rule 62-212.400, F.A.C.]**

9. Unconfined particulate matter emissions from yard operations, open stock-piling of materials and/or materials handling operations shall be controlled by using the following reasonable precautions when visible emissions exceed 20 percent opacity. Reasonable precautions may include, but shall not be limited to, any combination of the following: **[Rule 62-296.320, F.A.C.]**

   A. Reduced speed for vehicular traffic in the plant to 5 miles per hour.
   B. Use of liquid resinous adhesive or other liquid (water) dust suppressants or wetting agents.
   C. Use of paving or other asphaltic materials.
   D. Removal of particulate matter from paved roads and/or other paved areas by vacuum cleaning or otherwise by wetting prior to sweeping.
   E. Covering of trucks, trailers, front end loaders, and other vehicles or containers to prevent spillage of particulate matter during transport.
   F. Use of mulch, hydroseeding, grassing, and/or other vegetative ground cover on barren areas to prevent or reduce particulate matter from being windblown.
   G. Use of hoods, fans, filters, land similar equipment to contain, capture, and vent particulate matter.
   H. Enclosure or covering of conveyer systems.

10. Compliance with the emission limits in this permit shall be determined prior to the expiration date of this construction permit and annually thereafter by the following referenced methods as specified in 40 CFR 60, Appendix A, or by other test methods with prior Department approval: **[Rules 62-204.800 and 62-297.310, F.A.C.]**

    A. PM/PM_{10} - EPA Methods 1, 2, 3, 4, and 5. For the EAF, the sampling time and sample volume of each run shall be at least 4 hours and 160 dscf and the sampling time shall include an integral number of heats (Rule 62-296.800, F.A.C., 40 CFR 60.275a(e)(1)).
    B. CO - EPA Method 10 (24-hour average).
    C. NOx - EPA Method 7E (as measured).
    D. Lead - EPA Method 12.
    F. VOC - EPA Method 18, 25, or 25A.
    G. Visible emissions - EPA Method 9. The visible emissions test shall be conducted concurrently with any required PM/PM_{10} test on the unit. **[Rule 62-296.800, F.A.C., 40 CFR 60.275(a)(e)(4)]**

11. Compliance tests on the EAF and melt shop shall be conducted at a minimum production rate of 90 billet tons per hour production. Compliance tests on the billet reheat furnace shall be conducted at a minimum rate of 108 billet tons per hour. If testing is performed at a rate less than specified in this specific condition, operation shall be limited to a maximum of 110 percent of the tested capacity until such time as an acceptable test is performed at the minimum production rate specified in this specific condition. When operation is restricted to a lower capacity because of testing at such a level, the Air Quality Division (AQD) of the City of Jacksonville Regulatory & Environmental Services Department (RESD), upon advance notification, will allow operation at higher capacities if such operation is for demonstrating compliance at a higher capacity. **[Rule 62-297.310, F.A.C.]**

12. The permittee shall notify the City of Jacksonville AQD at least fifteen (15) days prior to any compliance testing required by this permit or other regulations. Copies of the test report(s) shall be submitted to AQR within forty-five (45) days of test completion. **[Rule 62-297.310, F.A.C.]**

SECTION III – EMISSIONS UNIT(S) SPECIFIC CONDITIONS

13. Continuous monitoring systems for the measurement of the opacity of emissions discharged into the atmosphere from Baghouse 1-2 and Baghouse 3-4 serving the melt shop shall be installed, calibrated, maintained, and operated by the permittee. The monitors shall meet the performance specifications listed in 40 CFR 60, Appendix B. **[Rule 62-296.800, F.A.C., and 40 CFR 60.273a(b)]**

14. The permittee shall monitor and maintain records of the following information at least once per shift during normal operations and at least every 15 minutes during compliance tests: **[40 CFR 60.274a(b), (b)(1), and (b)(2)]**

    A. Static pressure inside the EAF system or 6-minute, once per day, visual emissions (EPA Method 9) on the EAF building during meltdown or refining operations as provided in 40 CFR 60.273a as revised on May 3, 1999.
    B. Baghouse 1-2 and Baghouse 3-4 fan motor amperage and all roof and canopy hood damper positions or continuously monitor the volumetric flow rate through each separately ducted hood.
    C. A monthly operational status inspection shall be performed on the air pollution system (baghouses, hoods, ducts, instruments) that controls the melt shop and any deficiencies noted corrected promptly.

15. Raw material (scrap steel, fluxes, alloys, etc.) to the EAF shall not exceed 110 TPH. **[Rule 62-212.400, F.A.C.]**

16. Natural gas or propane consumption by the EAF shall not exceed 81.6 MMBtu/hr. Natural gas or propane fuel consumption by the reheat or ladle furnaces shall not exceed 222 MMBtu/hr heat input. **[Rule 62-4.160(2), F.A.C.]**

17. The maximum allowable process rate of the dust captured by the melt shop baghouses shall not exceed: **[Rule 62-212.400, F.A.C.]**

    A. 3 TPH to the dust accumulation silo.
    B. 100 TPH during truck/railcar loading.

18. Records of the measurements required in 40 CFR 60.274a must be retained for at least 2 years following the date of the measurement. **[Rule 62-4.070(3), F.A.C.; 40 CFR 60.276a(a)]**

19. Each owner or operator shall submit a written report of monitor downtime and exceedances of the control device opacity to the Administrator quarterly using the format in 40 CFR 60.7, "Notification and Record Keeping." For the purposes of these reports, exceedances are defined as all 6-minute periods during which the average opacity is 3 three) percent or greater. **[Rule 62-210.700, F.A.C.; 40 CFR 60.276a(b)]**

20. Operation at a furnace static pressure that exceeds the value established under 40 CFR 60.274a(g) and either operation of control system fan motor amperes at values exceeding +/- 15 percent of the value established under 40 CFR 60.274a(c) or operation at flow rates lower than those established under 40 CFR 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. **[40 CFR 60.276a(c)].**

21. The requirements of 40 CFR 60.276a 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 40 CFR 60.276a, provided that they comply with the requirements established by the State. **[40 CFR 60.276a(d)]**

22. Pursuant to 40 CFR Subpart AAa, the owner or operator shall conduct the demonstration of compliance with 40 CFR 60.272a(a) and furnish the Administrator a written report of the results of the test. This report shall include the following information: **[40 CFR 60.272a]**

A. Facility name and address;
B. Plant representative;
C. Make and model of process, control device, and continuous monitoring equipment;
D. Flow diagram of process and emission capture equipment including other equipment or process(es) ducted to the same control device;
E. Rated (design) capacity of process equipment;
F. Those data required under 40 CFR 60.274a(h);
(i) List of charge and tap weights and materials;
(II) Heat times and process log;
(III) Control device operation log; and
(iv) Continuous monitor or Reference Method 9 data.
G. Test dates and test times;
H. Test company;
I. Test company representative;
J. Test observers from outside agency;
K. Description of test methodology used, including any deviation from standard reference methods;
L. Schematic of sampling location;
M. Number of sampling points;
N. Description of sampling equipment;
0. Listing of sampling equipment calibrations and procedures;
P. Field and laboratory data sheets;
Q. Description of sample procedures;
R. Sampling equipment leak check results;
S. Description of analytical procedures;
U. Notation of sample blank corrections;
V. Sample emission calculations.

23. The subject emissions units shall be subject to the following:

- Excess emissions resulting from startup, shutdown or malfunction of any source shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. **[Rule 62-210.700, F.A.C.]**
- Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited. **[Rule 62-210.700, F.A.C.]**
- Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest. **[Rule 62-210.700, F.A.C.]**

- In case of excess emissions resulting from malfunctions, each source shall notify the Department or the local air program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. **[Rule 62-210.700, F.A.C.]**

24. The permittee shall submit an Annual Operation Report to the Duval County Regulatory and Environmental Services Department air program office by March 1 of each year. **[Rule 62-210.370, F.A.C.]**

APPENDIX BD
REVISED BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

AMERISTEEL CORPORATION
JACKSONVILLE MINIMILL MODIFICATION
PSD-FL-261 and 0310157-004-AC
Duval County

AmeriSteel Corporation has applied to modify its existing scrap steel recycling facility near Baldwin in Duval County, Florida. The facility produces steel reinforcing bars. The primary steel production operations include a Fuchs electric arc furnace (EAF), a Rokop continuous caster, a billet reheat furnace, a rolling mill and a rod mill. Particulate emissions from the meltshop are controlled by Baghouses 1-2 and Baghouses 3-4. Permitted steelmaking capacity for the facility is currently 600,000 tons per year. Actual steel production has averaged 558,000 tons per year for 1997 and 1998. This modification includes increasing the production capacity to 720,000 tons per year by making several changes to the process equipment.

The physical changes covered under this construction permit application are:

1. Installation of larger capacity current carrying arms at the EAF. These current conducting arms transmit electricity from the transformer to the electrodes in the EAF.

2. Construction of a new scrap handling building adjacent to the existing EAF shop. The building will be used to improve the handling and mixing of scrap, and to accommodate the increased amount of scrap required for the increased EAF production.

3. Construction of a ladle metallurgy furnace (LMF) to allow the EAF to tap at a lower temperature, thus decreasing tap to tap time while allowing different grades of steel to be produced at higher quality. Refining, which now occurs in the EAF at the end of the heat, would occur in the ladle. The addition of the LMF will not result in a production increase above the 720,000 tons/year requested in this application. LMF emissions will be combined with EAF emissions and will be exhausted through the same two baghouses. AmeriSteel will provide the Department with information on the LMF and perform any additional analyses required as soon as the design is finalized.

4. Extension of the tapping pit so the newly tapped ladle can clear the EAF roof. This will provide additional time for furnace operation. Presently, the tapping pit's size delays the beginning of a new cycle (charge to tap) of steel production. Before the furnace roof rotation takes place, the newly tapped ladle has to clear the tapping pit and then be moved east. This process takes approximately three minutes. If the tapping pit is extended, the furnace roof can rotate before the ladle clears the pit, thus decreasing the delay of the new cycle. With these changes, the furnace heat time could be shortened to as low as 50 minutes and liquid steel production could average as much as 100 tons per hour for each operating day.

(The following process description is based on the EPA's 1983 background document for revised new source performance standards for Electric Arc Furnaces. Some differences may exist between AmeriSteel's process and the following description).

APPENDIX BD
REVISED BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

The direct electric arc furnace is a refractory-lined, cylindrical vessel made of heavy, welded steel plates and having a bowl-shaped hearth and a dome-shaped roof. Three carbon electrodes are mounted on a superstructure above the furnace and are lowered and raised through holes in the furnace roof. The electrodes convey the energy for melting the scrap charge. Water-cooled glands are provided at the holes to cool the electrodes and minimize the gap between the electrodes and roof openings to reduce fugitive emissions, noise levels, electrode oxidation, and heat losses. The furnace is mounted on curved rocker trunnions and is designed for tilting the charge.

The main items of electrical equipment are a circuit breaker, a step-down transformer, and a tapped reactor to give arc stability and to dampen current surges. The transformer is provided with equipment to give a range of secondary voltages ("taps") to suit the melting, superheating, and refining conditions in the furnace. The transformer taps are changed in preprogrammed steps to provide the necessary voltage for the melting and refining of the scrap metal. The electrodes are raised or lowered by electromechanical or electrohydraulic devices. At a given transformer voltage, lowering the electrodes shortens the arc and increases the current and power input. Raising the electrodes has the reverse effect. Electrode movement is accomplished by automatic control in normal operation.

With the electrodes raised, the furnace roof can be swung aside to permit the charge materials to be dropped into the furnace (top charged). Additional alloying agents, as required, are added through the slag door of the furnace or through a separate hole in the furnace roof. Top charging of materials allows the furnace to be completely charged within a few minutes. The temperature of the molten bath is checked and samples for laboratory analysis are taken through the slag door.

The production of steel in the EAF is a batch process where "heats" or cycles range from 1 to 5 hours, depending upon the size and quality of the charge, the power input to the furnace, and the desired quality of the steel produced. Each heat consists of charging and backcharging, meltdown and refining, and tapping. Iron and steel scrap are loaded into a clam-shell type charge bucket with an electromagnet that is suspended from an overhead crane. The charge bucket is filled to a specified weight and weighed on a scale that has a digital display that is observed by the crane operator. When the roof of the furnace has been opened, charging is normally performed by carefully dropping the charge into the open arc furnace from the charge bucket.

Charging the open furnace produces emissions that are difficult to control. The intensity level of emissions during charging varies depending on the cleanliness and the makeup of the scrap. Most charging emissions result from vaporization of oil, grease, or dirt introduced with any turnings, borings, or chips; oxidation of organic matter that may adhere to the scrap; and the vaporization of water from wet or icy scrap. Charging emissions are made up of particulate matter, carbon monoxide, hydrocarbon vapors, and soot. Most of the carbon monoxide is quickly oxidized to carbon dioxide in ambient air. Backcharging produces an eruption of reddish-brown fumes with a strong upward thermal driving force. The emissions during backcharging are higher than during the initial charge because of the intense reaction that occurs due to the heat of the molten steel bath in the furnace.

During the charging process, the scrap must be introduced into the furnace so that there is no damage to the refractory. If scrap pieces remain above the furnace ring, the pieces must be repositioned so that the roof can swing back into place for meltdown. This repositioning can be done by hand or by compressing the scrap with the charge bucket or other large mass of metal suspended from the crane. An oxygen lance is sometimes used to cut any pieces blocking the roof. After the roof is rotated into place, it is lowered onto the furnace in preparation for meltdown. Repositioning of the scrap delays the closing of the roof, allowing more emissions to escape from the furnace.

After the roof is in place, the electrodes are mechanically lowered to within 1 inch of the scrap, and the power is turned on. When the current is applied to the electrodes, the electrodes are slowly lowered by automatic controls until they touch the scrap. During the first 3 to 5 minutes, an intermediate voltage is applied to the charge to allow the electrodes to bore into the scrap, which, in effect, shields the sides and roof of the furnace from the heat of the arc. Melting is accomplished by the heat supplied by direct radiation from the arcs formed between the electrodes of the furnace and the metallic charge, by direct radiation from the furnace lining, and by the resistance of the metal between the arc paths. The arcs melt scrap directly beneath and around the electrodes, "boring" through the scrap charge and forming a pool of molten metal on the furnace hearth. The molten steel pool enhances meltdown by the radiation of heat from below into the cold scrap. After the initial period, the maximum voltage is applied in order to melt the charge as fast as possible. Before the scrap is entirely melted, a bank of refractory material (such as dolomite) is built in front of the slagging door to prevent the molten steel from spilling out the door.

When the initial scrap charge is almost entirely molten, a backcharge of scrap may be added to the furnace. Following the backcharge, the roof is replaced, and electrodes are lowered and energized to melt the scrap. Near the end of the meltdown, oxygen lancing may be performed.

Oxygen lancing in arc furnaces is used mainly for adjusting of the chemistry of the steel, for speeding up the melting process, and for superheating the bath. Oxygen lancing results in increased bath and gas temperatures, gas evolution, and generation of particulates. Oxygen is used almost universally (instead of iron ore or mill scale) for "boiling" a heat of steel to flush out gases, mainly hydrogen and nitrogen. Oxygen may increase the steel temperature without the arcs because the carbon boil reaction is exothermic. Oxygen lancing can be carried out with moderate rates of oxygen addition, thereby avoiding excessive generation of high temperatures, gas evolution, and particulates. However, extended periods of oxygen lancing can increase refractory wear and oxidation of the bath but at the same time increase the production rate.

During the meltdown, phosphorus, silicon, manganese, carbon, and other elements in the scrap metal are oxidized. Slag formation begins and is carefully monitored during the meltdown stages to control the chemical concentration and product quality. Basic EAF's use either single or double slagging operations depending upon the desired quality of the end product. The single slagging process uses an oxidizing slag that is formed by the addition of lime and coke breeze (or other source of carbon) during the initial scrap metal charge. Other flux additions, such as fluorspar, silica, and ferrosilicon, may be made through the slag door. The carbon reacts with the calcium in the slag to form calcium carbide, which makes the slag basic. The oxidizing treatment

under a basic slag removes most of the phosphorus and carbon from the melt, thus lowering the concentrations to the desired level.

The double slagging process develops as oxidizing slag first, followed by a reducing slag. The initially formed oxidizing slag is raked off, with the power to the electrodes cut off, and is followed by additions of burnt lime, powdered coke, fluorspar, silica, sand, and ferrosilicon. The purposes of the reducing slag are: (1) to return the reducible oxides, such as those of manganese, chromium, vanadium, tungsten, iron, etc., from the slag to the metal; (2) to eliminate the sulfur as calcium sulfide; and (3) to finish the steel to the specified composition. Prior to the metal tap, the reducing slag is poured off into a slagging pot or onto the ground.

During the meltdown operations, the emissions consist of (1) metallic and mineral oxide particulates generated from the vaporization of iron and the transformation of mineral additives; (2) some carbon monoxide from combustion losses of the graphite electrodes, carbonaceous additives, and the carbon content of the steel; and (3) hydrocarbons from the vaporization and combustion of oil and impurities remaining on the scrap charge. Fluoride and trace constituents, such as nickel, hexavalent chromium, lead, cadmium, and arsenic, are emitted from the EAF. The carbon monoxide is combusted where the exhaust gases are exposed to ambient air, i.e., the electrode ports and the off-gas duct.

During the melting process, emissions escape through the electrode holes, the slag door, the roof ring, and sometimes the tap spout. Furnace evacuation with direct-shell evacuation control (DEC) can control most of these emissions by maintaining a slightly negative pressure within the furnace. After the proper temperature has been reached and the steel composition has been adjusted, the molten steel is tapped from the furnace into a ladle. To tap a heat, the power is shut off and the electrodes are raised sufficiently to clear the bath. The furnace is tilted (sometimes as much as 45 degrees), and the molten steel is tapped into a ladle. The ladle is placed close to the tapping spout to capture the batch of steel without excessive splashing and to reduce the exposure of the molten steel to the air and thus minimize excessive oxidation and cooling of the steel.

Additions of ferromanganese, ferrosilicon, and aluminum are sometimes made to the ladle to adjust the oxygen content of the steel. Depending upon the final product requirements, various alloying agents can also be added to the ladle. These alloying agents include aluminum, titanium, zirconium, vanadium, and boron. Specific amounts of alloys are added manually to the molten steel stream during the tap. For certain steel alloys, chrome is added just prior to the tap to avoid oxidation of the chromium during meltdown. During tapping, fumes consisting of iron oxides are generated in addition to oxide fumes resulting from alloys that were added to the ladle. After the molten steel is tapped into the ladle, the ladle is transferred to either an ingot teeming area, a continuous caster, or a refining vessel (in a specialty steel shop).

As required for major facilities listed in Florida Administrative Code (F.A.C.) Chapter 62-212, Table 212.400-1, a BACT determination must be made for each pollutant exceeding the significant emission rates in Table 212.400-2, "Regulated Air Pollutants Significant Emissions Rates," which in this case are particulate matter (PM/PM10), nitrogen oxides (NO_x), and carbon monoxide (CO).

APPENDIX BD
REVISED BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

BACT Determination Procedure

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that, in making the BACT determination, the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of BACT pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 - Standards of Performance for New Stationary Sources or 40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants.

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determination of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine, for the emission unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or economically infeasible for the emission unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from this facility can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as follows:

- Combustion Products (e.g., SO_2, NO_X). These are controlled generally by gaseous control devices and fuel quality.

- Products of Incomplete Combustion (e.g., CO, VOC). Control is largely achieved by proper combustion techniques.

- Emissions from materials handling, conveyance, and storage (primarily PM). These are controlled generally by fabric filters and reasonable precautions.

Grouping the pollutants in this manner facilitates the BACT analysis by enabling the examination of equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM, SO_2, H_2SO_4, fluorides, etc.), if a reduction in "non-regulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

BACT POLLUTANT ANALYSIS

Particulate Matter (PM, PM_{10}), Lead (Pb) and Visible Emissions (VE)

The quantity and type of emissions from an electric furnace depend upon furnace size, type and composition of scrap, quality of scrap, process melting rate, number of backcharges, refining procedure, tapping duration and temperature. The majority of the emissions from EAF's are particulates; both ferrous and nonferrous oxides. Furnace emissions are the highest during meltdown and refining operations, but charging and tapping emissions can also be significant, especially if ladle additions are made during the tap and dirty scrap is charged. The charging and tapping emissions represent approximately 5 percent each of the total emissions during a heat. Increases in electrical power to the furnace and the use of oxygen lancing will cause emissions to increase during meltdown and refining.

Electric arc furnace emissions are classified as process or fugitive. Emissions generated at the furnace during periods when the furnace roof is closed (e.g., during melting and refining) and the primary emission capture device (e.g., DEC system, side draft hood) is operative are considered to be process emissions. Those emissions generated during periods when the furnace roof is open (e.g., charging) or when the primary emission capture device cannot operate (e.g., charging and tapping) are considered to be fugitive emissions.

The chemical composition of the typical EAF fume during various stages of a melt is shown in Table 1. Iron oxide is the main component of the EAF fume, with a large amount of calcium oxide emitted during refining and a large amount of manganese oxide emitted during charging. The exhaust gas particulate composition for EAF's is presented in Table 2. The distribution of the particulate matter in EAF vessel fumes indicates that the particles are quite small. A particle size distribution is presented in Table 3. A majority of the particulates are in the inhalable size range (less than 15 micrometers). Lead is emitted as a component of particulate matter and exists primarily as compounds of lead (e.g. oxides), however, emissions of lead from the EAF are expressed as elemental lead.

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TABLE 1

Chemical Analysis of Electric Arc Furnace Dust by Phase of Furnace Operation

Phase	Dust Composition (Percentage)								
	SiO_2	CaO	MgO	Fe_2O_3	Al_2O_3	MnO	Cr_2O_3	SO_2	P_2O_3
Melting	9.77	3.39	0.46	56.75	0.31	10.15	1.32	2.08	0.60
Oxidizing	0.76	6.30	0.67	66.00	0.17	5.81	1.32	6.00	0.59
Oxygen Lancing	2.42	3.10	1.83	65.37	0.14	9.17	0.86	1.84	0.76
Reduction	Tr.	35.22	2.72	26.60	0.45	6.70	0.53	7.55	0.55

Source: USEPA Document EPA-450/3-82-020a

TABLE 2

EAF EXHAUST GAS PARTICULATE MATTER COMPOSITION

Constituent	Percent
Fe_2O_3	19-53
CaO	3-14
Al_2O_3	1-13
SiO_2	0.9-9
MgO	2-15
Mn_2O_3	0.6
ZnO	0-16.3
NiO	0-3
Cr_2O_3	0-14
CuO	0.1
MnO	0.6-12
Cl	1.2
PbO	0-4
FeO	4-10
Na_2O	1.5
LOI*	4.3-6.8
Other	4.8

* Loss on ignition.

Source: USEPA Document EPA-450/3-82-020a

TABLE 3

SIZE DISTRIBUTION OF PARTICULATE MATTER
EMISSIONS FROM STEELMAKING EAF FACILITIES

Particle size range (μm)	Size distribution (percent by weight)
<0.5	--
0.5-1.0	57-72
1.0-2.5	--
2.5-5.0	--
5-10	8-38
10-20	3-8
20-40	2-15
>40	0-18

Source: USEPA Document EPA-450/3-82-020a

Nitrogen Oxides (NOx)

The three fundamental mechanisms of NOx formation in the EAF process include thermal NOx, fuel bound nitrogen NOx, and prompt NOx. Thermal NOx arises from the thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in air in a high temperature combustion zone. Fuel NOx formation results from the evolution and reaction of fuel-bound nitrogen compounds with oxygen. The prompt NOx mechanism involves the intermediate formation of hydrogen cyanide with fuel combustion followed by the rapid oxidation of HCN to NO. Reference method test results show that more than 90 percent of all the NOx in the EAF exhaust is NO while very little is NO_2.

Thermal NOx is the most prevalent form. Thermal NOx formation takes place at temperatures above 2000°F, when both nitrogen and oxygen are present and sufficient residence time is allowed. In an EAF, where the furnace temperature reaches 3000 to 3400°F, conditions exist for the formation of NOx to a relatively high degree. Although EAFs have been considered a minor source of NOx emissions and verified emissions data are limited, EPA investigations have identified NOx emission factors ranging from 0.1 to over 0.7 pounds per ton of liquid steel produced. Modern high energy furnaces may be found at the higher end of the range.

NOx is also generated in the ladle furnace (to be constructed) and the reheat furnace. These furnaces use low-NOx burners to limit the formation of NOx by staged combustion. This lowers combustion zone temperatures sufficiently to reduce the amount of thermal NOx generated.

Carbon Monoxide (CO)

CO is generated during the charging, melting, slagging and tapping phases of the EAF heat cycle. Modern EAF facilities have a direct evacuation control (DEC) system to control emissions and maintain safe conditions, utilizing a capture hood exhaust system in combination with the DEC. Most of the CO is oxidized to CO_2 by contact with induced air at the DEC air gap. Exhaust gases mix with oxygen at a temperature above the auto-ignition temperature of CO (about 1350°F). AmeriSteel's EAF is an evolution of this design. CO generated in the furnace is oxidized at the air gap of the DEC. The DEC duct combustion system provides the time, temperature and mixing conditions necessary to maximize CO combustion while preventing unnecessary drafting of the furnace. If the draft on the furnace is too high, air can be drawn into the furnace generating excess NOx emissions and adversely affecting furnace metallurgy.

BACT EMISSION LIMITS/CONTROL TECHNOLOGY PROPOSED BY THE APPLICANT:

POLLUTANT	EMISSION LIMIT / CONTROL TECHNOLOGY
PM/PM_{10} (EAF)	0.0052 gr/dscf / Existing baghouses (same as current)
PM/PM_{10} (Reheat Furnace)	2.4 lb/hr / No add-on controls (currently 2.0 lb/hr)
Pb (EAF)	2.8 TPY / No add-on controls
NOx (EAF)	0.40 lb/ton steel / No add-on controls (currently 0.33 lb/ton)
NOx (Reheat Furnace)	0.20 lb/MMBtu / No add-on controls (currently 0.10 lb/MMBtu)
NOx (Ladle Furnace)	0.10 lb/MMBtu / No add-on controls (not currently specified)
CO (EAF)	3.0 lb/ton steel / No add-on controls (same as current)
CO (Reheat Furnace)	0.075 lb/MMBtu / No add-on controls (currently 0.035 lb)
VE (EAF)	3% opacity / Existing pneumatic system (same as current)
VE (Melt Shop)	6% opacity / No add-on controls (same as current)
VE (EAF Dust System)	10% opacity / Existing pneumatic system (same as current)

BACT DETERMINATION PROPOSED BY THE DEPARTMENT:

Particulate Matter (PM, PM_{10}), Lead (Pb) and Visible Emissions (VE)

The plant currently has two sets of baghouses (Nos. 1–2 and Nos. 3-4) to control PM/PM_{10}, lead and VE from the process. Department records indicate that these baghouses were originally installed in 1975 when the EAF was constructed. The baghouses are mechanical pressure/shaker-type systems. The original system consisted of a Fuller/DRACCO 13-module compartment with 6,000 square feet of cloth per module (3,770 dacron polyester bags with 78,000 square feet total area) capable of handling 260,000 acfm of dust-laden air at a filtration ratio (air to cloth) of 3.08:1. Overall design removal efficiency for this baghouse was 93.4% (98% for particles less than 5 microns) based on an uncontrolled emission factor of 3.075 lb/ton and a hood collection efficiency of 75%. The initial performance test showed actual emissions of 2.1 lb/hr and 0.0017 gr/scf compared to the New Source Performance Standard of 0.0052 gr/scf.

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Records show that the originally permitted billet capacity of 32 TPH (1975) was later increased to 43 TPH and then to 65 TPH in 1981. The 1981 expansion involved the installation of four oxygen/fuel burners in the walls of the furnace (burning No. 4 fuel oil with 0.7% sulfur); replacing the side draft hood with a 4th hole furnace vent (DEC system) and CO combustion system; and the addition of 6,000 square feet of baghouse filtering capacity (14th compartment) and larger fans. The permit was later modified to burn natural gas as the primary fuel in the EAF.

A PSD permit was applied for in March 1981 with the intention of including the original construction on an after-the-fact basis along with the expansion. The resultant BACT determination (Permit Number PSD-FL-074 was issued by the EPA on September 15, 1983) accepted the applicant's proposed technology and emission limits for particulate (NSPS-Subpart AA), VE (NSPS-Subpart AA), SO_2, NOx and CO. In 1990 the EPA rescinded the original PSD permit upon a showing that the facility entered into contracts to construct the EAF prior to the June 1, 1975 effective date of the federal PSD regulations.

An increase in EAF and billet tonnage capacity was not applied for again until 1994 when the applicant filed for an increase from 440,172 to 600,000 TPY to offset the shutdown of its Tampa Mill. This modification triggered applicability of Subpart AAa - Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 7, 1983, of 40 CFR 60 (Sections 60.270a through 60.276a) as well as a PSD permit (PSD-FL-221) and BACT determination.

The 1994 application called for increasing baghouse capacity by adding 9 compartments to the existing 14 compartments in Baghouse1-2 which is the primary system directly connected to the EAF. This change brought the new capacity from 260,000 acfm to 305,540 acfm for Baghouse 1-2 with approximately the same capacity provided by the Melt Shop Baghouses 3 & 4. The two fans for Baghouse 1-2 were relocated to the clean side of the gas stream thus converting the system to a negative pressure design. BACT limits established for PM for the new configuration were the same as the NSPS limits under Subpart AAa.

A summary of BACT determinations for PM/PM_{10} done in the last four years for similar EAF installations is shown below in reverse chronological order (from EPA's clearinghouse and other sources):

Facility/Location/Date Permit Issued	Capacity	Source	Control System	PM/PM_{10} Limit
Roanoke Electric Steel/Roanoke, VA/Nov. 1998	100 TPH	EAF	Baghouse (no specs)	0.0034 gr/scf
	160 TPH	BRF	None	6.72/4.70 lb/hr
	100 TPH	LMF	Baghouse (no specs)	0.0052 gr/scf
Ipsco Steel/Axis, AL/October 1998	200 TPH	EAF	Pulse Jet Baghouse	0.0033 gr/scf
	200 TPH	BRF	None	5.8 lb/MMBtu
	-	MSB &LMF	Pulse Jet Baghouse	0.0033 gr/scf
Chaparral Steel/Dinwiddie, VA/April 1998	215 TPH	EAF&LMF &MSB	Baghouse (positive pressure-no specs)	0.0018 gr/scf
	-	RF	None	10 lb/MMscf
Quanex (MacSteel Div.)/Fort Smith, AR/Apr.98	86 TPH	EAF	Baghouse (no specs)	0.0018 gr/scf
	86 TPH	RF	None	0.70 lb/hr
Qualitech Steel/Pittsboro, IN/October 1996	135 TPH	EAF&LMF &MSB	Baghouse (no specs)	0.0032 gr/scf

	-	RF	None	.003 lb/MMBtu
Nucor Steel/Crawfordville, IN/June 1996	502 TPH	EAF&LMF &MSB	Baghouse (16 compartments)	0.0018 gr/scf
Birmingham Steel/Memphis, TN/May 1996	285 TPH	EAF&LMF &MSB	Baghouse (reverse air)	0.0052 gr/scf
	-	RF	None	0.47 lb/hr
Ipsco Steel/Muscatine, IA/March 1996	230 TPH	EAF	Baghouse (neg. pres. pulse jet)	0.0033 gr/scf
Trico Steel/Decatur, AL/September 1995	440 TPH	EAF	Baghouse (neg. pres.)	0.0032 gr/scf (0.0026 goal)
Nucor Steel/Huger, SC/August 1995	165 TPH	EAF	Baghouse (neg. pres.)	0.0035 gr/scf
Tuscaloosa Steel/Tuscaloosa, AL/Dec. 1994	160 TPH	EAF	Baghouse (neg. pres.)	0.0035 gr/scf

EAF = Electric Arc Furnace/BRF = Billet Reheat Furnace/MSB = Melt Shop Building/LMF = Ladle Metallurgy Furnace

The Department's usual procedure for setting BACT limits where the applicant and the Department disagree on what the limit should be (for cases where the applicant already has state-of-the-art BACT control equipment in place and actual emission test results are substantially below the applicant's requested limit) is to provide a margin for compliance that is between 50 to 100 percent above the representative actual emission level. If the issue of AmeriSteel's baghouse control system not being representative of state-of-the-art technology is overlooked, the Department's procedure would be to arrive at the BACT limit as indicated below (assuming that compliance is based on the average of test results for Baghouses 1-2 and 3-4):

Present Actual Test Results:	Baghouse 1-2	0.0022
	Baghouse 3-4	0.0011
	Average*	0.0033/2 = 0.0017 gr/scf
BACT Limit (100% margin for compliance):		0.0017 x 2 = 0.0034 gr/scf

*Determined according to 40CFR60.275a(e)(2)

Coincidentally, this approach yields basically the same limit as indicated by the most recent BACT determinations for other EAF facilities; namely, 0.0034 gr/scf for Roanoke Electric Steel in Virginia and 0.0033 gr/scf for Ipsco Steel in Axis, Alabama. The Roanoke facility is slightly larger than AmeriSteel's requested capacity (100 vs. 90 TPH) and is being modified from 70 to 100 TPH which is similar to AmeriSteel's 75 to 90 TPH request. Ipsco Steel's facility is a new larger mill (200 TPH) with a pulse jet baghouse for which the vendor has guaranteed the performance to be 0.0033 gr/scf.

Mechanical shaker-type baghouses have a disadvantage relative to the more modern pulse jet type of fabric filter due to the puff of dust that is instantaneously emitted from shaken bags each time they begin filtration after being cleaned. Pulse jet filters have the advantage of continuous cleaning at uniform air flow resistance and they allow higher air-to-cloth ratios than shaker-type systems. Reverse jet and reverse-pulse units provide even higher air-to-cloth ratios while being continuously cleanable on-stream.

While AmeriSteel's baghouses for its EAF and Melt Shop are not state-of-the-art, AmeriSteel has the affordable options of improving control system performance considerably by installing

additional compartments to provide the proper air-to-cloth ratio (as it did for its 1995 modification) and making further improvements to its already effective baghouse maintenance program. Rather than requiring replacement of the existing control systems at this time, the Department believes that AmeriSteel can consistently meet the current state-of-the-art BACT limit (0.0034). Test data indicate that AmeriSteel will be able to consistently meet both the 3% opacity limitation and the current state-of-the-art BACT limit of 0.0034 gr/scf when both baghouse concentrations and flows are averaged according to the procedure in 40CFR60.275a. To allow AmeriSteel to respond to any unforeseen problems that arise when production is increased, the BACT limit for the first year of operation will be 0.0042 gr/scf but thereafter will be 0.0034 gr/scf.

Since no additional control equipment is being required at this time, no cost effectiveness analysis of control system alternatives is necessary.

For the processing of slag, the combination of cleaning or wetting roads, limiting the speed of vehicles in the plant to 5 mph, and wetting the slag during handling, screening, and storage as necessary to keep visible emissions below 20 percent opacity, is accepted as BACT. Also, the proposed Pb emissions of 2.8 TPY is accepted as BACT.

Nitrogen Oxides (NOx)

As shown in the table below, recent BACT NOx limits for EAFs have ranged from 0.27 to 0.70 lb/ton. None of the EAFs listed have NOx emission controls.

Facility/Location/Date Permit Issued	Capacity	Source	NOx Limit
Roanoke Electric Steel/Roanoke, VA/Nov. 1998	100 TPH	EAF	0.38 lb/ton
	160 TPH	BRF	0.25 lb/ton
	100 TPH	LMF	0.06 lb/ton
Ipsco Steel/Axis, AL/Oct. 1998	200 TPH	EAF	0.40 lb/ton
	200 TPH	BRF	172 lb/MMBtu
Chaparral Steel/Dinwiddie, VA/April 1998	215 TPH	EAF&LMF &MSB	0.70 lb/ton
	-	RF	210 lb/MMCF
Quanex (MacSteel Div.)/Fort Smith, AR/Apr.98	86 TPH	EAF	0.51 lb/ton
Qualitech Steel/Pittsboro, IN/October 1996	135 TPH	EAF&LMF &MSB	0.50 lb/ton
	-	RF	0.15 lb/MMBtu
Nucor Steel/Crawfordville, IN/June 1996	502 TPH	EAF&LMF &MSB	0.51 lb/ton
Birmingham Steel/Memphis, TN/May 1996	285 TPH	EAF&LMF &MSB	0.34 lb/ton
	-	RF	0.19 lb/ton
Ipsco Steel/Muscatine, IA/March 1996	230 TPH	EAF	0.27 lb/ton
Trico Steel/Decatur, AL/September 1995	440 TPH	EAF	0.35 lb/ton
Nucor Steel/Huger, SC/August 1995	165 TPH	EAF	0.35 lb/ton
Tuscaloosa Steel/Tuscaloosa, AL/Dec. 1994	160 TPH	EAF	0.35 lb/ton

Conventional BACT technologies for add-on NOx control from major combustion sources include selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), and flue gas recirculation (FGR) among the options available. Due to prohibitive cost effectiveness, none of these technologies has ever been applied on EAFs in mini-mills. The only feasible method of NOx control for the EAF is minimization of excess air entering the furnace. AmeriSteel achieves this by controlling furnace draft to the minimum level practicable. The current NOx standard of 0.33 lb/ton of steel will be accepted as BACT for the EAF. Use of natural gas and good combustion control is accepted as BACT for the auxiliary burners. NO emissions from the auxiliary burners are expected to be 0.08 lbs/1000 cubic feet gas burned.

For reheat furnaces, the cost analysis provided in the application suggests a cost effectiveness range from approximately $4,000/ton for low-NOx burners to $7,000/ton for SCR. Most of the reheat furnaces in this industry are in the size range of industrial process steam boilers and therefore do not afford the economies of scale that would tend to justify add-on systems for either heat recovery or pollution control. Only one plant has been required to install SCR but it was specifically needed to meet a NOx ambient air quality standard. The cost effectiveness for the SCR unit was estimated to be about $40,000/ton NOx removed. This cost is far above the guideline Florida uses in determining BACT. NOx emissions from gas-fired equipment in this size range can be effectively controlled by Low-NOx burners as presently installed at AmeriSteel. According to the EPA's clearinghouse, NOx BACT limits for reheat furnaces at similar facilities range from about 0.13 to around 0.2 lb/1,000 ft^3. Following the same approach that was used for setting the PM/PM_{10} limit, a margin of 100 percent above the most recent NOx test result yields 0.19 lb/MMBtu as the NOx BACT limit for the reheat and ladle furnaces.

Carbon Monoxide (CO)

The major source of CO emissions at this facility is the EAF. CO is formed through oxidation of the carbon present in the electrodes, scrap steel, fluxes, coal, and other carbon containing material in the EAF. Most of the CO formed in the EAF is captured with the direct evacuation system that maintains a slightly negative pressure inside the EAF. The gap between the furnace and the entry point in this duct allows excess air to enter which oxidizes over 90 percent of the CO. Maximum CO control from a source might be achieved through the use of a catalytic oxidation system, however, use of a catalyst oxidation system is not feasible because the metallic fumes in the gases would poison the catalyst. CO emissions from this EAF using this system have been measured at 3 lbs/billet ton of steel produced. The Department accepts this system as BACT for CO for the EAF. Use of natural gas in the EAF auxiliary burners and other furnace burners will generate around 0.035 lbs/1000 cubic foot of gas burned. The Department accepts the use of natural gas as BACT for the reheat and ladle furnaces. The CO emissions will be approximately 0.035 lbs/1000 cubic feet of gas burned.

APPENDIX BD
REVISED BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

BACT LIMITS DETERMINED BY THE DEPARTMENT

POLLUTANT	EMISSION LIMIT / CONTROL TECHNOLOGY
PM/PM_{10} (EAF and Ladle)	0.0042 gr/scf first year; 0.0034 gr/dscf thereafter
PM/PM_{10} (Reheat Furnace)	2.14 lb/hr / No add-on controls
Pb (EAF)	0.70 lb/hr (2.8 TPY) / No add-on controls
NOx (EAF)	0.33 lb/ton steel / No add-on controls
NOx (Reheat/Ladle Furnaces)	0.19 lb/MMBtu / No add-on controls
CO (EAF)	3.0 lb/ton steel (24 hr. avg.)/ No add-on controls
CO (Reheat Furnace)	0.035 lb/MMBtu / No add-on controls
VE (Baghouses 1-2 & 3-4)	3% opacity
VE (Melt Shop Vents)	6% opacity / No add-on controls
VE (EAF Dust System)	10% opacity / Existing pneumatic system

COMPLIANCE

Compliance with the particulate emission limitations shall be in accordance with the EPA Reference Method 5 as contained in Appendix A, 40 CFR 60 and as indicated above. For the EAF, the sampling time and sample volume of each run shall be at least 4 hours and 160 dscf and the sampling time shall include an integral number of heats (Rule 62-296.800, A.C., 40 CFR 60.275a(e)(1)). Compliance with other pollutant limits shall be as indicated below:

CO - EPA Method 10 (24 hour average)
NOx - EPA Method 7E (as measured)
Pb - EPA Method 12
VE - EPA Method 9

Compliance tests on the EAF and Melt Shop shall be conducted at a minimum production rate of 90 billet tons per hour production. Compliance tests on the reheat and ladle furnaces shall be conducted at a minimum rate of 108 billet tons per hour.

DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

John Reynolds, Permit Engineer
A. A. Linero, Administrator, New Source Review Section
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

APPENDIX BD
REVISED BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

Recommended By:

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

9/27/99
Date:

Approved By:

Howard L. Rhodes, Director
Division of Air Resources Management

Sept. 27, 1999
Date:

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

(a) Have access to and copy and records that must be kept under the conditions of the permit;
(b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
(c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

(a) A description of and cause of non-compliance; and
(b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are

submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extend it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.

G.13 This permit also constitutes:

(a) Determination of Best Available Control Technology *(X)*;
(b) Determination of Prevention of Significant Deterioration *(X)*; and
(c) Compliance with New Source Performance Standards *(X)*

G.14 The permittee shall comply with the following:

(a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

(b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

(c) Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The person responsible for performing the sampling or measurements;
3. The dates analyses were performed;
4. The person responsible for performing the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes

THRU: Clair Fancy

FROM Al Linero 9/24

DATE: September 24, 1999

SUBJECT AmeriSteel Corp., 0310157-004-AC, PSD-FL-261
:

Attached for approval and signature is a construction permit for AmeriSteel to increase production by 20% at the Baldwin Mill in Duval County. Relevant details are summarized in the Final Determination.

The final permit language reflects our agreement to take out language to which RESD objected. In its place, we will allow AmeriSteel an interim limit of 0.0042 lb PM/dscf from the electric arc furnace baghouse. By their second test they must meet 0.0034 lb PM/dscf. Both AmeriSteel and RESD agree with the final version. The second test could turn out to be sooner than one year because their Title V permit might require periodic monitoring.

The Fish and Wildlife Service advised that they consider SCR technically feasible and cost-effective. We determined that it is not. We are not aware of any such units in the country with SCR and believe the justification is weaker for modification of this existing facility. FWS also believes that lower emissions are possible from the existing Low NO_X burners on the Reheat Furnace. This matter is addressed in the Final determination and in the BACT determination.

I recommend your approval.

Today, September 24, is Day 74