Golder Associates Inc.

5100 West Lemon Street Suite 114 Tampa, FL USA 33609 Telephone: (813) 287-1717 Fax: (813) 287-1716



RECEIVED

SEP 15 2008

BEST AVAILABLE CONTROL
TECHNOLOGY (BACT) ANALYSIS UPDATE
FOR THE GERDAU AMERISTEEL
JACKSONVILLE STEEL MILL
BALDWIN DUVAL COUNTY, FLORIDA
0310157 -011-40/PSD-FL-3190

BUREAU OF AIR REGULATION

Prepared For:

Gerdau Ameristeel Jacksonville Steel Mill 16770 Rebar Road Baldwin, Florida 32234

Prepared By:

Golder Associates Inc. 5100 West Lemon Street, Suite 114 Tampa, Florida 33609

Distribution:

4 Copies - FDEP

1 Copy - City of Jacksonville, ERMD

2 Copies - Gerdau Ameristeel

2 Copies – Golder Associates Inc.

September 2008

083-89570

Golder Associates

TABLE OF CONTENTS

1.0	INTR	RODUCTION	1-1	
2.0	BEST	T AVAILABLE CONTROL TECHNOLOGY ANALYSIS	2-2	
	2.1	Control Technology Review		
	2.2	Requirements and BACT Summary		
		2.2.1 Ladle Metallurgic Furnace (LMF)		
		2.2.2 Billet Reheat Furnaces		
	2.3	LMF BACT Analysis		
		2.3.1 Particulate Matter (PM/PM ₁₀) and Lead		
		2.3.2 Nitrogen Oxides		
		2.3.3 Carbon Monoxide		
		2.3.4 Volatile Organic Compounds (VOC)		
		2.3.5 Sulfur Dioxide		
	2.4	Reheat Furnace BACT Analysis (Rebar and Wire/Rod BRFs)		
		2.4.1 Particulate Matter (PM/PM ₁₀)		
		2.4.2 Nitrogen Oxides		
		2.4.3 Carbon Monoxide		
		2.4.4 Volatile Organic Compounds (VOC)	2-34	
		2.4.5 Sulfur Dioxide		
		LIST OF TABLES		
Table	2-1	Proposed Updated BACT Emission Levels		
Table 2-2		BACT Determinations for Electric Arc Furnace (EAF) 1998-2008		
Table 2-3		PM/PM ₁₀ Control Technology Feasibility Analysis for EAF/LMFs		
Table 2-4		NO _x Control Technology Feasibility Analysis for EAF/LMFs		
Table 2-5		Add-on CO Control Technology Feasibility Analysis for EAF/LMFs		
Table	2-6	Add-on VOC Control Technology Feasibility Analysis for EAF/LMFs		
Гable 2-7		SO ₂ Control Technology Feasibility Analysis for EAF/LMFs		
Table 2-8		BACT Determinations for Reheat Furnaces, 1998-2008		
Table 2-9		PM/PM ₁₀ Control Technology Feasibility Analysis for Reheat Furnaces		
Table 2-10		NOx Control Technology Feasibility Analysis for Billet Reheat Furnaces		
Table 2-11		Cost Effectiveness of SCR, Billet Reheat Furnace		
Table 2-12		Add-on CO Control Technology Feasibility Analysis for Billet Reheat Furnaces		
Table 2-13		Add-on VOC Control Technology Feasibility Analysis for Billet Reheat Furnaces		

LIST OF APPENDICES

Appendix A FDEP BACT Request Letter

1.0 INTRODUCTION

On July 22, 2008, Gerdau Ameristeel (Gerdau) submitted to the Florida Department of Environmental Protection (the Department) a request for an 18-month extension of the expiration date of permit PSD-FL-349 and PSD-FL-349(A), Project No. 0310157-011-AC/PSD-FL-349(C). Subsequently, on August 19, 2008, the Department requested, pursuant to Rule 62-212.400(12)(a), F.A.C., that the Ladle Metallurgical Furnace (LMF), Billet Reheat Furnace, and Billet Reheat Furnace #2 undergo a Best Available Control Technology (BACT) determination review before construction is to resume. The Department's letter is included as Appendix A. The BACT determination review requested by the Department is contained herein.

2.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

2.1 Control Technology Review

The control technology review requirements of the federal and state PSD regulations require that all applicable federal and state emission-limiting standards be met, and that BACT be applied to control emissions from the source. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility exceeds the significant emission rate: PM/PM₁₀, NO_x, CO, VOC, and SO₂ emissions

BACT is defined in 40 CFR 52.21 (b)(12), and Rule 62-210.200(38), F.A.C. as:

An emissions limitation (including a visible emission standard) based on the maximum degree of reduction of each pollutant subject to regulation under the Act which would be emitted by any proposed major stationary source or major modification which the Administrator, 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 (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant, which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means, which achieve equivalent results.

BACT was promulgated within the framework of the PSD requirements in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's Guidelines for Determining Best Available Control Technology (BACT) (EPA, 1978) and in the PSD Workshop Manual (EPA, 1980). These guidelines were issued by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area.

According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, as a minimum, demonstrate compliance with new source performance standards (NSPS) for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and PSD Workshop Manual was used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected. However, EPA developed a concern that the bottom-up approach was not providing the level of BACT decisions originally intended. As a result, in December 1987, the EPA Assistant Administrator for Air and Radiation mandated changes in the implementation of the PSD program, including the adoption of a new "top-down" approach to BACT decision making.

The top-down BACT approach essentially starts with the most stringent (or top) technology and emissions limits that have been applied elsewhere to the same or a similar source category. The applicant must next provide a basis for rejecting this technology in favor of the next most stringent technology or propose to use it. Rejection of control alternatives may be based on technical or economic infeasibility. Such decisions are made on the basis of physical differences (e.g., fuel type), locational differences (e.g., availability of water), or significant differences that may exist in the environmental, economic, or energy impacts. The differences between the proposed facility and the facility on which the control technique was applied previously must be justified.

EPA has issued a draft guidance document on the top-down approach titled *Top-Down Best Available Control Technology Guidance Document* (EPA, 1990). This document has not yet been issued as final guidance or as rule. EPA has also published the document titled *OAQPS Cost Control Manual* (EPA, 1996) to assist industry and regulators in estimating capital and annual costs of pollution control equipment.

2.2 Requirements and BACT Summary

The 1977 CAA Amendments established requirements for the approval of pre-construction permit applications under the PSD program. One of these requirements is that BACT be installed for those pollutants requiring PSD review. BACT determinations must be made on a case-by-case basis considering technical, economic, energy, and environmental impacts for various BACT alternatives. To bring consistency to the BACT process, the EPA developed the "top-down" approach to BACT determination that is followed by FDEP.

The first step in a top-down BACT analysis is to determine, for each applicable pollutant, the most stringent control alternative available for a similar source or source category. If it can be shown that this level of control is not feasible on the basis of technical, economic, energy, or environmental impacts for the source in question, then the next most stringent level of control is identified and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any technical, economic, energy, or environmental consideration.

As requested by the Department, and in support of an extension of permits PSD-FL-349 and PSD-FL-349(A), an updated BACT analysis for the LMF, Billet Reheat Furnace, and Billet Reheat Furnace #2 is provided for , PM/PM₁₀, NO_x, CO, VOC, and SO₂ emissions.

2.2.1 Ladle Metallurgic Furnace (LMF)

The Electric Arc Furnace (EAF) and LMF make up one process and one emission unit (Emission Unit No. 008) and exhaust to a common baghouse. The EAF has been constructed and successfully compliance tested. The operation of the EAF and LMF are interconnected. Without the LMF, the refinement operations are performed in the EAF, and the emissions per ton of steel are assumed to be equal with or without the LMF. The EAF and LMF work together to produce liquid steel from scrap steel and, as such, serve as one emission unit. The addition of a LMF reduces the heat time of the

EAF by moving the refining operation to the LMF. While molten steel is being refined in the LMF, the EAF can be charged with scrap and melted, thus increasing the production rate of the facility. Based on this arrangement, the BACT limits applicable to the common EAF/LMF Baghouse encompass the limits for the EAF and LMF combined.

As stated above the construction of the EAF has been completed and the emission unit has successfully completed compliance testing. The emission limits for the EAF/LMF are based on a per ton of steel basis and the emissions from the EAF alone and EAF/LMF combined are assumed equal as described above. Therefore the compliance test results from the EAF are also representative of emissions for the EAF/LMF.

Due to the interconnected operation of the LMF with the EAF, the updated BACT analysis also includes the EAF. However, it should be noted that BACT for the EAF is not subject to the review because the EAF has been successfully constructed and test within the requirements of permits PSD-FL-349.

2.2.2 Billet Reheat Furnaces

The facility processes steel billets into steel rebar, wire, and rod. This is accomplished by reheating the steel billets produced by the continuous caster in the Billet Reheat Furnace (BRF) and processing them through various rolling and wire machines in the rolling and wire mills. Two new BRFs are authorized by permits PSD-FL-349 and PSD-FL-349(A). The BRFs being constructed as part of the project include the Rebar Mill BRF (Emission Unit No. 009) and the Wire/Rod Mill BRF (Emissions Unit No. 011).

A summary of the updated BACT determination analysis for the LMF and BRFs is provided in Table 2-1.

2.3 LMF BACT Analysis

2.3.1 Particulate Matter (PM/PM₁₀) and Lead

2.3.1.1 Previous BACT Determinations

As part of the updated BACT analysis, a review was performed of previous BACT determinations for PM/PM₁₀ from EAF/LMFs listed in the RACT/BACT/LAER Clearinghouse on EPA's web page and recent permitting activity. A summary of BACT determinations from this review are presented in Table 2-2. Determinations for similar sources issued during from years 1998 through 2008 are shown in Table 2-2.

From the review of previous BACT determinations, it is evident that PM/PM₁₀ BACT determinations for EAF/LMFs remain to be exclusively been based on baghouse technology. BACT determinations have been in the range of 0.0015 to 0.0052 gr/dscf for PM/PM₁₀ emissions. Therefore, no change in the EAF/LMF current BACT PM/PM₁₀ emission limit of 0.0018 gr/dscf is justified.

2.3.1.2 Control Technology Feasibility

The possible PM/PM₁₀ controls for the EAF/LMFs are listed in Table 2-3. As shown, there are five primary types of PM/PM₁₀ abatement methods, with various techniques within each method. Each available technique is listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

2.3.1.3 Potential Control Method Descriptions

Fuel Techniques

Fuel substitution, or fuel switching, is a common means of reducing emissions from combustion sources, such as electric utilities and industrial boilers. It involves replacing the current fuel with a fuel that emits less of a given pollutant when burned. PM/PM₁₀ emissions are primarily generated by electric arcing.

Fuel substitution is not feasible for the EAF/LMF because the primary source of heat is achieved through electrical arcing of AC power.

Pretreatment Devices

The performance of particulate control devices can often be improved through pretreatment of the gas stream. For PM control devices, pretreatment consists of the following techniques:

- Settling Chambers;
- Elutriators:
- Momentum Separators;
- Mechanically-Aided Separators; and
- Cyclones.

Of these five techniques, cyclones offer the most control efficiency, typically in the range of 60 to 90 percent. All of the other techniques have control efficiencies less than 30 percent.

Cyclones use inertia to remove particles from a spinning gas stream. Within a cyclone, the gas stream is forced to spin within a usually conical-shaped chamber. The gas spirals down the cyclone near the inner surface of the cyclone tube. At the bottom of the cyclone the gas turns and spirals up through the center of the tube and out the top of the cyclone.

Particles in the gas stream are forced toward the cyclone walls by centrifugal forces. For particles that are large, typically greater than 10 microns, inertial momentum overcomes the fluid drag forces so that the particles reach the cyclone walls and are collected. For smaller particles, the fluid drag forces are greater than the momentum forces and the particles follow the gas out of the cyclone. Inside the cyclone gravity forces the large particles down the sidewalls of the cyclone to a hopper where they are collected. Some pretreatment devices are technically feasible for application to the EAF/LMF. However, while pretreatment devices are feasible, they do not offer any additional control than the proposed baghouse. Because of the high flow rate, up to 1,000,000 ACFM, the flow would have to be divided and sent to several elutriators, momentum separators, mechanically-aided separators or cyclones and then merged again to enter the baghouse. In addition, while pretreatment devices are generally good at removing large particle size particulate, they do not effectively remove smaller particle sizes. The proposed baghouse is effective at removing large and small particle size PM. Therefore, use of a pretreatment device before the baghouse would be considered redundant and not afford any additional PM removal.

Electrostatic Precipitators (ESPs)

Collection of PM by electrostatic precipitators involves the ionization of the gas stream passing through the ESP, the charging, migration, and collection of particles on oppositely charged surfaces, and the removal of particles from the collection surfaces. There are two basic types of ESPs: dry and wet. In dry ESPs, the particulate is removed by rappers, which vibrate the collection surface, dislodging the material and allowing it to fall into the collection hoppers. Wet ESPs use water to rinse the particulates off of the collection surfaces.

Electrostatic precipitators have several advantages when compared with other control devices. They are very efficient collectors, even for small particles, with greater than 97-percent control efficiency. ESPs can also treat large volumes of gas with a low-pressure drop. ESPs can operate over a wide range of temperatures and generally have low operating cost. However, they have been proven unsuitable for applications involving PM with high concentrations of iron compounds such as those for the Project. A strong adhesion to the ESP plates results due to the properties of the iron particles. This strong adhesion results in an inability to clean the plates and ineffective ESP performance. Other issues of fouling of the ESP electrodes from high zinc content of PM. For these reasons ESPs are considered technically infeasible for the EAF/LMF.

Fabric Filters (Baghouses)

Baghouses, or fabric filters, utilize porous fabric to clean an airstream. They include types such as reverse-air, shaker, and pulsejet baghouses. The dust that accumulates on the surface of the filter aids in the filtering of fine dust particles. PM/PM₁₀ control efficiencies for fabric filters are typically greater than 99 percent.

During fabric filtration, flue gas is sent through the fabric by forced-draft fans. The fabric is responsible for some filtration, but more significantly it acts as support for the dust layer that accumulates. The layer of dust, also known as the filter cake, is a highly efficient filter, even for submicron particles. Woven fabrics rely on the filtration of the dust cake much more than felted fabrics.

Fabric filters offer high efficiencies, and are flexible to treat many types of dusts and a wide range of volumetric gas flow rates. In addition, fabric filters can be operated with low-pressure drop. Some potential disadvantages are:

- High moisture gas streams and sticky particles can plug the fabric and blind the filter, requiring bag replacement;
- High temperatures can damage fabric bags; and
- Fabric filters have a potential for fire or explosion.

Fabric filters can be categorized by type of cleaning, including shaker, reverse-air, and pulse jet:

- Shaker cleaning transfers energy to the fabric by suspending the bag from a motor-driven hook or framework that oscillates. Motion may be imparted to the bag in several ways, but the general effect is to create a sine wave along the fabric.
- In reverse air cleaning, gas flow to the bags is stopped in the compartment being cleaned and reverse air flow is directed through the bags. This reversal of gas flow gently collapses the bags, which causes the filter cake to detach.
- Pulse jet uses compressed air to force a burst of air down through the bag and expand it violently, releasing the filter cake.

Baghouses have been used exclusively as the PM control device for EAF/LMFs and are considered technically feasible for the Project. The Project has constructed the EAF/LMF baghouse with a BACT grain loading limit not to exceed 0.0018 gr/dscf. As discussed previously, based on an updated review of previous BACT determinations, it is evident that PM/PM₁₀ BACT determinations for EAF/LMFs remain to be exclusively been based on baghouse technology. BACT determinations have been in the range of 0.0015 to 0.0052 gr/dscf for PM/PM₁₀ emissions. Therefore, no change in the EAF/LMF current BACT PM/PM₁₀ emission limit of 0.0018 gr/dscf is justified.

Wet Scrubbers

Wet scrubbers are systems that involve particle collection by contacting the particles to a liquid, usually water. The aerosol particles are transferred from the gaseous airstream to the surface of the liquid by several different mechanisms. Wet scrubbers create a liquid waste that must be treated prior to disposal. In this case, the water will contain the hazardous waste EAF/LMF baghouse dust (RCRA Hazardous Waste K061). Typical gas flow rates for scrubbers are 500 to 100,000 scfm. The proposed project would require that the flow out of the baghouse be split into 10 separate scrubber units. PM/PM₁₀ control efficiencies for wet scrubbing systems range from about 50 to 95 percent, depending on the type of scrubbing system used. Typical types of wet scrubbers are as follows:

- Spray Chamber;
- Packed-Bed;
- Impingement Plate;
- Mechanically-Aided;
- Venturi;

- Orifice; and
- Condensation.

The advantages of wet scrubbers compared to other PM collection devices are that they can collect flammable and explosive dusts safely, absorb gaseous pollutants, and collect mists. Scrubbers can also cool hot gas streams. The disadvantages are the potential for corrosion and freezing, the potential of water and solid waste pollution problems, and high energy costs.

As provided in the original application, EPA's Air Pollution Control Technology Fact Sheet estimates the capital cost from \$2.5 to \$21 per scfm. Given the constituents of EAF baghouse dust, the scrubbers would likely need to be constructed of stainless steel and would likely be near the upper range of capital cost. Therefore the capital cost would be approaching \$20,000,000.00. EPA states that the annualized cost range from \$5.7 to \$193 per scfm. Even at the low end of the range would result in nearly \$6,000,000.00 annual cost for operating the scrubbers. Therefore wet scrubbers are not cost effective for the project.

2.3.1.4 Economic Analysis

Gerdau has constructed a 1,000,000-acfm baghouse, to control PM/PM₁₀ emissions from the EAF/LMF. This control equipment results in the highest control efficiency determined to be feasible, demonstrated and economical for the Project. Because Gerdau is proposing and constructed the control technology that offers the highest control efficiency feasible, an economic analysis comparing less efficient control devices is not applicable.

2.3.1.5 Environmental Impacts

The maximum predicted PM impacts for the proposed Project are below AAQS and Class II increment allowable impact levels. (Refer to Section 6, Table 6-8 of the original PSD application.) Additional PM controls would result in an insignificant reduction of ambient impacts that are already below AAQS and PSD increment levels for both Class I and Class II areas.

2.3.1.6 PM/PM₁₀ BACT Selection

In conclusion, Gerdau's current PM/PM₁₀ control technology (baghouse) and BACT emission limit equal to 0.0018 gr/dscf represents current BACT based on the latest control technologies and previous

BACT determinations for similar sources. Baghouses have been utilized exclusively for PM control from EAFs and provide the highest level of control of all feasible controls. The two most recent BACT determinations for EAF/LMFs resulted in a PM emission limit of 0.0018 gr/dscf. Similar to those projects, additional or different add-on PM/PM₁₀ control equipment remains inappropriate for the EAF/LMF.

PM emissions from primarily occur during charging and melting stages of the heat which occur in the EAF compared to the refining stages planned for the LMF. The EAF has been constructed and compliance tested. The focus of this BACT analysis is the LMF.

2.3.2 Nitrogen Oxides

2.3.2.1 Previous BACT Determinations

As part of the updated BACT analysis, a review was performed of previous NO_x BACT determinations for EAF/LMFs listed in the RACT/BACT/LAER Clearinghouse on EPA's web page and recent permitting activity. A summary of BACT determinations from this review are presented in Table 2-2. Determinations for similar sources issued during from years 1998 through 2008 are shown in Table 2-2.

From the review of previous BACT determinations, it is evident that NO_x BACT determinations for EAF/LMFs have exclusively been based on combustion practice. BACT determinations have been in the range of 0.3 to 0.89 lb NO_x per ton of steel.

2.3.2.2 Control Technology Feasibility

The possible NO_x controls for EAF/LMF are shown in Table 2-4. As shown in the table, there are five primary types of NO_x abatement methods, with various techniques within each method. Each available technique was listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

2.3.2.3 Potential Control Method Descriptions

Removal of Nitrogen

EAF/LMFs primary source of heat is achieved through electrical arcing of AC power. Removal of nitrogen in the air flow is not an option. The primary source of nitrogen is from ambient air pulled into the furnace by the direct evacuation system (DES). Control of the DES results in control of furnace pressure and control of high temperature NO_x formation. Gerdau will utilize furnace pressure control (combustion practice) to control excess air infiltration into the EAF/LMF and subsequent formation of high temperature NO_x.

Oxidation of NO_x with Subsequent Absorption

Inject Oxidant -- The oxidation of nitrogen to its higher valence states makes NO_x soluble in water. When this is done a gas absorber can be effective. Oxidants that have been injected into the gas stream are ozone, ionized oxygen, or hydrogen peroxide. This NO_x reduction technique has not been demonstrated on EAF/LMFs, and as such is not considered a demonstrated control technology.

Non-Thermal Plasma Reactor (NTPR) -- This technique generates electron energies in the gas stream that generate gas-phased radicals, such as hydroxyl (OH) and atomic oxygen (O) through collision of electrons with water and oxygen molecules present in the flue gas stream. In the flue gas stream, these radicals oxidize NO_x to form nitric acid (HNO₃), which can then be condensed out through a wet condensing precipitator. NTPR has not been demonstrated on EAF/LMFs, and as such is not considered a demonstrated control technology for the Project.

Chemical Reduction of NO_x

Selective Catalytic Reduction (SCR) -- SCR uses a catalyst to react injected ammonia to chemically reduce NO_x. The catalyst has a finite life in flue gas and some ammonia slips through without being reacted. SCR has historically used precious metal catalysts, but can now also use base metal and zeolite catalyst materials. In order for a SCR system to effectively reduce NO_x emissions, the exhaust stream should have relatively stable gas flow, and temperature. EAF/LMFs are highly transient operations due to their batch nature. The temperature and flow rate of the EAF/LMF exhaust stream will vary greatly over the heat cycle and as such are not suited for SCR control.

Other technical difficulties associated with applying SCR include no operating experience on EAF/LMFs, and likely premature catalyst deactivation due to chemical poisoning of the catalyst resulting from the EAF/LMF PM constituents of phosphorous and zinc. The high levels of reactive compounds in EAF/LMF PM emissions would lead to rapid catalyst deactivation, and SCR would not be feasible unless the SCR system is placed after a highly effective PM control device, such as a baghouse. In addition, SCR catalyst require moderately high temperature gas stream [600 to 750 degrees Fahrenheit (°F)]; thus, the gas stream 1,000,000 acfm would have to be reheated from approximately 200 °F to the proper temperature. This would require significant energy and result in additional NO_x and CO emissions. Additional energy would also be needed to compensate for the additional back pressure created by the SCR. While SCR is an available control for NO_x, it is not feasible on EAF/LMFs. Additionally expected high cost of reheating the gas stream and uncertainty of catalyst poisoning and catalyst replacement would make SCR economically unreasonable.

Selective Non-Catalytic Reduction (SNCR) -- In SNCR, ammonia or urea is injected within the ducts in a region where temperature is between 1,600 and $2,000^{\circ}F$. This technology is based on temperature ionizing the ammonia or urea instead of using a catalyst or non-thermal plasma. The temperature window for SNCR is very important because outside of it either more ammonia slips through the system or more NO_x is generated than is being chemically reduced.

As stated previously the EAF/LMF operation is highly transient throughout the heat cycle and the required temperature and residence time required for SNCR is not achieved in the EAF/LMF DES duct work. Therefore, SNCR is considered technically feasible for the proposed EAF/LMF.

Additionally, information from the Institute of Clean Air Companies' White Paper titled; "Selective Non-Catalytic Reduction for Controlling NO_x Emissions," dated May 2000, was reviewed. However, the document shows that none of the sources of the listed steel facilities utilize SNCR for EAFs or LMFs. The sources identified are natural gas-fired furnaces including annealing furnaces, tube furnaces, rotary hearths, etc. This document does not address the application of SNCR on electric arc furnaces and, as such, cannot be used as a basis for the determination that SNCR is a feasible and demonstrated technology for EAF/LMFs. Furthermore, not related to the White Paper, in 2000, Nucor Steel was required to evaluate the feasibility of SNCR on an EAF as part of an EPA Consent Decree, and determined that the technology is not technically feasible.

Reducing Residence Time at Peak Temperature

Air Staging of Combustion -- Combustion air is divided into two streams. The first stream is mixed with fuel in a ratio that produces a reducing flame. The second stream is injected downstream of the flame and creates an oxygen-rich zone.

Fuel Staging of Combustion -- This is staging of combustion using fuel instead of air. Fuel is divided into two streams. The first stream feeds primary combustion that operates in a reducing fuel-to-air ratio. The second stream is injected downstream of primary combustion, causing the net fuel to air ratio to be slightly oxidizing. Excess fuel in the primary combustion zone dilutes heat to reduce temperature. The second stream oxidizes the fuel while reducing the NO_x to N₂.

Inject Steam -- Injection of steam causes the stoichiometry of the mixture to be changed and dilutes calories generated by combustion. These actions cause combustion temperature to be lower, and inturn reduces the amount of thermal NO_x formed.

Each of these techniques is designed for fuel combustion equipment and they are not technically feasible for an EAF/LMF.

Reducing Peak Temperature

This group of combustion controls is primarily designed to reduce the combustion temperature and such conditions in an EAF/LMF result in inefficient scrap melting and increases in tap-to-tap time lowering the efficiency of the EAF/LMF. A short description of each technique follows:

Flue Gas Recirculation (FGR) -- Recirculation of cooled flue gas reduces combustion temperature by diluting the oxygen content of the combustion air and by causing heat to be diluted in a greater mass of flue gas. Heat in the flue gas can be recovered by a heat exchanger. This reduction of temperature lowers the thermal NO_x concentration that is generated.

Reburn -- In reburn technology, a set of natural gas burners are installed above the primary combustion zone. Natural gas is injected to form a fuel-rich, oxygen-deficient combustion zone above the main firing zone. Nitrogen oxides, created by the combustion process in the main portion of the boiler, drift upward into the reburn zone and are converted to molecular nitrogen. The technology requires no catalysts, chemical reagents, or changes to any existing burners. Reburn is

designed for fossil fuel combustion units and is not known to have ever been utilized on an EAF/LMF.

Over-Fire Air (OFA) -- When primary combustion uses a fuel-rich mixture, use of OFA completes the combustion. Because the mixture is always off-stoichiometric when combustion is occurring, the temperature is reduced. After all other stages of combustion, the remainder of the fuel is oxidized in the OFA.

Less Excess Air (LEA) -- Excess airflow combustion has been correlated to the amount of NO_x generated. Limiting the net excess airflow can limit NO_x content of the flue gas. The EAF/LMF will utilize furnace pressure control (combustion practice) to control the formation of high temperature NO_x .

Combustion Optimization -- Combustion optimization refers to the active control of combustion. The active combustion control measures seek to find optimum combustion efficiency and to control combustion at that efficiency.

Low NO_x/Oxy-fuel Burners (LNB) -- A LNB provides a stable flame that has several different zones. For example, the first zone can be primary combustion. The second zone can be Fuel Reburning (FR) with fuel added to chemically reduce NO_x. The third zone can be the final combustion in low excess air to limit the temperature.

In summary, FGR, Reburn, OFA, LEA, and Combustion Optimization are designed to reduce combustion temperature and as such are not feasible for EAF/LMFs.

2.3.2.4 Economic Analysis

Gerdau is proposing to utilize furnace pressure control and LNB in the EAF to control NO_x emissions from the EAF/LMF. This control equipment will result in the highest control efficiency determined to be feasible, demonstrated and economical for the Project. Because Gerdau is proposing the control technology that offers the highest control efficiency feasible, an economic analysis comparing less efficient control devices is not applicable.

2.3.2.5 Environmental Impacts

The maximum predicted annual NO₂ impacts for the proposed Project are below AAQS and PSD Class II increment allowable impact levels. (Refer to Section 6 of the original PSD application). Additional NO_x controls would result in an insignificant reduction of ambient impacts that are already below AAQS PSD increment levels for both Class I and II areas.

2.3.2.6 Energy Impacts

There are no significant energy penalties associated with furnace pressure control for the EAF/LMF and LNB for the EAF sidewall burners.

2.3.2.7 NO_x BACT Selection

In conclusion, Gerdau's current NO_x control technology of furnace pressure control for the EAF/LMF and LNB for the EAF burners and BACT emission limit equal to 0.33 lb/ton represents current BACT based on the latest control technologies and previous BACT determinations for similar sources. The two most recent BACT determinations for EAF/LMFs resulted in a NO_x emission limit of 0.3 lb/ton and 0.42 lb/ton. Similar to those projects, additional or different add-on NO_x control equipment is not technically feasible or appropriate for the EAF/LMF.

2.3.3 Carbon Monoxide

2.3.3.1 Previous BACT Determinations

As part of the updated BACT analysis, a review was performed of previous CO BACT determinations for EAF/LMFs listed in the RACT/BACT/LAER Clearinghouse on EPA's web page and recent permitting activity. A summary of BACT determinations from this review are presented in Table 2-2. Determinations for similar sources issued during from years 1998 through 2008 are shown in Table 2-2.

From the review of previous BACT determinations, it is evident that CO BACT determinations for EAF/LMFs remains exclusively based on combustion practice. BACT determinations have been in the range of 1.34 to 7.5 lb CO per ton of steel.

2.3.3.2 Control Technology Feasibility

The possible CO controls for EAF/LMFs are shown in Table 2-5. As shown in the table, there are four primary types of CO abatement methods. Each available technique was listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

2.3.3.3 Potential Control Method Descriptions

Good Operating Practices

CO is formed from incomplete combustion in the EAF/LMF. The sources of carbon monoxide are as follows:

- Charge carbon, which is carbon added to the scrap steel prior to initiation of melting;
- Injection carbon; and
- Small amounts of hydrocarbon compounds on steel scrap.

The EAF utilizes sidewall injectors similar to those currently operating on the old EAF to allow for injection of carbon below the slag level of the steel bath resulting in a more homogeneous steel bath, less carbon combusted above the steel bath and in forth-hole duct work, and as a result less incomplete combustion.

Post Combustion Reaction Chamber

Post combustion chambers are a form of thermal oxidation. Post combustion chambers are capable of achieving up to 99 percent reduction of CO emissions given enough residence time at high temperature. There are three known installations of post combustion chambers on EAFs:

- IPSCO Steel, IA was issued a PSD permit on April 1996 which required installation of a post combustion chamber. IPSCO was initially limited to 0.91 lb CO per ton of steel. However, in 2002, the IPSCO permit limit for CO was increased to 1.93 lb per ton steel.
- Tuscaloosa Steel, AL although not required by BACT, installed a post combustion chamber with oxyfuel burners on a trial basis to determine a means to meet their BACT limit of 2.0 lb CO per ton steel. Tuscaloosa has since removed the burners in the chamber due to continual maintenance because of particulate plugging. Tuscaloosa's current limit is equal to 2.2 lb/ton, permit issued in year 2006.
- Gallatin Steel initially installed a post combustion chamber with burner to meet its proposed minor source status. Operation of the post combustion chamber resulted in CO reductions less than expected and increased NO_x emissions. Maintenance was also an issue

from particulate plugging. As a result Gallatin Steel discontinued use of the post combustion chamber.

Post combustion chambers are technically feasible for EAF/LMFs, however they have not been proven successful in controlling CO emissions from EAF/LMFs. Due to the high particulate loading of EAF exhaust gases, it would be necessary to operate a baghouse prior to the combustion chamber. Exhaust gas exiting the baghouse would have to be reheated to bring the gas stream back up to the required thermal oxidation temperature, 1200°F. The reheating of 1,000,000 acfm would result in significant natural gas consumption and secondary NO_x emissions and is therefore not considered appropriate for the Project.

Incinerators

The two basic types of incinerators are thermal and catalytic. Thermal systems may be direct flame incinerators with no energy recovery (post combustion chambers), flame incinerators with a recuperative heat exchanger, or regenerative systems, which operate in a cyclic mode to achieve high-energy recovery. Catalytic systems include fixed bed (packed bed or monolith) systems and fluid-bed systems, both of which provide for energy recovery. Catalytic systems are not an option for EAF/LMFs due to catalyst poisoning. Thermal oxidation systems are an available technology, however have not been proven in EAF/LMF, a discussion of the feasibility of thermal systems was presented previously in the discussion of post combustion chambers.

Direct Shell Evacuation Control (Fourth Hole)

The primary CO control method for EAFs is the direct shell evacuation otherwise referred to as the fourth-hole evacuation. The DSE consists of water-cooled duct connected to the EAF through the furnace roof. The connection is referred to as the "fourth-hole." The fourth-hole is connected to the baghouse and during the melting and refining stages of a heat, a negative pressure is maintained in the EAF. At the point where the DSE duct meets the EAF there is an adjustable gap that allows combustion air to enter, providing oxygen to oxidize CO. The EAF utilizes a fourth-hole evacuation system for control of CO combustion.

2.3.3.4 CO BACT Selection

The CO BACT emission limit for the EAF/LMF remains equal to 2.0 lb/ton steel. The EAF/LMF will minimize CO emissions through proper EAF/LMF design, use of DSE, and good operating

practices. This level of control is consistent with previous determinations. The two most recent BACT determinations for EAF/LMFs resulted in a CO emission limit of 2.0 lb/ton and 2.3 lb/ton.

2.3.4 Volatile Organic Compounds (VOC)

2.3.4.1 Previous BACT Determinations

VOC emissions from the EAF/LMF are generated due to the volatilization of organic compounds present in the scrap metal. As part of the BACT analysis, a review was performed of previous VOC BACT determinations for EAF/LMFs listed in the RACT/BACT/LAER Clearinghouse on EPA's web page and recent permitting activity. A summary of BACT determinations from this review are presented in Table 2-2. Determinations for similar sources issued during from years 1998 through 2008 are shown in Table 2-2.

From the review of previous BACT determinations, it is evident that VOC BACT determinations for EAF/LMFs remain exclusively based on good operational practices. BACT determinations have been in the range of 0.1 to 0.42 lb VOC per ton of steel.

2.3.4.2 Control Technology Feasibility

The technically feasible add-on VOC controls for EAF/LMFs are shown in Table 2-6. As shown, there are four types of add-on VOC abatement methods. Each available technique was listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

2.3.4.3 Potential Control Method Descriptions

Refrigerated Condensers

The most common types of condensers used are surface and contact condensers. In surface condensers, the coolant does not contact the gas stream. Most surface condensers in refrigerated systems are shell and tube type. Shell and tube condensers circulate the coolant through tubes. The VOC condenses on the outside surface of the tube. Plate and frame type heat exchangers are also used as condensers in refrigerated systems. In these condensers, the coolant and the vapor flow

separately over thin plates. In either design, the condensed VOC vapors drain away to a collection tank for storage, reuse, or disposal.

Contact condensers cool the vapor stream by spraying either a liquid at ambient temperature or a chilled liquid directly into the gas stream.

Refrigerated condensers are used as air pollution control devices for treating emissions with high VOC concentrations [>5,000 parts per million by volume (ppmv)], in applications involving gasoline bulk terminals, storage, etc. Refrigerated condensers are not technically feasible for reduction of VOC from industrial EAF/LMFs, and as such are not technically feasible for the Project.

Carbon Adsorbers

Adsorption is employed to remove VOC compounds from low to medium concentration gas streams. Adsorption is a phenomenon where gas molecules passing through a bed of solid particles are selectively held there by attractive forces, which are weaker and less specific than those of chemical bonds. During adsorption, a gas molecule migrates from the gas stream to the surface of the solid where it is held by physical attraction releasing energy, the heat of adsorption, which typically equals or exceeds the heat of condensation. Adsorption capacity of the solid for the gas tends to increase with the gas phase concentration, molecular weight, diffusivity, polarity, and boiling point. Gases form actual chemical bonds with the adsorbent surface groups. There are five types of adsorption techniques.

Of the five techniques, fixed bed units are typically utilized for controlling continuous VOC containing streams from flow rates ranging from several hundred to several thousand cubic feet per minute. Based on the gas flow rate of EAF/LMF, carbon adsorption is not technically feasible for this project.

<u>Flare</u>

Flaring is a VOC control process in which the VOCs are piped to a remote, usually elevated, location and burned in an open flame in the open air using a specially designed burner tip and auxiliary fuel. Flares are not technically feasible for the EAF/LMF due to the large gas volume and low Btu value of the gas stream.

Incinerators

The two basic types of incinerators are thermal and catalytic. Thermal systems may be direct flame incinerators with no energy recovery, flame incinerators with a recuperative heat exchanger, or regenerative systems, which operate in a cyclic mode to achieve high-energy recovery. Catalytic systems include fixed bed (packed bed or monolith) systems and fluid-bed systems, both of which provide for energy recovery. Catalytic systems are not an option for EAF/LMFs due to catalyst poisoning.

Thermal incinerators are not considered technically feasible for EAF/LMFs, because of the high flue gas volume and low concentration of VOCs. In addition, the combustion of natural gas would result in increased NO_x emissions.

2.3.4.4 VOC BACT Selection

The BACT VOC emission limit for the EAF/LMF remains equal to 0.13 lb/ton steel. The EAF/LMF will minimize VOC emissions through proper EAF/LMF design, use of DSE, and good operating practices. This level of control is consistent with previous determinations. The two most recent BACT determinations for EAF/LMFs resulted in a VOC emission limit of 0.13 lb/ton.

As stated previously, VOC emissions from the EAF/LMF are generated due to the volatilization of organic compounds present in the scrap metal. This occurs primarily early in the heat cycle in the EAF, which has been constructed and compliance tested. The focus of this BACT analysis is the LMF.

2.3.5 Sulfur Dioxide

2.3.5.1 Previous BACT Determinations

As part of the updated BACT analysis, a review was performed of previous SO2 BACT determinations for EAF/LMFs listed in the RACT/BACT/LAER Clearinghouse on EPA's web page and recent permitting activity. A summary of BACT determinations from this review are presented in Table 2-2. Determinations for similar sources issued during from years 1998 through 2008 are shown in Table 2-2.

From the review of previous BACT determinations, it is evident that SO2 BACT determinations for EAF/LMFs have exclusively been based on good operational practices. BACT determinations have been in the range of 0.15 to 1.8 lb SO2 per ton of steel.

2.3.5.2 Control Technology Feasibility

The technically feasible add-on SO₂ controls for EAF/LMFs are shown in Table 2-7. As shown, there are four types of add-on SO₂ abatement methods. Each available technique was listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

2.3.5.3 Potential Control Method Descriptions

Charge Management

Sulfur dioxide emissions from EAF/LMFs are directly related to the amount of sulfur charged into the furnace. Sources of sulfur are as follows:

- Scrap metal
- Direct reduced iron (DRI)
- Pig iron
- Charge carbon; and
- Injection carbon

Gerdau operates scrap management which includes iron and steel scrap specifications; see Appendix C of the original PSD application. Gerdau will utilize scrap management to minimize the amount of sulfur charged in the EAF and, as a result, minimize the amount of SO₂ emissions.

Sorbent Injection

Sorbent Injection involves the injection of a dry sorbent into the flue gas duct where the temperature is about 750 to 1,250 degrees Celsius (°C). In sorbent injection, a finely grained sorbent, limestone (CaCO₃) or hydrated lime [Ca(OH)₂] is distributed quickly and evenly over the entire cross section in the duct work in a location where the temperature is in the range of 750 to 1,250 °C. The sorbent reacts with SO₂ and O₂ to form CaSO₄. CaSO₄ is then captured in a particulate control device together with unused sorbent and fly ash. Temperatures over 1,250 °C result in sintering of the surface on the sorbent, destroying the structure of the pores and reducing the active surface area.

There are many factors, which influence the performance of a duct sorbent injection process. These include sorbent reactivity, quantity of injected sorbent, relative humidity of the flue gas, gas and solids residence time in the duct, and quantity of recycled, unreacted sorbent from the particulate control device. The most efficient way of achieving good conditions is to establish a dedicated reaction chamber. EAF/LMFs are highly transient operations due to their batch nature. The temperature and flow rate of the EAF/LMF exhaust stream will vary greatly over the heat cycle and contain high particulate matter and low SO₂ concentrations, and as such are not ideal for sorbent injection. In addition there is no known installation of sorbent injection for EAF/LMFs.

Wet Scrubbers

Devices that are based on absorption principles include packed towers, plate, columns, venturi scrubbers, and spray chambers. Absorption is a mass transfer operation in which one or more soluble components of a gas mixture are dissolved in a liquid that has low volatility under the process conditions. The pollutant diffuses from the gas into the liquid when the liquid contains less than the equilibrium concentration of the gaseous component. The difference between the actual and the equilibrium concentration provides the driving force for absorption.

Wet FGD includes technologies such as lime, limestone forced or inhibited oxidation, and magnesium-enhanced lime FGD. These systems create solid and liquid waste streams, which must be treated before disposal. SO₂ control efficiencies for wet limestone FGD range from 50 to 98 percent, depending on the type of device and design, with an average of 90 percent

Wet scrubbers are not considered technically feasibility due to the presence of high particulate loading in the EAF exhaust gas. High particulates plug spray nozzles, packing, plates, and trays. Wet scrubbers are technically feasible if located downstream of a particulate control device. However wet scrubbers are typically designed for gas streams containing SO₂ concentrations ranging from 250 to 10,000 ppmv. This is at least 100 times greater than the SO₂ concentrations expected from the EAF/LMF. In addition there is no known installation of wet scrubbers on EAF/LMFs.

Spray Dry Scrubbers

Dry FGD systems include lime spray drying, dry lime furnace injection, and dry lime duct injection. These systems must be followed by a highly efficient PM control device, which is typically a fabric filter, although an electrostatic precipitator could also be used. Lime spray drying efficiency ranges from 70 to 96 percent, with an average of 90 percent.

The lime slurry, also called lime milk, is atomized/sprayed into a reactor vessel in a cloud of fine droplets where the water is evaporated by the heat of the flue gas. The typical residence time of about 10 seconds in the reactor is sufficient to allow for the SO₂ and other acid gases such as SO₃ and HCL to react simultaneously with the hydrated lime to form a dry mixture of calcium sulphate/sulphite. Waste water treatment is not needed in spray dry scrubbers because the water is completely evaporated in the system. Factors affecting the absorption chemistry include flue gas temperature, SO₂ concentration in the flue gas and the size of the atomized slurry droplets.

Spray dry scrubbers are not considered technically feasibility due to the presence of high particulate loading in the EAF exhaust gas. Spray dry scrubbers are technically feasible if located downstream of a particulate control device. However, an additional particulate control device would be required downstream of the scrubber to collect the calcium sulphate/sulphite. Given the expected low concentration of SO₂ in the exhaust stream, and the additional particulate control device required, spray dry scrubbers would be economically infeasible. Like wet scrubbers, spray dry scrubbers are typically designed for gas streams containing SO₂ concentrations ranging from 250 to 10,000 ppmv. In addition there is no known installation of wet scrubbers on EAF/LMFs.

FGD systems have not been demonstrated as feasible control technologies for EAF/LMFs. There are no known installations of FGD on EAF/LMFs and as such FGD is not feasible for the Project.

2.3.5.4 SO₂ BACT Selection

The current BACT SO₂ emission limit for the EAF/LMF remains equal to 0.20 lb/ton steel. The EAF/LMF will minimize SO₂ emissions through scrap management. This level of control is consistent with previous determinations. The two most recent BACT determinations for EAF/LMFs resulted in a SO₂ emission limit of 0.15 lb/ton and 0.63 lb/ton.

As stated previously, Sulfur dioxide emissions from EAF/LMFs are directly related to the amount of sulfur charged into the furnace. SO2 emissions occur primarily in the charging and melting stages of the heat which occur in the EAF compared to the refining stages planned for the LMF. The EAF has been constructed and compliance tested. The focus of this BACT analysis is the LMF.

2.4 Reheat Furnace BACT Analysis (Rebar and Wire/Rod BRFs)

2.4.1 Particulate Matter (PM/PM₁₀)

2.4.1.1 Previous BACT Determinations

As part of the updated BACT analysis, a review was performed of previous PM/PM₁₀ BACT determinations for Reheat Furnaces listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of BACT determinations from this review are presented in Table 2-8. Determinations for similar sources issued during from years 1998 through 2008 are shown in Table 2-8.

From the review of previous BACT determinations, it is evident that PM/PM₁₀ BACT determinations for Reheat Furnaces have exclusively been based on good combustion practice. BACT determinations have been in the range of 0.002 to 0.08 lb PM/PM₁₀ per MMBtu. The most recent determinations are based on natural gas consumption without specific permit limits.

2.4.1.2 Control Technology Feasibility

The technically feasible PM/PM_{10} controls for the Reheat Furnace are listed in Table 2-9. As shown, there are four primary types of PM/PM_{10} abatement methods, with various techniques within each method. Each available technique is listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

2.4.1.3 Potential Control Methods

There are three potential sources of particulate emissions from combustion processes: mineral matter found in the fuel, solids or dust in the ambient air used for combustion, and unburned carbon formed by incomplete combustion of the fuel. Due to the fact that natural gas is a gaseous fuel, PM emissions are typically low. Particulate matter from natural gas combustion has both filterable and condensable fractions. The particulate matter generated from natural gas combustion is usually larger molecular weight hydrocarbons that are not fully combusted. Increased PM emissions may result from poor air/fuel mixing or maintenance problems.

All control options are basically technically feasible however the reheat furnace will fire natural gas exclusively, which has little to no ash that would contribute to the formation of PM/PM₁₀. Add-on controls have never been applied to reheat furnace or commercial natural gas fired boilers, therefore add-on PM controls are not considered for the proposed reheat furnace.

Fuel Techniques

Fuel Substitution, or fuel switching, is a common means of reducing emissions from combustion sources, such as electric utilities and industrial boilers. It involves replacing the current fuel with a fuel that emits less of a given pollutant when burned.

The proposed reheat furnaces will be fired exclusively with clean burning natural gas and therefore no fuel substitution will result in lower PM emissions.

Pretreatment Devices, Electrostatic Precipitators (ESPs), and Baghouses

As stated previously all control options are basically technically feasible, however the reheat furnaces will fire natural gas exclusively, which has little to no ash that would contribute to the formation of PM/PM₁₀.

Pretreatment devices, ESPs, and baghouse as described in EAF/LMF BACT analysis are typically utilized for combustion of ash producing fuels such as coal, oil, biomass, refuse, etc. Theses add-on controls have never been applied to commercial natural gas fired boilers, therefore add-on PM controls are not considered for the proposed reheat furnaces.

2.4.1.4 PM/PM₁₀ BACT Selection

The updated BACT PM/PM₁₀ emission limit for the reheat furnaces remains equal to good combustion practice control technology and the exclusive use of natural gas. This limit is consistent with the most recent determinations, based on natural gas consumption without specific permit emission limits.

2.4.2 Nitrogen Oxides

2.4.2.1 Previous BACT Determinations

As part of the BACT analysis, a review was performed of previous BACT determinations for similar reheat furnaces listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of these BACT determinations is presented in Table 2-9. Determinations for similar sources issued during from years 1998 through 2008 are shown in Table 2-9.

From the review of previous BACT determinations, it is evident that NO_x BACT determinations for Reheat Furnaces remain based on good combustion practice. BACT determinations have been in the range of 0.08 to 0.269 lb PM/PM₁₀ per MMBtu. The two most recent BACT determinations for reheat furnaces resulted in a NO_x emission limit of 0.10 and 0.08 lb/MMBtu.

2.4.2.2 Control Technology Feasibility

The technically feasible NO_x controls for reheat furnaces are shown in Table 2-10. As shown in the table, there are two primary types of NO_x abatement methods, with various techniques within each method. Each available technique was listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

2.4.2.3 Potential Control Method Descriptions

The principal mechanism of NO_x formation in natural gas combustion is thermal NO_x . The thermal NO_x mechanism occurs through the thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air. Most NO_x formed through the thermal NO_x is affected by three factors:

- 1. oxygen concentration;
- 2. peak temperature; and
- 3. time of exposure at peak temperature.

As these factors increase, NO_x emissions increase. The emission trends due to changes in these factors are fairly consistent for all types of natural gas fired boilers and furnaces. Emission levels vary considerably with the type and size of combustor and with operating conditions.

The second mechanism of NO_x formation is prompt NO_x , which occurs through early reactions of nitrogen molecules in the combustion air and hydrocarbon radicals from the fuel. Prompt NO_x reactions occur within the flame and are usually negligible.

The last mechanism of NO_x formation, fuel NO_x , stems from the evolution and reaction of fuel-bonded nitrogen compounds with oxygen. Due to the characteristically low fuel nitrogen content of natural gas, NO_x formation through the fuel NO_x mechanism is insignificant.

A description of NO_x reduction methods follows.

Chemical Reduction of NO_x

Selective Catalytic Reduction (SCR) -- SCR uses a catalyst to react injected ammonia to chemically reduce NO_x. The catalyst has a finite life in flue gas and some ammonia slips through without being reacted. SCR has historically used precious metal catalysts, but can now also use base metal and zeolite catalyst materials. SCR is technically feasible for reheat furnaces; however there is only one know installation, Beta Steel in Portage Indiana. It should be noted that Beta Steel's current NO_x permit limit of 0.077 lb/MMBtu with SCR is essentially equivalent to the proposed BRFs NO_x limit of 0.08 lb/MMBtu.

Beta Steel, Portage Indiana – Reheat Furnace Permit History -- Beta Steel's reheat furnace was originally limited to 14.7 pounds per million standard cubic feet (lb/MMSCF) or 0.014 lb/MMBtu with SCR control. Subsequent stack testing showed that Beta Steel could not meet this limit with test results ranging from 17.7 to 77.1 lb/MMSCF. As a result, on May 30, 2003, Beta Steel requested and received a revised permit limit equal to 0.077 lb/MMbtu (IDEM Construction Permit 127-9642-00036, May 30, 2003), equal to the highest of the three test results. The Indiana Department of Environmental Management (IDEM) conducted an investigation to determine the appropriate limits. IDEM concluded that the 0.077 permit limit was still more stringent than any other BACT determination and granted the request.

In IDEM's Notice of Approval, May, 20, 2003, it is stated that "Beta Steel has demonstrated that due to the non-steady state nature of the reheat furnace process, it is not possible to maintain a consistent level of performance from SCR control. This results in lowered efficiency of control of NO_x emissions." In order for a SCR system to effectively reduce NOx emissions, the exhaust stream must

have relatively stable gas flow and temperature. As stated, the reheat furnace is a non-steady state operation, and as such the flue gas emission concentration and temperature are highly variable depending upon the heat input rate and the material being heated.

The following factors contribute to reduction in SCR control efficiency:

- 1. The reheat furnace operation is a non-steady state operation where emission rates vary depending upon heat input rate and material being heated;
- 2. Varying flue gas temperature at the inlet of SCR causes fluctuations in the Catalyst performance.
- 3. The catalyst performance is affected due to deposition of particulate matter from the flue gas stream. As it is not possible to run the gas through any kind of add-on control before the SCR, this factor is inherent to this application of SCR."

SCR is typically assumed to have a reduction efficiency of 80 to 90 percent with ideal conditions. Based on Beta Steel's current permit limit of 0.077 lb/MMBtu and original permit limit of 0.014 lb/MMBtu, the SCR system's efficiency was over estimated by 82 percent. Based on this information the SCR is at best only reducing NO_x emission by 10 percent.

In conclusion, while Beta Steel operates the only SCR controlled reheat furnace, the NO_x BACT permit limit of 0.077 lb/MMBtu is consistent with recently permitted furnaces with low NO_x burners and good combustion practice (see recent BACT determinations in Table 2-8). Based on Beta Steel's experience, and IDEM's conclusions, SCR is not considered a proven technology for control of NOx emissions from reheat furnaces.

Selective Non-Catalytic Reduction (SNCR) -- In SNCR, ammonia or urea is injected within the boiler or in ducts in a region where temperature is between 1,600 and 2,000°F. This technology is based on temperature ionizing the ammonia or urea instead of using a catalyst or non-thermal plasma. The temperature window for SNCR is very important because outside of it either more ammonia slips through the system or more NO_x is generated than is being chemically reduced. The temperature requirement for SNCR is greater than the temperature available exiting the reheat furnace and therefore SNCR is determined to be technically infeasible for the reheat furnace. There are no known installations of SNCR on billet reheat furnaces.

Reducing Peak Temperature

Flue Gas Recirculation (FGR) -- Recirculation of cooled flue gas reduces combustion temperature by diluting the oxygen content of the combustion air and by causing heat to be diluted in a greater mass of flue gas. Heat in the flue gas can be recovered by a heat exchanger. This reduction of temperature lowers the thermal NO_x concentration that is generated. FGR has been utilized in boilers; however, it has not been demonstrated in reheat furnaces and therefore is not considered for the Project

Reburn -- In a boiler outfitted with reburn technology, a set of natural gas burners are installed above the primary combustion zone. Natural gas is injected to form a fuel-rich, oxygen-deficient combustion zone above the main firing zone. Nitrogen oxides, created by the combustion process in the main portion of the boiler, drift upward into the reburn zone and are converted to molecular nitrogen. The technology requires no catalysts, chemical reagents, or changes to any existing burners. Typical reburn systems also incorporate redesign of the combustion air system along with the water-cooled, pinhole grate to provide less excess air (LEA). LEA has been utilized in boilers; however, it has not been demonstrated in reheat furnaces and therefore is not considered for the Project

Over-Fire Air (OFA) -- When primary combustion uses a fuel-rich mixture, use of OFA completes the combustion. Because the mixture is always off-stoichiometric when combustion is occurring, the temperature is reduced. After all other stages of combustion, the remainder of the fuel is oxidized in the OFA. OFA has been utilized in boilers; however, it has not been demonstrated in reheat furnaces and therefore is not considered for the Project.

Less Excess Air (LEA) -- Excess airflow combustion has been correlated to the amount of NO_x generated. Limiting the net excess airflow can limit NO_x content of the flue gas. The reheat furnace will utilize a combustion system that minimizes the amount of excess air in the furnace.

Combustion Optimization -- Combustion optimization refers to the active control of combustion. The active combustion control measures seek to find optimum combustion efficiency and to control combustion at that efficiency. The reheat furnace will be optimized for maximum combustion efficiency.

Low NO_x Burners (LNB) -- A LNB provides a stable flame that has several different zones. For example, the first zone can be primary combustion. The second zone can be Fuel Reburning (FR) with fuel added to chemically reduce NO_x. The third zone can be the final combustion in low excess air to limit the temperature. The reheat furnace will utilize LNB technology to reduce NO_x emissions.

2.4.2.4 Economic Analysis

SCR

An updated SCR cost analysis was performed in support of the updated BACT analysis. This updated cost analysis included scaling the year 2005 vendor provided equipment cost based on ratio of ENR's construction cost index for years 2005 and 2008. This results in an increase equipment cost of 8.7 percent from year 2005. For this analysis the uncontrolled NOx emissions are based on an annual average heat input rate of 90 MMBtu/hr, based on past actual operating experience (AOR data). The cost analysis also assumes 40 percent reduction of NOx as guaranteed by Haldor Topsoe. The resulting capital and annual costs and cost effectiveness of SCR applied to the reheat furnace are as follows:

- Capital Cost \$1,021,934
- Annual Cost \$171,251
- Cost Effectiveness \$13,991 per ton of NOx removed per reheat furnace.

In addition the storage of ammonia for the SCR would trigger the requirement of a Risk Management Plan (RMP). Implementation of RMP would incur additional annual costs not included in above cost analysis.

SCR is not considered to be cost effective for the Project (Table 2-11).

2.4.2.5 Environmental Impacts

The maximum predicted annual NO₂ impacts for the proposed Project are below the allocable AAQS and PSD Class II increment levels (See original PSD application). Additional NO_x controls would result in an insignificant reduction of ambient impacts that are already below AAQS and PSD levels for both Class I and II areas.

2.4.2.6 Energy Impacts

Energy penalties occur with SCR. SCR will require inputs of energy, water, and ammonia. The energy requirement is estimated at approximately \$12,600 per year and the annual ammonia cost is estimated at \$21,000.

2.4.2.7 NO_x BACT Selection

For the reheat furnace the combination of good combustion practices; low excess air; and low NO_x burners can achieve the maximum amount of emissions reduction that is technically and economically feasible, and is demonstrated in practice. Additional controls should be rejected as BACT for the reheat furnace for the following reasons:

- The current BACT emission limit of 0.08 lb/MMBtu is as low as any previous BACT determination made on similar units;
- Although there is one installation of SCR on a reheat furnace, the permit limit is consistent with existing BACT determinations with LNB technology.
- SCR, has a capital and annual operating cost of \$1.02 million and \$171,251, respectively, resulting in a cost effectiveness of at approximately \$14,000 per ton of NO_x removed; and
- SCR has not been demonstrated successfully in practice.

Therefore, the proposed NO_x BACT limit for the reheat furnace remains based on good combustion low excess air, and low NO_x burners with a maximum emission rate of 0.08 lb/MMBtu.

2.4.3 Carbon Monoxide

2.4.3.1 Previous BACT Determinations

As part of the updated BACT analysis, a review was performed of previous CO BACT determinations for reheat furnaces listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of the BACT determinations for reheat furnaces from this review is presented in Table 2-8.

The CO emission limits for reheat furnaces range from 0.011 to 0.084 lb/MMBtu. This rather large range of emissions is due to differences in reheat furnace design and operation. From the review of previous determinations, it is evident that CO BACT determinations for reheat furnaces remain based on good combustion practices.

2.4.3.2 Control Technology Feasibility

The technically feasible add-on CO controls for reheat furnaces are shown in Table 2-12. As shown, there are two types of add-on CO abatement methods. Each available technique was listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

2.4.3.3 Potential Control Method Descriptions

Good Combustion Practices

The reheat furnace design generally provides a moderately high temperature with sufficient turbulence and residence time at that temperature to complete combustion of the fuel. GCPs maintain efficient combustion and minimize products of incomplete combustion. To assure good combustion, process monitors can be used to monitor the O₂ content of the reheat furnace flue gas. Real time data is fed to the boiler control room. The boiler operator uses the real time data to adjust the boiler operation to ensure sufficient excess air levels. The proposed reheat furnaces will utilize GCPs to control CO emissions.

Incinerators

The two basic types of incinerators are thermal and catalytic. Thermal systems may be direct flame incinerators with no energy recovery, flame incinerators with a recuperative heat exchanger, or regenerative systems, which operate in a cyclic mode to achieve high-energy recovery. Catalytic systems include fixed bed (packed bed or monolith) systems and fluid-bed systems, both of which provide for energy recovery.

Theses add-on controls have typically not applied to commercial natural gas fired boilers or reheat furnaces, therefore incinerators are not considered for the proposed reheat furnace.

2.4.3.4 CO BACT Selection

The proposed BACT CO emission limit for the billet reheat furnaces remains equal to 0.035 lb/MMBtu. Gerdau will minimize CO emissions through proper furnace design and good combustion practices, including: control of combustion air and combustion temperature. This level of control is

consistent with previous determinations. The two most recent BACT determinations for reheat furnaces other than this facilities resulted in CO emission limits of 0.084 lb/MMBtu.

2.4.4 <u>Volatile Organic Compounds (VOC)</u>

2.4.4.1 Previous BACT Determinations

As part of the BACT analysis, a review was performed of previous VOC BACT determinations for reheat furnaces listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of the BACT determinations for reheat furnaces from this review is presented in Table 2-8.

The VOC emission limits for reheat furnaces range from 0.0014 to 0.006 lb/MMBtu. This range of emissions is due to differences in reheat furnace design and operation. From the review of previous determinations, it is evident that VOC BACT determinations for reheat furnaces remain exclusively based on good combustion practices and boiler design.

2.4.4.2 Control Technology Feasibility

The technically feasible add-on VOC controls for reheat furnaces are shown in Table 2-13. As shown, there are four types of add-on VOC abatement methods. Each available technique was listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

2.4.4.3 Potential Control Method Descriptions

VOC emissions from natural gas fired sources are primarily the result of incomplete combustion. Complete combustion is a function of three variables; time, temperature and turbulence. Once the combustion process begins, there must be enough residence time at the required temperature to complete the process, and during combustion there must be enough turbulence or mixing to ensure that the fuel gets enough oxygen for the combustion air. Combustion systems with poor control of the fuel to air ratio, poor mixing, and insufficient residence time at combustion temperature have higher VOC emission than do those with good controls.

Refrigerated Condensers

The most common types of condensers used are surface and contact condensers. In surface condensers, the coolant does not contact the gas stream. Most surface condensers in refrigerated systems are shell and tube type. Shell and tube condensers circulate the coolant through tubes. The VOC condenses on the outside surface of the tube. Plate and frame type heat exchangers are also used as condensers in refrigerated systems. In these condensers, the coolant and the vapor flow separately over thin plates. In either design, the condensed VOC vapors drain away to a collection tank for storage, reuse, or disposal.

Contact condensers cool the vapor stream by spraying either a liquid at ambient temperature or a chilled liquid directly into the gas stream.

Refrigerated condensers are used as air pollution control devices for treating emissions with high VOC concentrations [>5,000 parts per million by volume (ppmv)], in applications involving gasoline bulk terminals, storage, etc. Refrigerated condensers are not technically feasible for reduction of VOC from reheat furnaces, and as such are not technically feasible for the Project.

Carbon Adsorbers

Adsorption is employed to remove VOC compounds from low to medium concentration gas streams. Adsorption is a phenomenon where gas molecules passing through a bed of solid particles are selectively held there by attractive forces, which are weaker and less specific than those of chemical bonds. During adsorption, a gas molecule migrates from the gas stream to the surface of the solid where it is held by physical attraction releasing energy, the heat of adsorption, which typically equals or exceeds the heat of condensation. Adsorption capacity of the solid for the gas tends to increase with the gas phase concentration, molecular weight, diffusivity, polarity, and boiling point. Gases form actual chemical bonds with the adsorbent surface groups. There are five types of adsorption techniques.

Of the five techniques, fixed bed units are typically utilized for controlling continuous VOC containing streams from flow rates ranging from several hundred to several thousand cubic feet per minute. Based on the gas flow rate of the reheat furnace and low VOC content of the exhaust stream, carbon adsorption is not technically feasible for this project.

Destruction Controls (Flares)

Flaring is a VOC control process in which the VOCs are piped to a remote, usually elevated, location and burned in an open flame in the open air using a specially designed burner tip and auxiliary fuel. Flares are not technically feasible for the reheat furnace due to the large gas volume and low Btu value of the gas stream.

Incinerators

The two basic types of incinerators are thermal and catalytic. Thermal systems may be direct flame incinerators with no energy recovery, flame incinerators with a recuperative heat exchanger, or regenerative systems, which operate in a cyclic mode to achieve high-energy recovery. Catalytic systems include fixed bed (packed bed or monolith) systems and fluid-bed systems, both of which provide for energy recovery.

These add-on controls have typically not applied to commercial natural gas fired boilers or reheat furnaces, therefore incinerators are not considered for the proposed reheat furnace

2.4.4.4 VOC BACT Selection

The updated BACT VOC emission limit for the reheat furnaces remains equal to good combustion practice control technology and the exclusive use of natural gas. This limit is consistent with the most recent determinations, based on natural gas consumption without specific permit emission limits.

2.4.5 Sulfur Dioxide

2.4.5.1 Previous BACT Determinations

As part of the BACT analysis, a review was performed of previous SO₂ BACT determinations for reheat furnaces listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of the BACT determinations for reheat furnaces from this review is presented in Table 2-8.

The SO₂ emission limits for reheat furnaces are all equivalent to 0.0006 lb/MMBtu. From the review of previous determinations, it is evident that SO₂ BACT determinations for reheat furnaces remain exclusively based on combustion of natural gas.

2.4.5.2 Control Technology Feasibility

Control technologies to reduce SO2 emissions are described in Section 1.4. There are no known installations of SO₂ controls on any existing natural gas fired reheat furnace. Based on low sulfur content of natural gas, additional controls such sorbent injection, wet scrubbers and spray dry scrubbers are not considered economically feasible for the project.

2.4.5.3 SO₂ BACT Selection

The updated BACT SO₂ emission limit for the reheat furnaces remains equal to good combustion practice control technology and the exclusive use of natural gas. This limit is consistent with the most recent determinations, based on natural gas consumption without specific permit emission limits.

TABLES

Table 2-1. Proposed Updated BACT Emission Levels.

Pollutant	EAF/LMF	Rebar Mill BRF & Wire/Rod Mill BRF (lb/MMBtu)
PM PM ₁₀	0.0018 gr/dscf 0.0018 gr/dscf	Natural Gas Combustion Natural Gas Combustion
NO_x	0.33 lb/ton tapped steel	0.08
CO	2.0 lb/ton tapped steel	0.035
VOC	0.13 lb/ton tapped steel	Natural Gas Combustion
SO ₂	0.2 lb/ton tapped steel	Natural Gas Combustion

Source: Golder, 2008

Table 2-2. BACT Determinations for Electric Arc Furnace (EAF), 1998 - 2008

Facility	State	Date	Throughput ton/hr	NOx lb/ton	CO lb/ton	VOC lb/ton	SO ₂ lb/ton	PM/PM ₁₀ gr/dscf	PM gr/dscf	PM ₁₀ gr/dscf
Minnesota Steel Industries, LLC	Minnesota	9/7/2007	205	0.3	2	0.13	0.15		0.0018	0.003
Nucor Corporation/ Nucor Steel Decatur, LLC	Alabama	6/12/2007	440	0.42	2.3	0.13	0.62	0.0018		
Elwood National Steel	Pennsylvania	8/18/2006	45		6	0.28**	0.55			0.005
Nucor Steel Tuscaloosa	Alabama	6/6/2006	300	0.35	2.2	0.13	0.46			0.0018
North Star BHP Steel, Ltd	Ohio	12/20/2005	315	0.57	7.5		0.25		46.9 TPY	167.2 TPY
Nucor Steel Marion Inc.	Ohio	8/18/2005	70	0.40	4.1	0.29	0.25			0.005
Wheeling Pittsburgh Steel Corporation	Ohio	1/6/2005	350	0.54**	4**	0.35	0.3**		0.0032**	0.044
Steelcorr, Inc Bluewater project	Arizona	7/22/2004	350	0.35	2	0.13	0.2			0.0018
Charter Manufacturing Co., Inc./Charter Steel	Ohio	6/10/2004	110	0.33	3.24	0.2	0.2			0.113
Steel Dynamics, Hendricks	Indiana	8/29/2003	135	0.35	. 2	0.13	0.25-1.8		0.0018	0.0052
Beta Steel ¹	Indiana	5/30/2003	151	0.45	5.41	0.15	0.33	0.0052		0.0052
Timken Company/Faircrest Plant ²	Ohio	2/20/2003	200	$0.2 (NO_2)$	4.8	0.1	0.15	0.0032		
Nucor Jewett Plant ³	Texas	1/5/2003	240	0.898	2.2	0.43	1.76		55.5 lb/hr	34.2 lb/hr
Corus Tuscaloosa	Alabama	6/3/2003	160	0.35	2	0.13	0.62	0.2		
Nucor Corp.	Texas	1/15/2003		0.3	2	0.427	0.35	0.0052		
Nucor Steel Decatur, LLC (Trico Steel)	Alabama	7/11/2002	440	0.4	2.0	0.2	0.5	0.0032		
Nucor Steel Corp	North Carolina	2002		0.51	. 4	0.13	0.22	0.0018		
IPSCO Steel	Iowa	2002		0.8	1.93	0.18	0.7	0.0052		
Ellwood Quality Steels Co.	Pennsylvania	4/30/2001	53 ton/batch	0.1**	5	0.3**	0.45**			0.15 lb/ton**
SMI Steel	South Carolina	2001		0.51	2		0.35	0.002		
Nucor Yamato	Arkansas	2001	450	0.38	2	0.13	0.15	0.0018		
Kestone Steel	Illinois	2000		0.51	1.34	0.13	0.2	0.0018		
Charter Steel	Wisconsin	2000	**	0.51	3.5	0.06	0.176**	0.0015	6.05 lb/hr	5.56 lb/hr
Nucor Steel Corporation	Tennessee	11/6/2000	150	0.7	4	0.26	0.16			0.002
Republic Technologies Int.	Ohio	1/27/1999	165	0.35	4**	0.35**	0.07**	0.0032**		
SDI Steel, Whitley	Indiana	1999		0.35	2	0.09	0.25	0.002		
Gerdau-Ameristeel/Ameristeel Corporation	Florida	9/28/1999	100	0.33	3	0.295**		0.0034		
IPSCO Steel Inc.	Alabama	10/16/1998	200	0.4	2	0.35	0.7	0.0033		
Roanoke Electric	Virginia	1998		0.378	2.4	0.3	0.17	0.0034		
Quanex Corporation - Macsteel Division	Arkansas	2/18/1998	86	0.51	4.9	0.13	1.05	0.0018		
Chaparral Steel	Virginia	1998		0.7	4	0.35	0.7	0.0018		

^{**} Per EPA RBLC database, basis other than BACT.

Notes:

Emissions from Meltshop (EAF(w/Cojet Burners), LMF, Caster, & Natural Gas Comb. Units.)

²NO₂ emission limit as reported in EPA RBLC Database.

³EAF, LMF, Caster, Meltshop

Table 2-3. PM/PM₁₀ Control Technolgy Feasibility Analysis for EAF/LMFs

PM Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible? (Y/N)	Demonstrated? (Y/N)	Rank Based on Control Efficiency	Proposed for Project? (Y/N)
1. Fuel Techniques	Fuel Substitution	NA	N	NA	NA	NA
2. Pretreatment	Settling Chambers	< 10%	Y	Y	2	N
	Elutriators	< 10%	Y	N	NA	NA
	Momentum Separators	10 - 20%	Y	N	NA	NA
	Mechanically-Aided Separators	20 - 30%	Y	N	. NA	NA
	Cyclones	60 - 90%	Y	N	NA	NA
3. Electrostatic Precipitators(ESP)	Dry ESP	>99%	N	NA	NA	NA
	Wet ESP	>99%	N	NA	NA	NA
	Wire-Plate ESP	>99%	N	NA	NA	NA
	Wire-Pipe ESP	>99%	N	NA	NA	NA
4. Fabric Filters	Shaker-Cleaned	>99%	Y	Υ .	ı	N
	Reverse-Air	>99%	Y	Y	1	Y
	Pulse-Jet	>99%	Y	Y	1	N
5. Wet Scrubbers	Spray Chambers	50 - 95 %	Y	N	NA	NA
	Packed-Bed	50 - 95 %	Y	N	NA	NA
	Impingement Plate	50 - 95 %	Y	N	NA	NA
	Mechanically-Aided	50 - 95 %	N	NA	NA	NA
	Venturi	50 - 95 %	Y	N	NA	NA
	Orifice	50 - 95 %	Y	N	NA	NA
	Condensation	50 - 95 %	Y	N	NA	NA

Table 2-4. NO_x Control Technolgy Feasibility Analysis for EAF/LMFs

NO _x Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible? (Y/N)	Demonstrated? (Y/N)	Rank Based on Control Efficiency	Proposed for Project? (Y/N)
Removal of nitrogen	Ultra-Low Nitrogen Fuel	No Data	N	NA	NA	NA
Ü	Furnace Control (Minimization of Air Infiltration to EAF)	No Data	Y	Y	NA	Y
2. Oxidation of NO _x with subsequent absorption.	Inject Oxidant	60 - 80%	N	NA	NA	NA
	Non-Thermal Plasma Reactor (NTPR)	60 - 80%	N	NA	NA	NA
3. Chemical reduction of NO,	Selective Catalytic Reduction (SCR)	35 - 80%	N	NA	NA	NA
Ť	Selective Non-Catalytic Reduction (SNCR)	35 - 80%	N .	NA	NA	NA
Reducing residence time at peak temperature	Air Staging of Combustion	50 - 65%	N	NA	NA	NA
	Fuel Staging of Combustion	50 - 65%	N	NA	NA	NA
	Inject Steam	50 - 65%	N	NA ·	NA	NA
5. Reducing peak temperature	Flue Gas Recirculation (FGR)	15 -25%	Y	Y	1	N
•	Natural Gas Reburning (NGR)	15 -25%	N	N	NA	NA
	Over Fire Air (OFA)	15 -25%	Y	Y	1	N
	Less Excess Air (LEA)	15 -25%	Y	Y	1	Y
	Combustion Optimization	15 -25%	Y	Y	NA	NA
	Reduce Air Preheat	15 -25%	Y	Y	1	N
	Low NO _x /Oxyfuel Burners (LNB)	15 -25%	Y	Y	1	Y

Table 2-5. Add-on CO Control Technology Feasibility Analysis for EAF/LMFs

VOC Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible? (Y/N)	Demonstrated? (Y/N)	Rank Based on Control Efficiency	Proposed for Project? (Y/N)
1. Good Combustion Practice	Furnace Control	>50%	Y	Y	1	Y
2. Post Combustion	Post Combustion Chamber	>90%	Y	N	NA	N
3. Incinerators	Thermal Catalytic	>80% >80%	N N	NA NA	NA NA	NA NA
4. Direct Evacuation System	Fourth Hole	NA	Y	Y	NA	Y

Table 2-6. Add-on VOC Control Technology Feasibility Analysis for EAF/LMFs

VOC Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible? (Y/N)	Bagasse Demonstrated? (Y/N)	Rank Based on Control Efficiency	Proposed for Project? (Y/N)
1. Good Combustion Practice	Furnace Control	>50%	Y	Y	1	Y
2. Refrigerated Condensors	Surface	Variable	N	NA	NA	NA
	Contact	Variable	N	NA	NA	NA
				NA	NA	NA
3. Carbon Adsorbers	Fixed Regenerative bed	Variable	N	NA	NA	NA
	Disposable/Rechargeable Cannisters	Variable	N	NA	NA	NA
-	Traveling Bed Adsorbers	Variable	N	NA	NA	NA
	Fluid Bed Adsorbers	Variable	N	NA	NA	NA
	Chromatographic Baghouse	Variable	N	NA	NA	NA
				NA	NA	NA
4. Destruction Controls	Flares	Variable	N	NA	NA	NA
	•		,	NA	NA	NA
5. Incinerators	Thermal	>80%	N	NA	NA	NA
	Catalytic	>80%	N	NA	NA	NA

Table 2-7. SO₂ Control Technolgy Feasibility Analysis for EAF/LMFs

PM Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible? (Y/N)	Demonstrated? (Y/N)	Rank Based on Control Efficiency	Proposed for Project? (Y/N)
Charge Management	Scrap and Carbon Management	Unknown	Y	Y	1	Y
2. Sorbent Injection	Sorbent Duct Injection	80%	Y	N	NA	NA
3. Wet Scrubbers	Packed Tower	99.9%	Y	N .	NA	NA ·
	Plate	>90%	Y	N	NA	NA
	Columns	>90%	Y	N	· NA	NA
	Venturi	>90%	Y	N	NA	NA
	Spray Chamber	>90%	Y	Ν .	NA	NA
4. Spray Dry Scrubbers	Lime or Calcium Oxide	90 - 95%	Υ .	N	NA	NA

NTF = Not Technically Feasible

Table 2-8. BACT Determinations for Reheat Furnaces, 1998 - 2008

				(lb/MMBtu)			
Facility	State	Date	NO _x	со	voc	SO ₂	PM/PM ₁₀
Gerdau Ameristeel Wilton	Iowa	5/29/2007	110.23 lb/mmcf	84 lb/mmcf			
Gerdau Ameristeel - Jacksonville Steel Mill	Florida	5/5/2006	0.08	0.035			
Nucor-Yamato Steel Company - Blytheville Mill	Arizona	4/6/2005	0.17				
IPSCO Steel Inc.	Alabama	2/7/2005	0.17				
Nucor Steel	North Carolina	11/23/2004	0.13	0.084	0.006	0.00058	0.01
Nucor Steel Corp	Nevada	6/22/2004	0.64	0.066	0.0055	0.00060	
Nucor Auburn Steel	New York	6/22/2004		0.084		0.00061	
Structural Metals Inc./SMI Texas	Texas	1/28/2004	14.64 lb/hr	0.24 lb/hr	0.24 lb/hr	1.34 lb/hr	1.2 lb/hr
Nucor Steel Corp (Draft Determination)	Nebraska	6/22/2004	0.096	0.035	0.0055	0.0006	
Steel Dynamics, Hendricks	Indiana	8/29/2003	0.08	0.084	0.0050	0.0006	0.0019
Beta Steel*	Indiana	5/30/2003	0.077	0.04			
Nucor Steel	North Carolina	2002	0.128	0.084	0.005	0.00058	
IPSCO Steel	lowa	2002	0.269				
Nucor Yamato	Arkansas	10/10/2001	0.094	0.0824	0.0054	0.0006	0.0168
Charter Steel	Wisconsin	2000	0.09	0.011	0.0014	0.00061	0.082
Republic Technologies Int.	Ohio	1/27/1999	0.112	0.039			0.005
SDI Steel, Whitley	Indiana	1999	0.11	0.03	0.0055		
Gerdau-Ameristeel	Florida	1999	0.19	0.035			0.0108
IPSCO Steel Inc.	Alabama	10/16/1998	0.172				0.0058
Quanex Corporation - Macsteel Division	Arkansas	2/18/1998	0.14	0.035			0.0031
Chaparral Steel	Virginia	1998	0.21	0.075	0.0053	0.0006	

Note: All measurements in lb/MMBtu.

Table 2-9. PM/PM₁₀ Control Technolgy Feasibility Analysis for Reheat Furnaces

PM Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible? (Y/N)	Demonstrated? (Y/N)	Rank Based on Control Efficiency	Proposed for Reheat Furnace? (Y/N)
1. Fuel Techniques	Fuel Substitution	NA	Y	Y	N	N
2. Pretreatment	Settling Chambers	< 10%	Y	N	NA	NA
	Elutriators	< 10%	Y	N	NA	NA
	Momentum Separators	10 - 20%	Y	N	NA	NA
	Mechanically-Aided Separators	20 - 30%	Y	N	NA	NA
	Cyclones	60 - 90%	Y	N	NA	NA
3. Electrostatic Precipitators(ESP)	Dry ESP	>99%	Υ.	N	NA	NA
•	Wet ESP	>99%	Y	N	NA	NA
	Wire-Plate ESP	>99%	Y	N	NA	NA
	Wire-Pipe ESP	>99%	Y	N	NA	NA
4. Fabric Filters	Shaker-Cleaned	>99%	Y	N	NA	NA
•	Reverse-Air	>99%	Y	N	NA	· NA
	Pulse-Jet	>99%	Y	N	NA	NA

Table 2-10. NO_x Control Technology Feasibility Analysis for Billet Reheat Furnaces

NO _x Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible? (Y/N)	Demonstrated? (Y/N)	Rank Based on Control Efficiency	Proposed for Reheat Furnace? (Y/N)
Chemical reduction of NO _x	Selective Catalytic Reduction (SCR)	35 - 80%	Y	N	NA	NA
•	Selective Non-Catalytic Reduction (SNCR)	35 - 80%	N	NA	NA	NA
2. Reducing peak temperature	Flue Gas Recirculation (FGR)	15 -25%	N	NA	NA	NA
	Natural Gas Reburning (NGR)	15 -25%	N	NA	NA	NA
	Over Fire Air (OFA)	15 -25%	N	NA	NA	NA
	Less Excess Air (LEA)	15 -25%	Y	Y	1	Y
	Combustion Optimization	15 -25%	Y	Y	1	Y
	Low NO _x Burners (LNB)	15 -25%	Y	Y	1	Y

Table 2-11. Cost Effectiveness of SCR, Billet Reheat Furnace.

Cost Items	Cost Factors ^a	Cost (\$)
DIRECT CAPITAL COSTS (DCC):		
SCR Installed System - Catalyst Cost	Based on Vendor quote ^b	765,078
Emission Monitoring	15% of SCR equipment cost	114,762
Ammonia Storage System	included	included
Foundation and Structure Support	8% of equipment cost	included
Control Room and Enclosures	4% of equipment cost, engineering estimate	included
Transition Ducts to and from SCR	4% of equipment cost, engineering estimate	included
Wiring and Conduit	2% of equipment cost, engineering estimate	included
Insulation	2% of equipment cost, engineering estimate	included
Motor Control and Motor Starters	4% of equipment cost, engineering estimate	included
SCR Bypass Duct	\$127 per MMBtu/hr	included
Induced Draft Fan	5% of SCR equiment cost, engineering estimate	included
Taxes	Florida sales tax, 6%	included
Total DCC:		879,840
INDIRECT CAPITAL COSTS (ICC): General Facilities	5% of DCC	included
Engineering Fees	10% of DCC ,	included
Performance test	1% of DCC	8,798
Total ICC:		8,798
Project Contingencies:	15% of DCC and ICC	133,296
TOTAL CAPITAL INVESTMENT OF SCR (TCI):	DCC + ICC + Project Contingencies	1,021,934
TOTAL CAPITAL INVESTMENT		1,021,934
DIRECT OPERATING COSTS (DOC):		
(1) Operating Labor	041 44 0160 06 44	0.004
Operator	24 hrs/wk, \$16/hr, 26 wks/yr	9,984
Supervisor	15% of operator cost	1,498
(2) Maintenance	Engineering estimate, 5% of catalyst replacement cost	1,417
(3) SCR Energy Requirement	163 Hp Blower, 16 Hp Ammonia Pump,	12,595
	82kW/h for SCR @ \$0.04/kWh	
(4) Ammonia Cost	\$800/ton NH3 19% Aqueous(Tanner,05)	20,951
(6) Catalyst Replacement and disposal	\$85,008 per catalyst ^c , 25,500 hrs or every 3 years	28,336
Total DOC:		74,781
CAPITAL RECOVERY COSTS (CRC):	CRF of 0.0944 times TCI (20 yrs @ 7%)	96,471
ANNUALIZED COSTS of SCR (AC):	DOC+ CRC	171,251
TOTAL ANNUALIZED COST		171,251
BASELINE NO _x EMISSIONS (TPY):	Annual Avg 90 MMBtu/hr, 8500 hr/yr, 0.08 lb NOx/ MMBtu	30.6
MAXIMUM NO _x EMISSIONS (TPY):	40% Control; Haldor Topsoe Quote	18.4
REDUCTION IN NO _x EMISSONS (TPY):		12.2
COST EFFECTIVENESS:	\$ per ton of NO _x Removed	13,991

Footnotes

^a Unless otherwise specified, factors and cost estimates reflect OAQPS Cost Manual, Section 3, Sixth edition.

b 2005 Haldor Topsoe SCR Catalyst Quote scaled for year 2008 based ENR's Construction Cost Index (+8.7%). Catalyst estimated to be 10% of the total installed cost of the SCR.

 $^{^{\}rm c}$ SCR catalyst replacement based on Haldor Topsoe catalyst quote and 3 year guarantee.

Table 2-12. Add-on CO Control Technology Feasibility Analysis for Billet Reheat Furnaces

VOC Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible? (Y/N)	Demonstrated? (Y/N)	Rank Based on Control Efficiency	Proposed for Reheat Furnace? (Y/N)
1. Good Combustion Practice	Furnace Control	>50%	\mathcal{F}	Y	1	Y
2. Incinerators	Thermal Catalytic	>80% >80%	N N	NA NA	NA NA	NA NA

Table 2-13. Add-on VOC Control Technology Feasibility Analysis for Billet Reheat Furnaces

VOC Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible? (Y/N)	Demonstrated? (Y/N)	Rank Based on Control Efficiency	Proposed for Reheat Furnace? (Y/N)
1. Good Combustion Practice	Furnace Control	>50%	Y	Y	. 1	Y
2. Refrigerated Condensors	Surface	Variable	N	NA	NA	NA
2. 2	Contact	Variable	N	NA	NA	NA
3. Carbon Adsorbers	Fixed Regenerative bed	Variable	N	NA	NA	NA
	Disposable/Rechargeable Cannisters	Variable	N	NA	NA	NA
	Traveling Bed Adsorbers	Variable	N	NA	NA	NA
	Fluid Bed Adsorbers	Variable	N	NA	NA	NA
	Chromatographic Baghouse	Variable	N	NA	NA	NA
4. Destruction Controls	Flares	Variable	N	NA	NA	NA
5. Incinerators	Thermal	>80%	N	NA	NA	NA
	Catalytic	>80%	<u>N</u>	NA	NA	NA

APPENDIX A FDEP BACT REQUEST LETTER



Florida Department of Environmental Protection

Bob Martinez Center 2600 Blair Stone Road Tallahassee, Florida 32399-2400 Charlie Crist Governor

Jeff Kottkamp Lt. Governor

Michael W. Sole Secretary

August 19, 2008

Electronically Sent - Received Receipt Requested

Mr. Carlos Zanoelo Vice President and General Manager Gerdau Ameristeel Jacksonville Steel Mill 16770 Rebar Road Baldwin, Florida 32234

RE: Request for an Extension of the Expiration Date for Permits PSD-FL-349 and PSD-FL-349(A) Project No. 0310157-011-AC/PSD-FL-349(C)

Dear Mr. Zanoelo:

On July 22, 2008, the Department received a request for an 18-month extension of the expiration date of the above referenced permits. The expiration date is September 28, 2008. Based on our review of the proposed project, we have determined that the following additional information is needed in order to continue processing this application package. Please provide all assumptions, calculations, and reference material(s), that are used or reflected in any of your responses.

1. Pursuant to Rule 62-212.400(12)(a), F.A.C., Source Obligation, authorization to construct expires if construction is discontinued for a period of 18 months or more. Based on an e-mail received on August 5, 2008, the schedule for the Ladel Metallurgical Furnace, Billet Reheat Furnace and Billet Reheat Furnace #2 indicates that these emissions units will need to undergo a Best Available Control Technology (BACT) determination review before construction is to resume. Therefore, please complete and submit the appropriate application pages and associated documents to address BACT for these emissions units.

If you have any questions regarding this matter, please call Bruce Mitchell at (850)413-9198.

Sincerely.

New Source Review Section Bureau of Air Regulation

SA/bm

cc: Carlos Zanoelo, Gerdau Ameristeel (czanoelo@GerdauAmeriSteel.com)

James P. Wold, Gerdau Ameristeel (JWold@GerdauAmeriSteel.com)

Devid Larocca, Golder Associates (<u>DLaRocca@golder.com</u>)

Richard Robinson, Duval County Environmental Quality Division, (ROBINSON@coj.net)

Golder Associates Inc.

5100 West Lemon Street, Suite 114 Tampa, FL USA 33609 Telephone (813) 287-1717 Fax (813) 287-1716 www.golder.com

July 21, 2008



JUL 22 2008

0639766

Bureau of Air Regulations

Department of Environmental Protection
2600 Blair Stone Road

Tallahassee, Florida 32399-2400

Attention: Ms. Trina L. Vielhauer, Chief, Bureau of Air Regulations

RE: Gerdau Ameristeel, Jacksonville Steel Mill – Request for Extension of Air Construction Permit No. 0310157-007-AC/PSD-FL-349

0310157-011-40

Dear Ms. Vielhauer:

Gerdau Ameristeel (Gerdau) operates the existing Jacksonville Steel Mill near Baldwin in Duval County, Florida. The facility is a scrap iron and steel recycling (secondary metal production) plant that has been in operation since 1976. The plant receives scrap steel by truck and rail and processes it into steel rebar, wire and rod. Main components of the plant include the following:

- Electric Arc Furnace (EAF);
- Continuous Caster;
- Billet Reheat Furnace;
- Rolling and Rod Mill; and
- Slag Handling and Storage.

On September 21, 2005, the Florida Department of Environmental Protection (FDEP) issued Air Construction Permit No. 0310157-007-AC/PSD-FL-349. This permit provides authorization for the construction of the following:

- A new Melt Shop, which houses the EAF operations;
- A new Continuous Caster Building, which houses the Continuous Caster and Ladle Metallurgical Furnace (LMF); and
- A new Billet Reheat Furnace.

On May 2, 2006, the Florida Department of Environmental Protection (FDEP) issued Air Construction Permit No. 0310157-008-AC/PSD-FL-349A. This permit was a revision to the previous issued permit on September 21, 2005 and provides authorization for the construction of a second new Billet Reheat Furnace. The expiration of the PSD Permit is September 28, 2008.

Condition 10 of the construction permit states the following: "The permit expiration date includes sufficient time to complete construction, perform required testing, submit test reports, and submit an application for a Title V operation permit to the Department. Approval to construct shall become invalid for any of the following reasons: construction is not commenced within 18 months after issuance of this permit; construction is discontinued for a period of 18 months or more; or construction is not completed with a reasonable time. The Department may extend the 18-month

period upon satisfactory showing that an extension is justified. In conjunction with an extension of the 18-month period to commence or continue construction (or to construct the project in phases), the Department may require the permittee to demonstrate the adequacy of any previous determinations of Best Available Control Technology (BACT) for emission units regulated by the project. For good cause, the permittee may request that this PSD air construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulations at least sixty (60) days prior to the expiration of this permit."

Construction of the project was initiated within the required 18 months of the permit issuance, and construction of the new Melt Shop, including the construction of the new EAF has been completed. In addition, Gerdau has submitted an application to revise the Title V operating permit to include the new Melt Shop and EAF. Since the initial startup, May 2007, the EAF has experienced two catastrophic EAF transformer failures. These failures have caused extensive delays in the project advancement including delays in the construction of the continuous caster and billet reheat furnaces. The transformer failures are documented in the attached letters to the City of Jacksonville. In addition to the delays caused by the repair and replacement of transformers, Gerdau has also experienced delays beyond its control as a result of poor market conditions.

For the foregoing reasons, Gerdau requests that Air Construction Permit No. 0310157-008-AC/PSD-FL-349A be modified to provide an eighteen (18) month extension of the permit expiration date.

Sincerely,

GOLDER ASSOCIATES INC.

Sal J. Laroun

Maria J. Borks

David T. Larocca

Senior Project Engineer

Ken F. Kosky P.E.

Principal

DTL/dtl

cc: James P. Wold, Gerdau Ameristeel

Document2



July 21, 2008

Bureau of Air Regulations Department of Environmental Protection 2600 Blair Stone Road Tallahassee, Florida 32399-2400

Environmental Quality Division Air Quality 117 West Duval Street, Suite 225 Jacksonville, FL 32202

Attention: Ms. Trina L. Vielhauer, Chief, Bureau of Air Regulations

Attention: Mr. Ronald L. Roberson, Environmental Engineer

RE: Gerdau Ameristeel, Jacksonville Steel Mill-Title V Operation Permit Application Extension Request.

Dear Ms. Vielhauer:

Gerdau commenced operation of a new Electric Arc Furnace (EAF) with a 95 MVA transformer on May 27, 2007. Under its construction permit, performance testing was scheduled to occur by November, 2007. On September, 15, 2007, Gerdau experienced a force majeure equipment malfunction when its 95 MVA transformer suffered a catastrophic failure. Gerdau submitted a letter on November 6, 2007, requesting an extension of the testing deadline due to the force majeure event. The Department responded on November 15, 2007, and has demanded a stack test or an extension under an enforceable agreement. Despite the force majeure defense, Gerdau is willing to conduct a stack test and enter into an appropriate enforcement order.

This letter is intended to provide further background on Gerdau's unique situation related to the *force majeure* malfunction, recommend a path forward that includes conducting two stack tests, and to stress that Gerdau is not, and cannot under its present operating scenario, exceed its permit limits under its Title V or construction permits.

Gerdau intends to return the original transformer to service as originally permitted as soon as possible. Currently, the EAF is operating with a 65 MVA-rated transformer that Gerdau received from its Beaumont, Texas facility. This transformer has performed poorly and can be operated only at 35 MVA. Under optimum conditions, the transformer is only capable of producing steel at a production rate of 87 TPH, just over fifty percent of its permitted capacity of 160 TPH. Further, yearly operating totals are also well below permitted capacity. As of the end of November, the EAF had operated for 6,700 hours, and it will likely operate for only 7,200 hours by year end, below both the existing and new Title V permit levels of 8,000 and 8,520 hours/year, respectively. All emissions are going through the new baghouse and, because of lower operating rates, are also well below permitted levels.

Because the 65 MVA-rated transformer is performing so inefficiently, Gerdau is planning to replace it with another interim transformer as soon as possible. Gerdau understands the city's request that it not continue to operate an interim transformer indefinitely without a stack test and therefore proposes to conduct stack testing on the facility with a 2nd interim transformer that will be installed shortly. Gerdau is currently in the process of procuring this transformer, rated at 90 MVA, from its Perth Amboy, New Jersey facility. Gerdau anticipates that this transformer will be installed in mid-March, 2008. Gerdau does not believe that it is constructive to test the facility with the first interim transformer since it will very shortly be replaced and its size and operational problems are causing the facility to operate well below permitted capacity. We propose to conduct the first stack test within sixty days of delivery and installation of the replacement transformer, now scheduled for mid-March, 2008. This short delay is necessary for testing and balancing to ensure that the interim transformer operates properly with the new EAF (testing includes determining adequate arc length, impendence with the transformer etc.). The 2nd transformer is



Jacksonville Steel Mill Division

closer in size to the original transformer and may allow Gerdau to conduct more meaningful testing closer to the 144 TPH mandated by the permit.¹

The original transformer is currently scheduled to be returned to service in October, 2008. It too will take approximately 60 days to reach full operation, after which Gerdau proposes to conduct a second round of stack testing. Gerdau requests assurances that performance testing conducted for the smaller interim transformer will not create a new baseline for PSD or Title V purposes.

The Department has the discretion to grant Gerdau's request under the recently enacted Force Majeure Rule, which formalized EPA's previously existing policy of using enforcement discretion to delay performance testing in *force majeure* circumstances. EPA's definition of force majeure events includes equipment failure beyond the control of the facility. The rule states that the granting of an extension to the performance test deadline is "solely within the discretion of the Administrator." The Administrator in this case refers to the Department, which has been delegated responsibility over the program by the Administrator. The rule grants broad discretionary authority to the Department and does not contain any limitation in the form of a requirement of an enforceable order. EPA's national stack testing guidance did suggest that time extensions be granted through an enforcement discretion letter or an administrative order, but this guidance has since been supplanted by a specific EPA rulemaking. The intention of the *force majeure* exception is to keep those facilities that experience a qualifying event outside the enforcement regime. Requiring an enforceable order would thus be contrary to the spirit and intention of the rule. Further, enforceable orders were only one of several options that the EPA suggested in its previous guidance and are by no means mandatory. That said, Gerdau understands that the Department would prefer to handle this *force majeure* event under an appropriate enforcement order. We are certainly willing to pursue this approach.

Gerdau Ameristeel looks forward to discussing this matter with the City on January 2nd.

Sincerely,

James Wold

¹ See Condition B.6 of Permit 0310157-009-AC/PSD-FL349B, note 3, p. 8.

² See Revisions to Standards of Performance for New Stationary Sources, National Emission Standards for Hazardous Air Pollutants, and National Emissions Standards for Hazardous Air pollutants for Source Categories, 72 Fed. Reg. 27,437 (May 16, 2007).

³ *Id.* at 27,438

BEFORE THE ENVIRONMENTAL PROTECTION BOARD CITY OF JACKSONVILLE

CITY OF JACKSONVILLE ENVIRONMENTAL AND COMPLIANCE DEPARTMENT,))
ENVIRONMENTAL QUALITY DIVISION,)
Petitioner,	 Cease & Desist Citation AP-07-24 Alleged Failure to Conduct Initial Performance Compliance Testing
VS.)
Gerdau Ameristeel Corp.,	,)
Respondent.)

CONSENT ORDER WITH COMPLIANCE PLAN

This Consent Order with Compliance Plan is made and entered into between the City of Jacksonville, Environmental and Compliance Department (E&CD) and Gerdau Ameristeel Corp. ("Respondent").

- 1. E&CD, through its Environmental Quality Division (EQD), enforces Chapters 360 and 362, City of Jacksonville Ordinance Code and Jacksonville Environmental Protection Board Rule 2.
- 2. The Respondent is located at 16770 Rebar Road, Baldwin, Florida 32234. The Respondent owns and operates an Electric Arc Furnace at Jacksonville Steel Mill.
- 3. On December 4, 2007, E&CD issued Citation AP-07-24 to the Respondent for failure to conduct an initial performance compliance test on a new electric arc furnace at Jacksonville Steel Mill.
- 4. The Respondent and E&CD have met in an effort to resolve their disputes as to compliance issues and any alleged violations of City of Jacksonville ordinances and rules. The parties have agreed to enter into this Consent Order with Compliance Plan in order to expeditiously address compliance issues without litigation and its attendant costs, delays, and risks.

Having reached a resolution of this matter without any admission of liability or wrongdoing by the Respondent, the parties agree, and it is

ORDERED:

5. The Respondent shall operate the electric arc furnace at Jacksonville Steel Mill in accordance with all local, state, and federal rules and regulations.

Gerdau Ameristeel Cease & Desist Citation AP-07-24 Consent Order With Compliance Plan Page 2

- 6. The Respondent shall comply with the following schedule:
 - a. By no later than February 29, 2008, Respondent shall conduct a compliance test on the 65 MVA Beaumont Transformer and submit the compliance test report to EQD within 45 days of completion of the test.
 - b. By no later than September 1, 2008, Respondent shall complete the installation and start up the 91 MVA Perth Amboy Transformer at Jacksonville Steel Mill. Respondent shall submit notice of the installation and start up of the 91 MVA Perth Amboy Transformer to EQD within 15 business days of installation and start up of the transformer.
 - c. Respondent shall have a 60 day shakedown period to run the 91 MVA Perth Amboy Transformer. The 60 day shakedown period shall begin on the start up date of the transformer.
 - d. Respondent shall conduct the required compliance test on the 91 MVA Perth Amboy Transformer no later than 15 days after the 60 day shakedown period. A notice of the compliance test on the 91 MVA Perth Amboy Transformer shall be submitted to EQD 15 days prior to the start of the test. The required compliance test report on the 91 MVA Perth Amboy Transformer shall be submitted to EQD within 45 days of the completion of the test.
- 7. Pursuant to Section 360.306, Ordinance Code, if the Respondent fails to meet any of the deadlines specified in paragraph 6 above, then the Director of E&CD may impose a civil fine of up to \$500 for each occurrence of noncompliance with this Consent Order with Compliance Plan. Each day of non-compliance shall constitute a separate offense. The civil fine shall be due within seven days of written notification to the Respondent. The check shall be made payable to the City of Jacksonville Environmental Protection Trust Fund and mailed to E&CD, 117 W. Duval Street, Suite 225, Jacksonville, FL 32202 to the attention Dana L. Brown.
- 8. No civil penalty is required in this case as Respondent has demonstrated that the failure to timely test the new electric arc furnace was due to a bona fide malfunction which rendered the transformer that powered the electric arc furnace inoperable.
- 9. This Consent Order with Compliance Plan fully resolves all issues raised in E&CD's Cease and Desist Citation AP-07-24 regarding the matters addressed herein. E&CD reserves the right to take appropriate enforcement action against Respondent for any future violation of the Ordinance Code or rules. Respondent reserves its right to contest any such enforcement action in accordance with applicable law.

Gerdau Ameristeel Cease & Desist Citation AP-07-24 Consent Order With Compliance Plan Page 3

- 10. Notwithstanding paragraph 7 above, a violation of the terms of this Consent Order may subject the Respondent to judicial imposition of civil penalties of up to \$10,000 per violation per day.
- 11. In consideration of the complete and timely performance by the Respondent of the obligations agreed to in this Consent Order with Compliance Plan, E&CD waives any right to seek judicial imposition of additional penalties. The Respondent waives its right to an administrative hearing pursuant to Section 120.57(1), Florida Statutes, regarding the terms of this Consent Order with Compliance Plan.
- 12. The provisions of this Consent Order with Compliance Plan shall apply to and be binding upon the parties, their officers, directors, agents, servants, employees, successors, and assigns and all persons, firms and corporations acting under, through or for them and upon those persons, firms, and corporations in active concert or participation with them.
- 13. Entry of this Consent Order with Compliance Plan does not relieve the Respondent of the need to comply with applicable federal, state or local laws, regulations or ordinances.

CITY OF JACKSONVILLE ENVIRONMENTAL AND COMPLIANCE DEPARTMENT

•	
Date	Ebenezer S. Gujjarlapudi, P.E., Director
	Gerdau Ameristeel US Inc.
Date	Carlos Zanoelo, VP/General Manager
	ORDER
	g document was adopted by order of the Environmental Protection e this day of, 2008.
Michael F. Templeton, Chairma	n
Environmental Protection Board	· ·

S:\AIR\Gerdau Ameristeel\Consent Order.doc

Golder Associates Inc.

5100 West Lemon Street, Suite 114 Tampa, FL USA 33609 Telephone (813) 287-1717 Fax (813) 287-1716 www.golder.com

July 21, 2008



JUL 22 2008

0639766

BUREAU OF AIR REGULATION

Bureau of Air Regulations
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attention: Ms. Trina L. Vielhauer, Chief, Bureau of Air Regulations

RE: Gerdau Ameristeel, Jacksonville Steel Mill – Request for Extension of Air Construction Permit No. 0310157-007-AC/PSD-FL-349

0316157-011-AC/PSD-FL-349C

Dear Ms. Vielhauer:

Gerdau Ameristeel (Gerdau) operates the existing Jacksonville Steel Mill near Baldwin in Duval County, Florida. The facility is a scrap iron and steel recycling (secondary metal production) plant that has been in operation since 1976. The plant receives scrap steel by truck and rail and processes it into steel rebar, wire and rod. Main components of the plant include the following:

- Electric Arc Furnace (EAF);
- Continuous Caster;
- Billet Reheat Furnace;
- Rolling and Rod Mill; and
- Slag Handling and Storage.

On September 21, 2005, the Florida Department of Environmental Protection (FDEP) issued Air Construction Permit No. 0310157-007-AC/PSD-FL-349. This permit provides authorization for the construction of the following:

- A new Melt Shop, which houses the EAF operations;
- A new Continuous Caster Building, which houses the Continuous Caster and Ladle Metallurgical Furnace (LMF); and
- A new Billet Reheat Furnace.

On May 2, 2006, the Florida Department of Environmental Protection (FDEP) issued Air Construction Permit No. 0310157-008-AC/PSD-FL-349A. This permit was a revision to the previous issued permit on September 21, 2005 and provides authorization for the construction of a second new Billet Reheat Furnace. The expiration of the PSD Permit is September 28, 2008.

Condition 10 of the construction permit states the following: "The permit expiration date includes sufficient time to complete construction, perform required testing, submit test reports, and submit an application for a Title V operation permit to the Department. Approval to construct shall become invalid for any of the following reasons: construction is not commenced within 18 months after issuance of this permit; construction is discontinued for a period of 18 months or more; or construction is not completed with a reasonable time. The Department may extend the 18-month

period upon satisfactory showing that an extension is justified. In conjunction with an extension of the 18-month period to commence or continue construction (or to construct the project in phases), the Department may require the permittee to demonstrate the adequacy of any previous determinations of Best Available Control Technology (BACT) for emission units regulated by the project. For good cause, the permittee may request that this PSD air construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulations at least sixty (60) days prior to the expiration of this permit."

Construction of the project was initiated within the required 18 months of the permit issuance, and construction of the new Melt Shop, including the construction of the new EAF has been completed. In addition, Gerdau has submitted an application to revise the Title V operating permit to include the new Melt Shop and EAF. Since the initial startup, May 2007, the EAF has experienced two catastrophic EAF transformer failures. These failures have caused extensive delays in the project advancement including delays in the construction of the continuous caster and billet reheat furnaces. The transformer failures are documented in the attached letters to the City of Jacksonville. In addition to the delays caused by the repair and replacement of transformers, Gerdau has also experienced delays beyond its control as a result of poor market conditions.

For the foregoing reasons, Gerdau requests that Air Construction Permit No. 0310157-008-AC/PSD-FL-349A be modified to provide an eighteen (18) month extension of the permit expiration date.

Sincerely,

GOLDER ASSOCIATES INC.

and J. Laroun

David T. Larocca

Senior Project Engineer

Ken F. Kosky P.E.

Principal

DTL/dt1

cc: James P. Wold, Gerdau Ameristeel

Document2



Jacksonville Steel Mill Division

July 21, 2008

Bureau of Air Regulations Department of Environmental Protection 2600 Blair Stone Road Tallahassee, Florida 32399-2400

Environmental Quality Division Air Quality 117 West Duval Street, Suite 225 Jacksonville, FL 32202

Attention: Ms. Trina L. Vielhauer, Chief, Bureau of Air Regulations

Attention: Mr. Ronald L. Roberson, Environmental Engineer

RE: Gerdau Ameristeel, Jacksonville Steel Mill - Title V Operation Permit Application Extension Request.

Dear Ms. Vielhauer:

Gerdau commenced operation of a new Electric Arc Furnace (EAF) with a 95 MVA transformer on May 27, 2007. Under its construction permit, performance testing was scheduled to occur by November, 2007. On September, 15, 2007, Gerdau experienced a *force majeure* equipment malfunction when its 95 MVA transformer suffered a catastrophic failure. Gerdau submitted a letter on November 6, 2007, requesting an extension of the testing deadline due to the *force majeure* event. The Department responded on November 15, 2007, and has demanded a stack test or an extension under an enforceable agreement. Despite the *force majeure* defense, Gerdau is willing to conduct a stack test and enter into an appropriate enforcement order.

This letter is intended to provide further background on Gerdau's unique situation related to the *force majeure* malfunction, recommend a path forward that includes conducting two stack tests, and to stress that Gerdau is not, and cannot under its present operating scenario, exceed its permit limits under its Title V or construction permits.

Gerdau intends to return the original transformer to service as originally permitted as soon as possible. Currently, the EAF is operating with a 65 MVA-rated transformer that Gerdau received from its Beaumont, Texas facility. This transformer has performed poorly and can be operated only at 35 MVA. Under optimum conditions, the transformer is only capable of producing steel at a production rate of 87 TPH, just over fifty percent of its permitted capacity of 160 TPH. Further, yearly operating totals are also well below permitted capacity. As of the end of November, the EAF had operated for 6,700 hours, and it will likely operate for only 7,200 hours by year end, below both the existing and new Title V permit levels of 8,000 and 8,520 hours/year, respectively. All emissions are going through the new baghouse and, because of lower operating rates, are also well below permitted levels.

Because the 65 MVA-rated transformer is performing so inefficiently, Gerdau is planning to replace it with another interim transformer as soon as possible. Gerdau understands the city's request that it not continue to operate an interim transformer indefinitely without a stack test and therefore proposes to conduct stack testing on the facility with a 2nd interim transformer that will be installed shortly. Gerdau is currently in the process of procuring this transformer, rated at 90 MVA, from its Perth Amboy, New Jersey facility. Gerdau anticipates that this transformer will be installed in mid-March, 2008. Gerdau does not believe that it is constructive to test the facility with the first interim transformer since it will very shortly be replaced and its size and operational problems are causing the facility to operate well below permitted capacity. We propose to conduct the first stack test within sixty days of delivery and installation of the replacement transformer, now scheduled for mid-March, 2008. This short delay is necessary for testing and balancing to ensure that the interim transformer operates properly with the new EAF (testing includes determining adequate arc length, impendence with the transformer etc.). The 2nd transformer is



Jacksonville Steel Mill Division

closer in size to the original transformer and may allow Gerdau to conduct more meaningful testing closer to the 144 TPH mandated by the permit.¹

The original transformer is currently scheduled to be returned to service in October, 2008. It too will take approximately 60 days to reach full operation, after which Gerdau proposes to conduct a second round of stack testing. Gerdau requests assurances that performance testing conducted for the smaller interim transformer will not create a new baseline for PSD or Title V purposes.

The Department has the discretion to grant Gerdau's request under the recently enacted Force Majeure Rule, which formalized EPA's previously existing policy of using enforcement discretion to delay performance testing in *force majeure* circumstances.² EPA's definition of force majeure events includes equipment failure beyond the control of the facility. The rule states that the granting of an extension to the performance test deadline is "solely within the discretion of the Administrator." The Administrator in this case refers to the Department, which has been delegated responsibility over the program by the Administrator. The rule grants broad discretionary authority to the Department and does not contain any limitation in the form of a requirement of an enforceable order. EPA's national stack testing guidance did suggest that time extensions be granted through an enforcement discretion letter or an administrative order, but this guidance has since been supplanted by a specific EPA rulemaking. The intention of the *force majeure* exception is to keep those facilities that experience a qualifying event outside the enforcement regime. Requiring an enforceable order would thus be contrary to the spirit and intention of the rule. Further, enforceable orders were only one of several options that the EPA suggested in its previous guidance and are by no means mandatory. That said, Gerdau understands that the Department would prefer to handle this *force majeure* event under an appropriate enforcement order. We are certainly willing to pursue this approach.

Gerdau Ameristeel looks forward to discussing this matter with the City on January 2nd.

Sincerely,

James Wold

¹ See Condition B.6 of Permit 0310157-009-AC/PSD-FL349B, note 3, p. 8.

² See Revisions to Standards of Performance for New Stationary Sources, National Emission Standards for Hazardous Air Pollutants, and National Emissions Standards for Hazardous Air pollutants for Source Categories, 72 Fed. Reg. 27,437 (May 16, 2007).

³ Id. at 27,438

BEFORE THE ENVIRONMENTAL PROTECTION BOARD CITY OF JACKSONVILLE

CITY OF JACKSONVILLE	
ENVIRONMENTAL AND)
COMPLIANCE DEPARTMENT,)
ENVIRONMENTAL QUALITY DIVISION,)
·) Cease & Desist Citation AP-07-24
Petitioner,) Alleged Failure to Conduct
) Initial Performance Compliance Testing
vs.)
)
Gerdau Ameristeel Corp.,	•)
`)
Respondent.)

CONSENT ORDER WITH COMPLIANCE PLAN

This Consent Order with Compliance Plan is made and entered into between the City of Jacksonville, Environmental and Compliance Department (E&CD) and Gerdau Ameristeel Corp. ("Respondent").

- 1. E&CD, through its Environmental Quality Division (EQD), enforces Chapters 360 and 362, City of Jacksonville Ordinance Code and Jacksonville Environmental Protection Board Rule 2.
- 2. The Respondent is located at 16770 Rebar Road, Baldwin, Florida 32234. The Respondent owns and operates an Electric Arc Furnace at Jacksonville Steel Mill.
- 3. On December 4, 2007, E&CD issued Citation AP-07-24 to the Respondent for failure to conduct an initial performance compliance test on a new electric arc furnace at Jacksonville Steel Mill.
- 4. The Respondent and E&CD have met in an effort to resolve their disputes as to compliance issues and any alleged violations of City of Jacksonville ordinances and rules. The parties have agreed to enter into this Consent Order with Compliance Plan in order to expeditiously address compliance issues without litigation and its attendant costs, delays, and risks.

Having reached a resolution of this matter without any admission of liability or wrongdoing by the Respondent, the parties agree, and it is

ORDERED:

5. The Respondent shall operate the electric arc furnace at Jacksonville Steel Mill in accordance with all local, state, and federal rules and regulations.

Gerdau Ameristeel Cease & Desist Citation AP-07-24 Consent Order With Compliance Plan Page 2

- 6. The Respondent shall comply with the following schedule:
 - a. By no later than February 29, 2008, Respondent shall conduct a compliance test on the 65 MVA Beaumont Transformer and submit the compliance test report to EQD within 45 days of completion of the test.
 - b. By no later than September 1, 2008, Respondent shall complete the installation and start up the 91 MVA Perth Amboy Transformer at Jacksonville Steel Mill. Respondent shall submit notice of the installation and start up of the 91 MVA Perth Amboy Transformer to EQD within 15 business days of installation and start up of the transformer.
 - c. Respondent shall have a 60 day shakedown period to run the 91 MVA Perth Amboy Transformer. The 60 day shakedown period shall begin on the start up date of the transformer.
 - d. Respondent shall conduct the required compliance test on the 91 MVA Perth Amboy Transformer no later than 15 days after the 60 day shakedown period. A notice of the compliance test on the 91 MVA Perth Amboy Transformer shall be submitted to EQD 15 days prior to the start of the test. The required compliance test report on the 91 MVA Perth Amboy Transformer shall be submitted to EQD within 45 days of the completion of the test.
- 7. Pursuant to Section 360.306, Ordinance Code, if the Respondent fails to meet any of the deadlines specified in paragraph 6 above, then the Director of E&CD may impose a civil fine of up to \$500 for each occurrence of noncompliance with this Consent Order with Compliance Plan. Each day of non-compliance shall constitute a separate offense. The civil fine shall be due within seven days of written notification to the Respondent. The check shall be made payable to the City of Jacksonville Environmental Protection Trust Fund and mailed to E&CD, 117 W. Duval Street, Suite 225, Jacksonville, FL 32202 to the attention Dana L. Brown.
- 8. No civil penalty is required in this case as Respondent has demonstrated that the failure to timely test the new electric arc furnace was due to a bona fide malfunction which rendered the transformer that powered the electric arc furnace inoperable.
- 9. This Consent Order with Compliance Plan fully resolves all issues raised in E&CD's Cease and Desist Citation AP-07-24 regarding the matters addressed herein. E&CD reserves the right to take appropriate enforcement action against Respondent for any future violation of the Ordinance Code or rules. Respondent reserves its right to contest any such enforcement action in accordance with applicable law.

Gerdau Ameristeel Cease & Desist Citation AP-07-24 Consent Order With Compliance Plan Page 3

- 10. Notwithstanding paragraph 7 above, a violation of the terms of this Consent Order may subject the Respondent to judicial imposition of civil penalties of up to \$10,000 per violation per day.
- 11. In consideration of the complete and timely performance by the Respondent of the obligations agreed to in this Consent Order with Compliance Plan, E&CD waives any right to seek judicial imposition of additional penalties. The Respondent waives its right to an administrative hearing pursuant to Section 120.57(1), Florida Statutes, regarding the terms of this Consent Order with Compliance Plan.
- 12. The provisions of this Consent Order with Compliance Plan shall apply to and be binding upon the parties, their officers, directors, agents, servants, employees, successors, and assigns and all persons, firms and corporations acting under, through or for them and upon those persons, firms, and corporations in active concert or participation with them.
- 13. Entry of this Consent Order with Compliance Plan does not relieve the Respondent of the need to comply with applicable federal, state or local laws, regulations or ordinances.

CITY OF JACKSONVILLE ENVIRONMENTAL AND COMPLIANCE DEPARTMENT

Date	Ebenezer S. Gujjarlapudi, P.E., Director
Gerdau A	meristeel US Inc.
Date	Carlos Zanoelo, VP/General Manager
C	ORDER
I hereby certify that the foregoing document value Board of the City of Jacksonville this	was adopted by order of the Environmental Protectio day of, 2008.
Michael F. Templeton, Chairman Environmental Protection Board	·



Florida Department of Environmental Protection

Bob Martinez Center 2600 Blair Stone Road Tallahassee, Florida 32399-2400 Charlie Crist Governor

Jeff Kottkamp Lt. Governor

Michael W. Sole Secretary

October 9, 2008

Sent by Electronic Mail – Received Receipt Requested

Mr. Carlos Zanoelo, Vice President and General Manager Gerdau Ameristeel 16770 Rebar Road Baldwin, Florida 32234

Re: Extension of Air Construction Permit Expiration Date

Gerdau Ameristeel, Jacksonville Steel Mill

Permit No. PSD-FL-349C (Project No. 0310157-011-AC)

Extension of Original Air Permit No. PSD-FL-349B (Project No. 0310157-009-AC)

Dear Mr. Zanoelo:

On July 28, 2008, you requested an extension of the expiration date for the above referenced air construction permit for the Jacksonville Steel Mill located near Baldwin in Duval County, Florida. Briefly, this project is an expansion of the existing mill and authorizes the construction of a new melt shop, a new electric arc furnace, a new ladle metallurgical furnace, a new continuous caster machine, a new gas-fired billet reheat furnace #2, and modification of the existing billet reheat furnace #1. There have been several construction delays including the catastrophic failure of the transformer for the new electric arc furnace. Replacement transformers have not yet been sufficient to operate the mill at the new permitted capacity. Compliance has been demonstrated at the reduced operating rates for the equipment installed to date. To complete the expansion project, additional time is needed to: finish construction (the new ladle metallurgical furnace, the new continuous caster machine, the new gas-fired billet reheat furnace #2, modification of the existing billet reheat furnace #1), complete shakedown of installed equipment, perform the required tests, and submit a timely Title V operation permit.

Due to the delays, construction of the following equipment was halted for 18 months or more: the new ladle metallurgical furnace, the new continuous caster machine, the new gas-fired billet reheat furnace #2, modification of the existing billet reheat furnace #1. No new control technologies for these types of emissions units were identified. A review of recent Best Available Control Technology (BACT) determinations listed in the EPA's BACT Clearinghouse shows no new entries with emissions limits less than those established in the original permit for this project. Based on the application and available information, the current BACT determinations in Permit No. 0310157-009-AC/PSD-FL-349B remain valid for the affected emissions units. Based on the circumstances and information provided, the Department approves this request.

Determination: The expiration date is hereby extended from **September 28, 2008** to **October 1, 2010** to provide the necessary time to finish construction (the new ladle metallurgical furnace, the new continuous caster machine, the new gas-fired billet reheat furnace #2, modification of the existing billet reheat furnace #1, and associated work), complete shakedown of installed equipment, perform the required tests, and submit a timely Title V operation permit. A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permitting decision is issued pursuant to Chapter 403, Florida Statutes.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the

EXTENSION OF AIR CONSTRUCTION PERMIT EXPIRATION DATE

provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The Permitting Authority responsible for making a permit determination for this project is the Bureau of Air Regulation in the Department of Environmental Protection's Division of Air Resource Management. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/488-0114.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000 (Telephone: 850/245-2241). Petitions must be filed within 14 days of receipt of this permit extension. 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 (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority'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 when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact; (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 including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the 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 Permitting Authority'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, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this written notice. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available in this proceeding.

Effective Date: This permitting decision is final and effective on the date filed with the clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition pursuant to Rule 62-110.106, F.A.C., and the petition conforms to the content requirements of Rules 28-106.201 and 28-106.301, F.A.C. Upon timely filing of a petition or a request for extension of time, this action will not be effective until further order of the Department.

Judicial Review: Any party to this permitting decision (order) has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure

EXTENSION OF AIR CONSTRUCTION PERMIT EXPIRATION DATE

with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

Trina Vielhauer, Chief

Bureau of Air Regulation

TLV/jfk/bm

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Extension of Air Construction Permit Expiration Date was sent by electronic mail (or a link to these documents made available electronically on a publicly accessible server) with received receipt requested before the close of business on to the persons listed below.

- Mr. Carlos Zanoelo, Gerdau Ameristeel (czanoelo@gerdauameristeel.com)
- Mr. Scott A. McCann, Golder Associates, Inc. (smccann@golder.com)
- Mr. Richard Robinson, ERMD-EQD (ROBINSON@coj.net)
- Mr. James P. Wold, Gerdau Ameristeel (jwold@gerdauameristeel.com)
- Mr. David LaRocca, Golder Associates, Inc. (DLaRocca@golder.com)
- Ms. Kathleen Forney, U.S. EPA, Region 4 (forney kathleen@epamail.epa.gov)
- Ms. Heather Abrams, U.S. EPA Region 4 (abrams.heather@epamail.epa.gov)
- Ms. Catherine Collins, Fish and Wildlife Service (catherine collins@fws.gov)
- Ms. Vicki Gibson, DEP BAR (Victoria.Gibson@dep.stste.fl.us) (for read file)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Applicant

Gerdau Ameristeel - Jacksonville Steel Mill 16770 Rebar Road Baldwin, Florida 32234 Facility ID No. 0310157

County

Duval County, Florida

Project

Project No. 0310157-011-AC/PSD-FL-349C Expiration Date Extension of Project No. 0310157-009-AC/PSD-FL-349B

Permitting Authority

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation – New Source Review Section
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400
Telephone: 850/488-0114

Fax: 850/921-9533

October 9, 2008

1. APPLICATION INFORMATION

Facility Location

Gerdau Ameristeel's Jacksonville Steel Mill is located at 16770 Rebar Road, Duval County, Florida. The UTM coordinates of this facility are: Zone 17; 405.7 km East; 3350.2 km North (Latitude is 30° 16' 52" North / Longitude is 81° 58' 50'').

Facility Classification

The facility belongs to Major Group No. 33 (Primary Metal Industries), Group No. 339 (Miscellaneous Primary Metal Products), and Industry No. 3390 (Steel Mills). The North American Industry Classification System (NAICS) Code is No. 331111 (Steel Manufacturing Facilities That Operate Electric Arc Furnaces). The facility is regulated according to the following categories.

<u>Title III</u>: The existing facility is not a major source of hazardous air pollutants (HAP).

<u>Title IV</u>: The existing facility operates no units subject to the acid rain provisions of the Clean Air Act.

<u>Title V:</u> The existing facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.

<u>PSD</u>: The existing facility is a major stationary source in accordance with Rule 62-212.400, F.A.C for the Prevention of Significant Deterioration (PSD) of Air Quality. This facility belongs to one of the 28 major facility categories (Secondary Metal Production Plants) specified in the definition of a major stationary source.

NSPS: The existing facility operates an electric arc furnace operation consisting of a melt shop, electric arc furnace (EAF) and ladle metallurgical furnace (LMF), which is subject to the New Source Performance Standards (NSPS) in Subpart AAa of Part 60 in Title 40 of the Code of Federal Regulations (CFR).

General Facility and Process Description

Gerdau Ameristeel operates the existing Jacksonville Steel Mill near Baldwin in Duval County, Florida. The facility is a scrap iron and steel recycling (secondary metal production) plant that has been operating since 1975. The existing and modified plant receives scrap steel by truck and rail and processes it into steel rebar, wire and rod. Main components of the plant include: a new EAF and associated melt shop building; a new LMF (under construction) and associated building (to house the new LMF, continuous caster and support activities); a scrap handling building; an existing continuous caster operation; a new continuous caster machine (under construction); an existing billet reheat furnace (BRF; under modification) for making rebar; a new BRF #2 (under construction) for making wire and rod; an existing rolling mill; an existing rod mill; an existing slag handling and storage operation; and a new #5 baghouse control system to control particulate matter and visible emissions from the EAF and LMF operations. The original air construction permit allowed an increase in the permitted steel production capacity from 720,000 to 1,192,800 tons per year of liquid steel.

The secondary steel production plant melts and refines scrap steel materials into usable steel. Refining simply means to remove undesirable elements from the molten steel and add alloys to reach the final metal chemistry. The production of steel is a series of batch processes including charging, melting, refining, slagging, tapping, further refining, and casting.

The process begins by adding a "charge" of iron and steel scrap to the top of the electric arc furnace (EAF). Other materials, such as lime and carbon, may also be charged. The EAF consists of a furnace shell, furnace roof and the transformer. The EAF melts the charge by heating with electric arcs from carbon electrodes and secondarily with gas-fired sidewall burners inside the furnace. Molten steel is then tapped (poured) from the EAF into a ladle metallurgical furnace (LMF). A "heat cycle", sometimes referred to as a "heat", is the period of time beginning when scrap is charged to an empty EAF and ending when the EAF tap is completed.

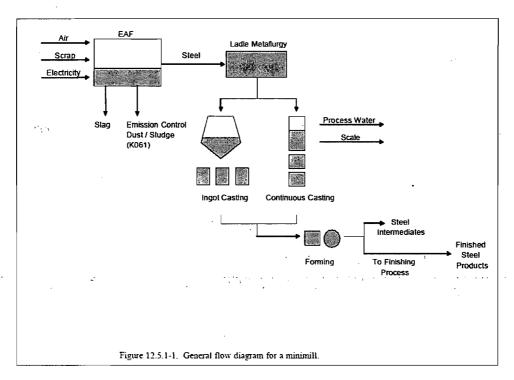
The LMF is a second electric arc furnace that provides further refinement of the material to produce a desired liquid steel specification. It is equipped with a bulk flux and alloy batching system, alloy wire feeders, water-cooled roof, and electrodes to allow temperature adjustments. Argon gas is also bubbled through the ladle to aid in the refining. Lime is added to react with impurities to form "slag", which floats on top of the liquid steel.

114

Periodically, the operator takes a sample of the steel for analysis. Based on the sample results, the operator adds controlled amounts of lime and alloys. As needed, alloys are added to the steel by using the bulk alloy system, dumping bagged alloys into the ladle, and by using the wire feeder to feed metallurgical wire containing alloys. Alloys ensure that certain material properties are met. The electrodes may be used to adjust or maintain steel temperature. When the chemistry and temperature of the steel are within specifications, the LMF ladle is taken to the continuous caster. Before tapping, the furnace is tilted to pour slag into the furnace pit.

Refined liquid steel is gravity fed from the LMF ladle into the refractory-lined tundish (reservoir) of the continuous caster, which may generate small amounts of particulate matter. The continuous caster feeds numerous molds that form steel billets or bars. Billets are stored and later melted in an existing billet reheat furnace, which fires natural gas as the exclusive fuel. Various rolling and wire machines are used to process the refined molten steel from the billet recovery furnace into rebar, wire, and rod.

Hot slag is poured off of the top of the steel bath from the electrical arc furnaces into the slag pit located in the Melt Shop building. Here it cools and solidifies. Front-end loaders remove slag from the pit and transport it to the slag processing area, where it is screened and sized for transport off site. The following process flow diagram is from EPA's draft AP-42 Section 12.5.1 for "minimills" and shows the general steel production process.



Project Description

On September 21, 2005, the Department issued Permit No. 0310157-007-AC/PSD-FL-349 to Gerdau Ameristeel for the construction of a new melt shop, EAF, LMF and continuous caster machine. On May 5, 2006, the Department issued Permit No. 0310157-008-AC/PSD-FL-349A, which modified the original permit to also include a new gas-fired BRF #2 and a modification of the existing BRF #1. The existing BRF #1 will be used to produce rebar and the new BRF #2 will be dedicated to producing wire or rod. On April 6, 2007, the Department issued Permit No. 0310157-009-AC/PSD-FL-349B, which modified the original permit to include tires as a source of carbon for the EAF.

The expiration date of Permit No. 0310157-009-AC/PSD-FL-349B is September 28, 2008. On July 28, 2008, the permittee requested an 18-month extension of the expiration date in order to complete the authorized construction for the new LMF, continuous caster machine and BRF #2 as well as the modification of existing BRF #1. Based on a request for additional information dated August 19, 2008, the permittee submitted a

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

response on September 15, 2008 that included a review of previous Best Available Control Technology (BACT) determinations, which completed the application.

The following construction authorized by Permit No. 0310157-009-AC/PSD-FL-349B has been completed.

- Baghouse #5. Construction was started in October 2005 and completed in November 2006. Compliance testing was conducted in April 2007, February 2008 and June 2008.
- Melt Shop Building. Construction was started in February 2006 and completed in May 2007. Compliance testing was conducted in February 2008 and June 2008.
- EAF. Construction was started in February 2006 and completed in May 2007. Compliance testing was conducted in February 2008 and June 2008.
- LMF. Construction was started in January 2006 and ceased in August 2006. Site clearing for the project
 was completed. The combined water system to provide cooling water to the EAF and LMF was completed.
 The building to house the LMF was completed. Duct work from the baghouse #5 to the LMF was partially
 completed. The overhead crane rails were installed in the building for the LMF was completed. Design
 work is ongoing.
- Continuous Caster Machine (CCM). Construction was started in January 2006 and ceased in April 2007.
 Site clearing for the project was completed. The part of the building to house the CCM was completed.
 Overhead crane rails were installed in the building for the LMF was completed. Design work is ongoing.
- BRF #1 and BRF #2. Construction was started in January 2007 and ceased in April 2007. Initial site
 clearing for the project was completed. Required improvements to the plant storm water drainage system
 were partially completed. Relocation of utilities is ongoing. Design work is ongoing.

On September 15, 2007, the EAF suffered a catastrophic failure of the transformer. Smaller replacement transformers have been used to operate the unit at reduced capacity. The plant is still awaiting a new replacement transformer that will operate at the permitted capacity.

2. REVIEW OF THE PREVIOUS BACT DETERMINATIONS

Construction and modification authorized by the original Permit No. 0310157-009-AC/PSD-FL-349B was discontinued for a period of 18 months or more on some of these emissions units. Pursuant to Rule 62-212.400(12)(Source Obligation), F.A.C., the previous BACT determinations must be revalidated for the new LMF, the new BRF #2 and the existing BRF #1 that will be modified. Rule 62-210.200(Definitions), F.A.C. defines BACT as:

An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account:

- 1. Energy, environmental and economic impacts, and other costs;
- 2. All scientific, engineering, and technical material and other information available to the Department; and
- 3. The emission limiting standards or BACT determinations of Florida and any other state;

determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.

If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of an emissions unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design,

equipment, work practice or operation.

Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results.

In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60, 61, and 63.

In the Technical Evaluation and Preliminary Determinations associated with the original project, the Department conducted a case-by-case BACT determination in accordance with the above requirements and the "Top-Down Methodology" described by EPA. The following tables summarize the current BACT determinations for particulate matter (PM), particulate matter with a mean aerodynamic particle diameter of 10 microns or less (PM₁₀), nitrogen oxides (NO_X), sulfur dioxides (SO₂), carbon monoxide (CO) and volatile organic compound (VOC).

Table 1. New EAF and LMF Operations

Pollutant	Emission Limits 1	Control Technology	Test Methods 2 and 3
PM/PM ₁₀	0.0018 grains/dscf	Direct-shell evacuation control (DEC) systems (fourth hole vent with O ₂), canopy hoods and new No. 5 baghouse control system	EPA Reference Method 5 40 CFR 60, Appendix A
NO _x	0.33 lb/ton tapped steel	Low-NO _x oxy-fuel sidewall burners and furnace pressure control (good combustion practices – low excess air by the DEC systems)	EPA Reference Method 7, 7A or 7E; 40 CFR 60, Appendix A
SO ₂	0.2 lb/ton tapped steel	Scrap management plan and supplemental firing of natural gas	EPA Reference Method 8; 40 CFR 60, Appendix A
СО	2.0 lbs/ton tapped steel	DEC systems and proper design, operation and control of the combustion process	EPA Reference Method 10; 40 CFR 60, Appendix A
VOCs	0.13 lb/ton tapped steel	DEC systems, scrap management plan, and proper design, operation and control of the combustion process	EPA Reference Method 18, 25 or 25A; 40 CFR 60, Appendix A
Visible	<3% Opacity from No. 5	No. 5 baghouse control system, associated	EPA Reference Method 9;
Emissions	baghouse control system <6% Opacity from Melt Shop	roof canopy hoods, and usage of the associated DEC systems	40 CFR 60, Appendix A
<u>.</u>	Roof and Continuous Caster Building Roof	magnetic for a second section of	
Visible	<10% Opacity from	No. 5 baghouse control system	EPA Reference Method 9;
Emissions	miscellaneous pickup and		40 CFR 60, Appendix A
	transfer points along the dust-		
	handling system for the No. 5		
	baghouse control system		

Unless otherwise specified, the averaging time for each limit shall be in accordance with the test method.

For the EAF and LMF operations, the sampling time and sample volume of each PM test run shall be at least 4 hours and 160 dscf, respectively, and the sampling time shall include an integral number of heats. Compliance with the CO standard shall be based on the average of three, 3-hour test runs. [Rule 62-204.800, F.A.C., and 40 CFR 60.275a(e)(1)]

Pursuant to Rules 62-297.310(2) and (2)(b), F.A.C., compliance tests on the EAF and LMF operations shall be conducted at a minimum production rate of 144 tons per hour tapped steel, which is 90% of permitted capacity.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Table 2. Modified BRF #1 and New BRF #2

Pollutant	Emission Limits 1	Control Technology	Test Methods ²
PM/PM ₁₀		Firing natural gas	
NO _x	0.08 lb/MMBtu	Low-NO _x burners (LNBs); and, good combustion practices and low excess air	EPA Reference Method 7, 7A or 7E; 40 CFR 60, Appendix A
SO_2	·	Firing natural gas	
CO	0.035 lb/MMBtu	Proper furnace design and good combustion practices, including control of combustion air and temperature	EPA Reference Method 10; 40 CFR 60, Appendix A
VOCs		Firing natural gas; and, proper furnace design and good combustion practices, including control of combustion air and temperature	·
Visible Emissions	≤10% opacity, except for one 6-minute period per hour in which the opacity shall not exceed 20%	Firing natural gas	EPA Reference Method 9; 40 CFR 60, Appendix A

The averaging time for each limit shall be in accordance with the test method.

There does not appear to be any new control technologies recently introduced for these types of emissions units. A review of recent BACT determinations listed in the EPA's BACT/LAER Clearinghouse shows no new entries with emissions limits less than those established in the original permit for this project. However, there is one previous listing for an EAF (CO-0054, 2004) that indicates a NOx limit of 0.150 lb/ton of steel product, which appears lower. No add-on control technologies were specified for achieving this level of emissions. The Department contacted the reviewing agency and discovered that the limit has never been achieved to date and that the company recently submitted a request to relax this limit. Based on the application and available information, the Department determines that the current BACT determinations in Permit No. 0310157-009-AC/PSD-FL-349B remain valid for the affected emissions units. Therefore, the expiration date will be revised from September 28, 2008 to October 1, 2010.

3. CONCLUSION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the permit. Bruce Mitchell is the project engineer responsible for reviewing the application and drafting the permit changes. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

Pursuant to Rules 62-297.310(2) and (2)(b), F.A.C., compliance tests on each BRF operation shall be conducted at a minimum rate of 144 billet tons per hour, which is 90% of permitted capacity.

Memorandum

Florida Department of Environmental Protection

TO:

Trina Vielhauer, Chief, Bureau of Air Regulation

THROUGH:

Jeff Koerner, Administrator, New Source Review Section

FROM:

Bruce Mitchell Pr

DATE:

October 8, 2008

SUBJECT:

Final Air Construction Permit No. PSD-FL-349C

Project No. 0310157-011-AC

Affected Permit No. 0310157-009-AC/PSD-FL-349B

Gerdau Ameristeel - Jacksonville Steel Mill

Expiration Date Extension

On September 21, 2005, the Department issued Permit No. 0310157-007-AC/PSD-FL-349 to Gerdau Ameristeel to expand the steel mill operations. On July 28, 2008, the permittee requested an 18-month extension of the expiration date in order to complete the authorized construction for the new LMF, continuous caster machine and BRF #2 as well as the modification of existing BRF #1. Based on a request for additional information dated August 19, 2008, the permittee submitted a response on September 15, 2008 that included a review of previous Best Available Control Technology (BACT) determinations, which completed the application.

There does not appear to be any new control technologies recently introduced for these types of emissions units. A review of recent BACT determinations listed in the EPA's BACT/LAER Clearinghouse shows no new entries with emissions limits less than those established in the original permit for this project. Based on the application and available information, we believe that the current BACT determinations remain valid for the affected emissions units. We recommend extending the expiration date from September 28, 2008 to October 1, 2010 to allow additional time to complete the expansion project and apply for the Title V Permit.

Attachments

Walker, Elizabeth (AIR)

From:

Walker, Elizabeth (AIR)

Sent:

Thursday, October 09, 2008 3:28 PM

To:

'czanoelo@gerdauameristeel.com'; 'smccann@golder.com'; 'jwold@gerdauameristeel.com';

'dlarocca@golder.com'

Cc:

Mitchell, Bruce; Koerner, Jeff; Gibson, Victoria; 'Forney.Kathleen@epamail.epa.gov';

'catherine_collins@fws.gov'; 'abrams.heather@epamail.epa.gov'; 'Robinson, Richard'

Subject:

Gerdau-Ameristeel, Jacksonville Steel Mill - Notice of Permit Extension (PSD-FL-349C)

Attachments:

TEPD.pdf; Notice of Permit Extension.pdf

Dear Sirs:

The attached documents may require immediate action within a specified time frame. Please open and review the documents as soon as possible. Notify us regarding any problems opening the documents. <u>Once opened, follow these</u> steps to confirm receipt of the documents:

Send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software, noting that you can view the documents, and then selecting "Send".

The Division of Air Resource Management is sending electronic versions of these documents in lieu of sending them Return Receipt Requested via the US Postal service to provide greater service to the applicant and the engineering community. Your "receipt confirmation" e-mail serves the same purpose as tracking the receipt of the signed "Return Receipt" card from the US Postal Service. We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s). Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you.

Elizabeth Walker
Bureau of Air Regulation
Division of Air Resource Management (DARM)
(850)921-9505

Recipient

'czanoelo@gerdauameristeel.com'
'smccann@golder.com'
'jwold@gerdauameristeel.com'
'dlarocca@golder.com'

Mitchell, Bruce Koemer, Jeff Gibson, Victoria

'Forney.Kathleen@epamail.epa.gov'
'catherine_collins@fws.gov'
'abrams.heather@epamail.epa.gov'
'Robinson, Richard'

Delivery

Delivered: 10/9/2008 3:28 PM Delivered: 10/9/2008 3:28 PM Delivered: 10/9/2008 3:28 PM

Walker, Elizabeth (AIR)

From: Wold, James [JWold@GerdauAmeriSteel.com]

Sent: Monday, October 13, 2008 7:32 AM

To: Walker, Elizabeth (AIR)

Subject: RE: Gerdau-Ameristeel, Jacksonville Steel Mill - Notice of Permit Extension (PSD-FL-349C)

We have received the attached documents and are currently reviewing them.

Thanks





Prego stampare la presente e-mail solo se veramente necessario. Print this message only if it is absolutely necessary. Imprima esta mensagem apenas se for absolutamente necessario. Imprimir este mensaje sólo si es absolutamente necesario

James P. Wold, CHMM P.O. Box 518 16770 Rebar Rd Baldwin, Florida 32234

Phone: 904-266-4261 ext 133

Cell: 904-228-1962 Fax: 904-266-0053

From: Walker, Elizabeth (AIR) [mailto:Elizabeth.Walker@dep.state.fl.us]

Sent: Thursday, October 09, 2008 3:28 PM

To: Zanoelo, Carlos; smccann@golder.com; Wold, James; dlarocca@golder.com

Cc: Mitchell, Bruce; Koerner, Jeff; Gibson, Victoria; Forney.Kathleen@epamail.epa.gov; catherine_collins@fws.gov;

abrams.heather@epamail.epa.gov; Robinson, Richard

Subject: Gerdau-Ameristeel, Jacksonville Steel Mill - Notice of Permit Extension (PSD-FL-349C)

Dear Sirs:

The attached documents may require immediate action within a specified time frame. Please open and review the documents as soon as possible. Notify us regarding any problems opening the documents. Once opened, follow these steps to confirm receipt of the documents:

Send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software, noting that you can view the documents, and then selecting "Send".

The Division of Air Resource Management is sending electronic versions of these documents in lieu of sending them Return Receipt Requested via the US Postal service to provide greater service to the applicant and the engineering community. Your "receipt confirmation" e-mail serves the same purpose as tracking the receipt of the signed "Return Receipt" card from the US Postal Service. We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s). Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

Elizabeth Walker
Bureau of Air Regulation
Division of Air Resource Management (DARM)
(850)921-9505

The Department of Environmental Protection values your feedback as a customer. DEP Secretary Michael W. Sole is committed to continuously assessing and improving the level and quality of services provided to you. Please take a few minutes to comment on the quality of service you received. Simply click on this link to the DEP Customer Survey. Thank you in advance for completing the survey.



Florida Department of Environmental Protection

Bob Martinez Center 2600 Blair Stone Road Tallahassee, Florida 32399-2400 Charlie Crist Governor

Jeff Kottkamp Lt. Governor

Michael W. Sole Secretary

August 19, 2008

Electronically Sent - Received Receipt Requested

Mr. Carlos Zanoelo Vice President and General Manager Gerdau Ameristeel Jacksonville Steel Mill 16770 Rebar Road Baldwin, Florida 32234

RE: Request for an Extension of the Expiration Date for Permits PSD-FL-349 and PSD-FL-349(A) Project No. 0310157-011-AC/PSD-FL-349(C)

Dear Mr. Zanoelo:

On July 22, 2008, the Department received a request for an 18-month extension of the expiration date of the above referenced permits. The expiration date is September 28, 2008. Based on our review of the proposed project, we have determined that the following additional information is needed in order to continue processing this application package. Please provide all assumptions, calculations, and reference material(s), that are used or reflected in any of your responses.

1. Pursuant to Rule 62-212.400(12)(a), F.A.C., Source Obligation, authorization to construct expires if construction is discontinued for a period of 18 months or more. Based on an e-mail received on August 5, 2008, the schedule for the Ladel Metallurgical Furnace, Billet Reheat Furnace and Billet Reheat Furnace #2 indicates that these emissions units will need to undergo a Best Available Control Technology (BACT) determination review before construction is to resume. Therefore, please complete and submit the appropriate application pages and associated documents to address BACT for these emissions units.

If you have any questions regarding this matter, please call Bruce Mitchell at (850)413-9198.

Sincerely,

Syed Arif, P.E.

New Source Review Section Bureau of Air Regulation

SA/bm

cc: Carlos Zanoelo, Gerdau Ameristeel (czanoelo@GerdauAmeriSteel.com)

James P. Wold, Gerdau Ameristeel (<u>JWold@GerdauAmeriSteel.com</u>)

Devid Larocca, Golder Associates (DLaRocca@golder.com)

Richard Robinson, Duval County Environmental Quality Division, (ROBINSON@coj.net)

Walker, Elizabeth (AIR)

From:

Livingston, Sylvia

Sent:

Tuesday, August 19, 2008 3:41 PM

To: Cc: 'czanoelo@gerdauameristeel.com'; 'jwold@ameristeel.com'; 'Dlarocca@golder.com' Rich Robinson (robinson@coj.net); Arif, Syed; Mitchell, Bruce; Walker, Elizabeth (AIR);

Gibson, Victoria

Subject:

RAI - 0310157-011-AC/PSD-FL-349C (Gerdau Ameristeel Jacksonville Mill)

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: http://www.adobe.com/products/acrobat/readstep.html.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

Sylvia Livingston
Bureau of Air Regulation
Division of Air Resource Management (DARM)
850/921-9506



0310157-011-AC.p