

Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

August 19, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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

Re: DEP File No. 0310157-004-AC, PSD-FL-261, Revised Draft Permit
Baldwin Mill – Production Capacity Increase

Dear Mr. Shumake:

Enclosed is one copy of the Revised Draft air construction permit for AmeriSteel Corporation's mill located at Highway 217 at Yellow Water Road, Duval County. The Revised Technical Evaluation and Preliminary Determination, the Department's Intent to Issue Revised Air Construction Permit and the Public Notice of Intent to Issue Revised Air Construction Permit are also included.

The Public Notice of Intent to Issue Revised Air Construction Permit must be published one time only, as soon as possible, in the legal advertisement section of a newspaper of general circulation in the area affected, pursuant to the requirements Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., of the New Source Review Section at the above letterhead address. If you have any other questions, please contact John Reynolds at 850/488-0114.

Sincerely,

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

CHF/jr

Enclosures

Z 333 618 128

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Mr. Donnie Shumake, AmeriSteel	
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Post Office, State, & ZIP Code	
Baldwin, FL 32234	
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PSD-FL-261	
0310157-004-AC	

PS Form 3800, April 1995

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- Complete items 3, 4a, and 4b.
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3. Article Addressed to:

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

4. Article Number

2 333 618 128

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1007-11-10-0000
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PUBLIC NOTICE OF INTENT TO ISSUE REVISED AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0310157-004-AC, PSD-FL-261

AmeriSteel Corporation
Baldwin Plant
Duval County

The Department of Environmental Protection (Department) gives notice of its intent to issue a revised air construction permit to AmeriSteel Corporation for the Baldwin Plant located at Highway 217 at Yellow Water Road, Duval County. The permit is for modifications to increase production capacity from 600,000 to 720,000 billet tons of steel per year. The applicant's mailing address is: P.O. Box 518, Baldwin, Florida 32234. A Best Available Control Technology (BACT) determination was required for particulate matter (PM/PM₁₀), lead (Pb), nitrogen oxides (NO_x), and carbon monoxide (CO) pursuant to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD).

The Department intends to issue this revised air construction permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Particulate matter and lead emissions from the electric arc furnace and the melt shop building will be controlled by two fabric filters (baghouses). Fugitive particulate matter emissions from other sources will be controlled by dust prevention procedures. NO_x emissions will be controlled by the use of Low-NO_x burners. Carbon monoxide emissions will be limited by air oxidation. Fuels will be limited to natural gas and propane.

An air quality impact analysis was conducted. Maximum predicted impacts due to proposed emissions from the project are less than the applicable PSD Class I and Class II significant impact levels.

The Department will issue the Final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for public meetings concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments and requests for public meetings should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

In the Matter of an
Application for Permit by:

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

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

INTENT TO ISSUE REVISED AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue a revised air construction permit (copy of Draft revised permit attached) for the proposed project, detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, AmeriSteel Corporation, submitted a complete application on April 12, 1999, to the Department for an air construction permit for its Baldwin Plant located at Highway 217 at Yellow Water Road, Duval County. The permit is for modifications to increase the production capacity from 600,000 to 720,000 billet tons of steel per year.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit is required to construct (modify) the facility.

The Department intends to issue this revised air construction permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Revised Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for public meetings concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of Public Notice of Intent to Issue Revised Air Construction Permit. Written comments and requests for public meetings should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301.

Mr. Donnie Shumake, V.P. & General Manager, AmeriSteel Corporation
Baldwin Plant
DEP File No. 0310157-004-AC, PSD-FL-261
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Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation is not available in this proceeding.

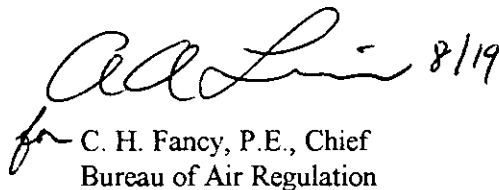
In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.

 8/19
for C. H. Fancy, P.E., Chief
Bureau of Air Regulation

Mr. Donnie Shumake, V.P. & General Manager, AmeriSteel Corporation
Baldwin Plant
DEP File No. 0310157-004-AC, PSD-FL-261
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CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Intent to Issue Revised Air Construction Permit (including the Public Notice of Intent to Issue Revised Air Construction Permit, Revised Technical Evaluation and Preliminary Determination, and the Draft permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 8/20/99 to the person(s) listed:

Mr. Donnie Shumake *
Mr. Ernest E. Frye, Director, NE District
Mr. Daniel Haskell, Director, RESD
Mr. Gregg 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.

Martha Jane Wise 8/20/99
(Clerk) (Date)

REVISED
TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

AmeriSteel Corporation
Baldwin, Florida
Duval County

Modification to Increase
Production Capacity to 720,000 TPY
Permit No. 0310157-004-AC
PSD-FL-261

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

August 19, 1999

REVISED TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

I. GENERAL INFORMATION

A. Applicant: AmeriSteel Corporation
P. O. Box 518
Baldwin, Florida 32234

B. Application Date/Facility Location

On April 12, 1999 the Department received AmeriSteel Corporation's completed application for a permit to construct (modify) an existing recycle scrap-based steel works (SIC 3312) located near Baldwin in Duval County, Florida. The UTM Coordinates of this site are Zone 17, 405.7 km E and 3350.2 km N.

II. TECHNICAL EVALUATION

A. Process Description

The AmeriSteel facility produces steel reinforcing bars and steel rod. 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.

The steel works operations consist of melting/refining recycled scrap steel in the EAF, casting the refined steel into billets, reheating the steel billets and then rolling the steel billets into products (concrete reinforcing bars and marketable wire), and processing the slag from the EAF as a by-product. Scrap steel is brought to the plant in railroad cars and trucks. The scrap steel is currently stored in the yard and then transferred by cranes into the EAF scrap charging bucket.

Specific weights of cold scrap steel and alloy materials are placed into the open EAF. The roof of the EAF is then rotated into place and the carbon electrodes are lowered into the EAF. Electrical power is then applied through the electrodes which melts the steel in the EAF. After the initial charge of steel is melted, the electrodes are raised and the roof is rotated aside so that another charge (backcharge) of steel can be added to the EAF. A typical cycle or "heat" includes an initial charge of scrap steel and two back charges of scrap steel. Oxygen from an on-site oxygen pressure swing absorption plant is injected into the molten steel to adjust the chemistry of the steel, speed up the melting process, and heat the molten steel. The EAF has natural gas fired burners to preheat and assist in melting the scrap steel.

At the end of the cycle, the electrical power to the electrodes is shut off. The electrodes are then raised from the EAF. The furnace is drained/tapped and the molten metal is poured into a preheated ladle. Alloying agents may be added to the ladle to adjust the chemistry of the steel. The EAF is also tapped to remove the slag that forms above the steel. This slag runs into a pit and is then hauled to the slag processing plant. The slag is cooled with water at the slag processing plant before being processed.

Before tapping, the ladle is preheated by a natural gas fired burner to prevent thermal shock when it contacts the molten steel. The plant has 3 ladle heaters. After tapping, the ladle containing the molten steel is transferred by overhead crane to the continuous caster. The slide gate for the ladle is opened to allow molten steel to flow into the continuous caster. The continuous caster produces billets that are approximately 5 inches square by 30 feet long. The billets are stored under a roof until they are sent to the reheat furnace.

Pebble lime, an additive used in the EAF, is pneumatically transferred to a silo that is vented to Baghouse 3-4. Other additives for the EAF are brought to the plant in bags. The dust captured by Baghouse 1-2 and Baghouse 3-4 controlling the emissions from the melt shop building is regulated by the New Source

REVISED TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Performance Standard (NSPS) for steel plants (40 CFR 60, Subpart AAa). The applicant will use conveyers to transfer the dust collected by the melt shop baghouses to either a silo or directly to a covered truck. The dust silo is vented to Baghouse 3-4 and is equipped with a retractable loading snorkel for loading trucks and railroad cars in a totally enclosed building. The collected dust is hauled off-site for processing and disposal. The NSPS visible emission limit for the handling of dust collected by these baghouses is 10 percent opacity.

The natural gas-fired reheat furnace is located under a roof. The billets are heated therein to the requisite temperature (1900-2100 °F). The heated billets are fed, one at a time, to the rolling mill. The billets pass through a series of mill stands to form either concrete reinforcing bars or marketable wire. The product is stored in the yard until it is shipped to the customers.

In the outdoor slag processing plant, the slag is passed over a magnetic separator and screens and then stored according to its diameter in the yard. The slag is sold in bulk to the customers. Payloaders hauling the slag and other vehicular traffic in the yard are limited to a speed of 5 miles per hour. The low speed will help reduce fugitive dust.

B. Project Description

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 conducting 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.

This permit also covers a modification that was formally requested in 1997 but withdrawn after the applicant decided to pursue the current expansion project. The 1997 request was for an upward adjustment of the volatile organic compounds (VOC) emissions limit since the emission factor for prior permitting actions did not properly reflect the characteristics of the metal scrap used. Associated with the 1997 request was an

REVISED TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

agreement to discontinue the processing of used oil filters. This request has been incorporated into the current permit modification.

D. Air Pollution Control and Emissions

The transfer of scrap steel from railroad cars to the scrap charging bucket occurs in the melt shop building which houses the EAF and continuous caster. The air in this building is captured by either the roof evacuation system or the roof canopy hood for the baghouses. The primary emissions from the handling of scrap steel is fugitive particulate matter.

The EAF is located under the roof canopy hood. The canopy hood is divided into sections controlled by louvers. The sections of the hood in service are controlled automatically, depending on the EAF operation mode, to optimize capture of the air pollutants escaping from the operation. The melt shop building roof evacuation system captures the emissions that escape the roof canopy hood. The emissions from the melt shop building are controlled by Baghouse 1-2 and Baghouse 3-4. All PM emissions from this process are believed to consist of particles smaller than 10 microns in diameter. PM/PM₁₀ emissions from the continuous caster are captured by the roof evacuation system. Emissions have been estimated at 0.12 lbs PM/ton of steel.

The EAF is the most significant source of CO at this plant. CO emissions of 3 lbs/ton of steel produced, result from the carbon present in the EAF (electrodes, additives). Lancing with oxygen converts some carbon to CO. The Direct Evacuation Control System (DEC) conveys fumes directly from the EAF to the baghouses. A gap in this duct allows ambient air to enter which cools the gases and oxidizes most of the CO. The DEC is estimated to be 90 percent efficient in the destruction of CO.

NO_x is generated in the EAF due to oxidation of atmospheric nitrogen at the high temperature of the electric arc. The auxiliary natural gas burners on the side of the EAF also generate NO_x. Some NO_x is also generated in the continuous caster as a result of contact between air and the molten steel. No air pollution control for NO_x is typically used for these operations. The billet reheat furnace emits NO_x from the combustion of the gas fuel. The site-specific NO_x emission factor for reheat furnace, based on stack tests, is 0.08 lbs nitrogen oxide (NO)/1000 cubic feet of natural gas. CO is also formed during the combustion of natural gas. The applicant relies on efficient combustion to control the CO from this source. Emissions are typically controlled by clean fuel (natural gas or propane) and low-NO_x burners.

VOC emissions vary with the amount and type of plastics and oil contamination vaporized during the meltdown process. Actual test results show that these emissions have come down by about 20-30 percent to around 0.2 lb/ton after a new type of shredder was installed approximately one year ago. An emission factor of 0.295 lb VOCs/ton steel has been proposed by the applicant which is in line with the approach used by the Department for setting the PM/PM₁₀ limit (100 percent above actual emissions to provide a margin for compliance).

The slag processing operation is located outside and southeast of the melt shop building. It is an unconfined source of PM/PM₁₀ emissions. Emissions are estimated to be 6.4 TPY. Reasonable precautions during the processing of slag include wetting as necessary to minimize unconfined emissions. A similar degree of control can be attained by covering the conveyers and installing hoods with dust collectors on the conveyor transfer points and screens.

Proposed annual emissions from the facility based on 8,000 hours of operation are presented below.

Process	PM ₁₀	SO ₂	NO _x	CO	VOC	Pb
Baghouses	95.6	90.0	118.8	1,080.0	106.2	2.8
EAF Fugitives	5.0	N/A	N/A	N/A	N/A	0.15
Reheat Furnace	8.5	0.2625	87.5	36.8	2.4	0.0
Total	109.1	90.3	206.3	1,116.80	108.6	2.95

REVISED TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

III. Rule Applicability

The proposed modification is subject to the preconstruction review requirements under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-4, 62-210, 62-212, 62-272, 62-275, 62-296, and 62-297, Florida Administrative Code (F.A.C.). The facility is located in an air quality area that is designated attainment/maintenance for ozone (Rule 62-275.600, F.A.C.), unclassifiable for sulfur dioxide (Rule 62-275.420, F.A.C.), and attainment for the other criteria pollutants (Rule 62-275.400, F.A.C.).

Iron and steel production plants are on the list of Major Facility Categories (Table 212.400-1, F.A.C.). This steel works is a major facility because it emits over 100 TPY of particulate matter (as PM₁₀), carbon monoxide (CO), and nitrogen oxides (NO_x). The proposed modification will cause a significant net emissions increase of PM₁₀, Pb, CO, and NO_x (Table 212.400-2, F.A.C.) and is therefore subject to the Prevention of Significant Deterioration (PSD) regulations (Rule 62-212.400, F.A.C.). The emission standards for PM₁₀, Pb, CO, and NO_x are established by a Best Available Control Technology (BACT) determination (Rule 62-212.410, F.A.C.).

The facility is subject to the federal New Source Performance Standards (40 CFR 60, Subpart AAa, Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 7, 1983). The emission units affected by this modification shall comply with all applicable provisions of the Florida Administrative Code (including applicable portions of the Code of Federal Regulations) and, specifically, the following chapters and rules:

• Chapter 62-4	Permits.
• Rule 62-204.220	Ambient Air Quality Protection
• Rule 62-204.240	Ambient Air Quality Standards
• Rule 62-204.260	Prevention of Significant Deterioration Increments
• Rule 62-204.360	Designation of Prevention of Significant Deterioration Areas
• Rule 62-204.800	Federal Regulations Adopted by Reference
• Rule 62-210.300	Permits Required
• Rule 62-210.350	Public Notice and Comments
• Rule 62-210.370	Reports
• Rule 62-210.550	Stack Height Policy
• Rule 62-210.650	Circumvention
• Rule 62-210.700	Excess Emissions
• Rule 62-210.900	Forms and Instructions
• Rule 62-212.300	General Preconstruction Review Requirements
• Rule 62-212.400	Prevention of Significant Deterioration
• Rule 62-212.500	Preconstruction Review for Nonattainment Areas
• Rule 62-296.320	General Pollutant Emission Limiting Standards
• Rule 62-296.330	Best Available Control Technology (BACT)
• Rule 62-296.700	Reasonable Available Control Technology Particulate Matter
• Rule 62-296.711	Materials Handling, Sizing, Screening, Crushing and Grinding Operations
• Rule 62-297.310	General Test Requirements
• Rule 62-297.400	EPA Methods Adopted by Reference
• Rule 62-297.401	EPA Test Procedures
• Rule 62-297.520	EPA Performance Specifications

REVISED TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

IV. Air Quality Analysis

The proposed project will increase emissions of four pollutants at levels in excess of PSD significant amounts: PM₁₀, CO, NO_x, and Pb. PM₁₀ and NO_x are criteria pollutants and have national and state ambient air quality standards (AAQS), PSD increments, and significant impact levels defined for them. CO and Pb are criteria pollutants and have only AAQS and significant impact levels defined for them.

The applicant's initial PM₁₀, CO, NO_x, and Pb air quality impact analyses for this project predicted no significant impacts; therefore, further applicable AAQS and PSD increment impact analyses for these pollutants were not required. The nearest PSD Class I areas are the Okefenokee and Wolf Island National Wilderness Areas located 38 and 136 km to the north and northeast, respectively. Based on the preceding discussion the air quality analyses required by the PSD regulations for this project are the following:

- A significant impact analysis for PM₁₀, CO, NO_x and Pb
- An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality modeling impacts.

Based on these required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause or significantly contribute to a violation of any AAQS or PSD increment. However, the following EPA-directed stack height language is included: "In approving this permit, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in *NRDC v. Thomas*, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators." A more detailed discussion of the required analyses follows.

Models and Meteorological Data Used in the Significant Impact Analysis

The EPA-approved Industrial Source Complex Short-Term (ISCST3) dispersion model was used to evaluate the pollutant emissions from the proposed project. This model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. It incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. The ISCST3 model allows for the separation of sources, building wake downwash, and various other input and output features. A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant used the EPA recommended regulatory options. Direction-specific downwash parameters were used for all sources for which downwash was considered. The stacks associated with this project all satisfy the good engineering practice (GEP) stack height criteria.

Meteorological data used in the ISCST3 model consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Jacksonville, Florida (surface data) and Waycross, Georgia (upper air data). The 5-year period of meteorological data was from 1984 through 1988. These NWS stations were selected for use in the study because they are the closest primary weather stations to the study area and are most representative of the project site. The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling.

For determining the project's significant impact area in the vicinity of the facility and if there are significant impacts from the project on any PSD Class I area, the highest predicted short-term concentrations and highest predicted annual averages were compared to their respective significant impact levels.

REVISED TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Significant Impact Analysis

Preliminary modeling is conducted using only the proposed project's worst case emission scenario for each pollutant and applicable averaging time. Over 500 receptors were placed along the facility's fenceline and within 10 km of the facility, which is located in a PSD Class II area. In addition, 11 discrete receptors were used to predict impacts at the two closest PSD Class I areas. 10 of the 11 receptors were located along the southern and eastern boundaries of the Okefenokee National Wilderness Refuge (ONWR) located approximately 36 kilometers (km) north of the facility. One additional receptor was located at the Wolf Island National Wilderness Refuge (WINWR), located approximately 136 km north of the facility.

For each pollutant subject to PSD and also subject to PSD increment and/or AAQS analyses, this modeling compares maximum predicted impacts due to the project with PSD significant impact levels to determine whether significant impacts due to the project were predicted in the vicinity of the facility or in the Class I areas. In the event that the maximum predicted impact of a proposed project is less than the appropriate significant impact level, a full impact analysis for that pollutant is not required. Full impact modeling considers not only the impact of the project but also other major sources, including background concentrations, located within the vicinity of the project. The tables below show the results of this modeling.

MAXIMUM PROJECT AIR QUALITY IMPACTS FOR COMPARISON TO THE PSD CLASS II SIGNIFICANT IMPACT LEVELS IN THE VICINITY OF THE FACILITY

Pollutant	Averaging Time	Max Predicted Impact (ug/m ³)	Significant Impact Level (ug/m ³)	Significant Impact?
PM ₁₀	Annual	0.4	1	NO
	24-hour	4.7	5	NO
CO	8-hour	81	500	NO
	1-hour	160	2000	NO
NO ₂	Annual	0.4	1	NO
Pb	Quarterly	0.02	0.03	NO

MAXIMUM PROJECT AIR QUALITY IMPACTS FOR COMPARISON TO THE PSD CLASS I SIGNIFICANT IMPACT LEVELS

Pollutant	Averaging Time	Max. Predicted Impact at Class I Areas (ug/m ³)	Proposed EPA Significant Impact Level (ug/m ³)	Significant Impact?
PM ₁₀	Annual	0.008	0.2	NO
	24-hour	0.2	0.3	NO
NO ₂	Annual	0.01	0.1	NO

REVISED TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The results of the significant impact modeling show that there are no significant impacts predicted from emissions from this project; therefore, no further modeling was required.

Impacts On Soils, Vegetation, Wildlife, Visibility and Growth

The maximum ground-level concentrations predicted to occur for PM₁₀, CO, NO_x and Pb emissions as a result of the proposed project are less than significant impact levels, which in turn are less than the applicable allowable increments for each pollutant. Because the AAQS are designed to protect both the public health and welfare and the project impacts are less than significant, it is reasonable to assume the impacts on soils, vegetation, wildlife, visibility will be minimal or insignificant. There will be no significant impacts from growth.

V. Conclusion

Based on the information provided by AmeriSteel Corporation, the Department has reasonable assurance that the proposed modification, as described in this evaluation and subject to the conditions proposed herein, will not cause a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 62-212 of the Florida Administrative Code.

Permit Engineer: John Reynolds
Meteorologist: Cleve Holladay

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

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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).

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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.

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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

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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 (NOx), and carbon monoxide (CO).

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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., SO₂, 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.

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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, SO₂, H₂SO₄, 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, PM₁₀), 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 ₂ O ₃	Al ₂ O ₃	MnO	Cr ₂ O ₃	SO ₂	P ₂ O 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

<u>Constituent</u>	<u>Percent</u>
Fe ₂ O ₃	19-53
CaO	3-14
Al ₂ O ₃	1-13
SiO ₂	0.9-9
MgO	2-15
Mn ₂ O ₃	0.6
ZnO	0-16.3
NiO	0-3
Cr ₂ O ₃	0-14
CuO	0.1
MnO	0.6-12
Cl	1.2
PbO	0-4
FeO	4-10
Na ₂ O	1.5
LOI*	4.3-6.8
Other	4.8

* Loss on ignition.

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

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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 (NO_x)

The three fundamental mechanisms of NO_x formation in the EAF process include thermal NO_x, fuel bound nitrogen NO_x, and prompt NO_x. Thermal NO_x arises from the thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in air in a high temperature combustion zone. Fuel NO_x formation results from the evolution and reaction of fuel-bound nitrogen compounds with oxygen. The prompt NO_x 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 NO_x in the EAF exhaust is NO while very little is NO₂.

Thermal NO_x is the most prevalent form. Thermal NO_x 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 NO_x to a relatively high degree. Although EAFs have been considered a minor source of NO_x emissions and verified emissions data are limited, EPA investigations have identified NO_x 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.

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

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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 CO₂ 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:

<u>POLLUTANT</u>	<u>EMISSION LIMIT / CONTROL TECHNOLOGY</u>
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, PM₁₀), Lead (Pb) and Visible Emissions (VE)

The plant currently has two sets of baghouses (Nos. 1-2 and Nos. 3-4) to control PM/PM₁₀, 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), SO₂, NO_x 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 Baghouse 1-2 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/PM₁₀ 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
	86 TPH	EAF	Baghouse (no specs)	0.0018 gr/scf
Quanex (MacSteel Div.)/Fort Smith, AR/Apr. 98	86 TPH	RF	None	0.70 lb/hr
	135 TPH	EAF & LMF & MSB	Baghouse (no specs)	0.0032 gr/scf

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

EAFF = 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	<u>0.0011</u>
	Average*	$0.0033/2 = 0.0017 \text{ gr/scf}$
BACT Limit (100% margin for compliance):		$0.0017 \times 2 = 0.0034 \text{ gr/scf}$

*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

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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, the Department is willing to accept an alternative plan that would make up for the lack of modern control equipment. (The presence of continuous opacity monitoring equipment for both baghouses provides the assurance the Department needs that the opacity, the Department's primary concern, will be maintained within the 3% limit and provides the basis for the Department's willingness to accept an alternate plan).

Before requiring such options to be implemented under a corrective action plan, the Department would need evidence that AmeriSteel cannot 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. The process flow diagram submitted with the current application, Figure 1-5, shows the EAF and the Melt Shop Roof Evacuation system exhaust ducts joined together in a common duct and routed to Baghouses 1-2 and 3-4 in parallel flow. If, during annual compliance testing, the averaged baghouse concentration limit is not met while the opacity limit is met, the Department will allow retesting within 72 hours until three simultaneous consecutive runs on the two baghouses collectively average 0.0034 gr/scf or less.

If, after timely retesting, the baghouses are unable to achieve a PM/PM₁₀ average emission rate of 0.0034 gr/scf or less, the Department and AmeriSteel will negotiate terms and scheduling for implementation of a corrective action plan that may include installing additional compartments and/or providing enhanced bag maintenance or other measures. The corrective action plan will be triggered only by the failure to achieve the BACT concentration limit after retesting as specified above. [It should be noted that this retesting provision is for the purpose of demonstrating that the subject control systems have not lost their current performance capability. The retesting provision applies only as a result of this two-part emission limit (opacity and concentration) in this instance and must not be used to establish any precedents or procedures for other facilities that may fail compliance tests].

Since no additional control equipment is being required at this time, no cost effectiveness analysis of control system alternatives is necessary. In the event that new baghouse compartments are required to be installed under a corrective action plan, their cost-effectiveness is presumed to be justified to restore the air-to-cloth ratio that existed prior to the current modification.

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

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	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/Muscatoine, 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 NO_x 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 NO_x 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 NO_x 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-NO_x 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 NO_x ambient air quality standard. The cost effectiveness for the SCR unit was estimated to be about \$40,000/ton NO_x removed. This cost is far above the guideline Florida uses in determining BACT. NO_x emissions from gas-fired equipment in this size range can be effectively controlled by Low-NO_x burners as presently installed at AmeriSteel. According to the EPA's clearinghouse, NO_x BACT limits for reheat furnaces at similar facilities range from about 0.13 to around 0.2 lb/1,000 ft³. Following the same approach that was used for setting the PM/PM₁₀ limit, a margin of 100 percent above the most recent NO_x test result yields 0.19 lb/MMBtu as the NO_x BACT limit for the reheat and ladle furnaces.

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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.

BACT LIMITS DETERMINED BY THE DEPARTMENT

<u>POLLUTANT</u>	<u>EMISSION LIMIT / CONTROL TECHNOLOGY</u>
PM/PM ₁₀ (EAF and Ladle)	0.0034 gr/dscf / Corrective Action Plan if limit not met
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
NO _x (EAF)	0.33 lb/ton steel / No add-on controls
NO _x (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 / Corrective Action Plan if limit not met
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)
 NO_x - EPA Method 7E (as measured)
 Pb - EPA Method 12
 VE - EPA Method 9

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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

Recommended By:

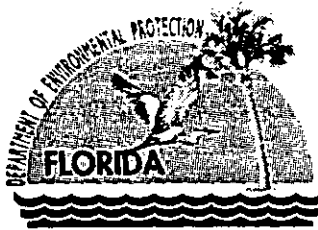
Approved By:

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

Howard L. Rhodes, Director
Division of Air Resources Management

Date:

Date:



Jeb Bush
Governor

Department of Environmental Protection

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 (PM₁₀), lead (Pb), nitrogen oxides (NO_x), 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/PM₁₀, NO_x, 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.]

AIR CONSTRUCTION PERMIT PSD-FL-261 (0310157-004-AC)
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 001 shall 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/PM₁₀) - 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 (NO_x) - 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/PM₁₀ - 2.4 lbs/hr and 10.2 TPY.
 - B. CO - 0.035 lbs/MMBtu, 7.7 lbs/hr, and 33 TPY.
 - C. NO_x - 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.]

SECTION III – EMISSIONS UNIT(S) SPECIFIC CONDITIONS

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, and 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/PM₁₀ - 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. NO_x - EPA Method 7E (as measured).
 - D. Lead - EPA Method 12.
 - E. 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/PM₁₀ 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 (RESO), upon advance notification, will allow operation at higher capacities if such operation is for demonstrating compliance at a higher capacity. If, during compliance testing, the averaged baghouse concentration limit is not met while the opacity limit is met, the Department will allow retesting within 72 hours until three simultaneous consecutive runs on the two baghouses collectively average 0.0034 gr/scf or less. If, after timely retesting, the baghouses are unable to achieve a PM/PM₁₀ average emission rate of 0.0034 gr/scf or less, in lieu of an enforcement action by the Department or the RESO, the Department and AmeriSteel will negotiate terms and scheduling for implementation of a corrective action plan that may include

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- installing additional compartments and/or providing enhanced bag maintenance or other measures to bring the particulate emissions into compliance. The corrective action plan will be triggered only by the failure to achieve the BACT concentration limit after retesting as specified above. [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.]
 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

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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;
 - O. 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.]

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

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 extent 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.