

**Synthetic Minor Determination and/or**  **Netting Determination**

Permit To Install **03-14079**

**A. Source Description**

The Marion Steel Company was issued PTI #03-03928 for the installation of a 60 ton per hour electric arc furnace (emissions unit P903). This PTI (#03-14079) is an modification to address permitting issues associated with new emissions data since the installation of the electric arc furnace. Emissions unit P903 replaced two older furnaces, P901 and P902, that have been removed from the facility. Also during the contemporaneous netting period for the installation of emissions unit P903, the company removed P002, a reheat furnace, and installed P009, a reheat furnace, and removed K001, a coating operation, and installed K002, a coating operation.

**B. Facility Emissions and Attainment Status**

The facility is major for CO, NO<sub>x</sub>, PE, VOC and HAPs for Title V and PSD purposes. Marion county is in attainment/unclassifiable for all criteria pollutants.

**C. Source Emissions**

**Potential Emissions:** The following table summarizes the potential emissions for P903. The emissions are based on emission factors developed from stack test data (9/99 and 1/03), the maximum process weight rate (60 tons/hr) and 8760 hours per year operation. The emission factors for fugitive PE and PM<sub>10</sub> are based on adjusted emission factors from AP-42, Table 12.5-1 (10/86), the maximum process weight rate (60 tons/hr), a system capture and control efficiency of 99.5% and 8760 hours per year operation. The fugitive lead and mercury emissions were calculated by multiplying the hourly fugitive PE emission rate by the highest percentage of lead and mercury determined through baghouse dust analyses and 8760 hours per year of operation.

<b>Pollutant</b>	<b>Point Source Hourly Emissions (lbs)</b>	<b>Point Source Annual Emissions (tons)</b>	<b>Fugitive Hourly Emissions (lbs)</b>	<b>Fugitive Annual Emissions (tons)</b>	<b>Total Annual Emissions (tons)</b>	<b>PSD Significance Levels (tons)</b>
<b>NO<sub>x</sub></b>	11.02	48.27	N/A	N/A	<b>48.27*</b>	<b>40</b>
<b>SO<sub>2</sub></b>	0.88	3.85	N/A	N/A	3.85	<b>40</b>
<b>CO</b>	284.15	1244.56	N/A	N/A	<b>1244.56*</b>	<b>100</b>
<b>VOC</b>	16.36	71.66	N/A	N/A	<b>71.66*</b>	<b>40</b>
<b>PM<sub>10</sub></b>	0.88	3.85	5.94	26.03	<b>29.88*</b>	<b>15</b>
<b>PE</b>	0.88	3.85	10.25	44.89	<b>48.74*</b>	<b>25</b>
<b>Lead</b>	0.0018	0.0075	0.2501	1.0952	<b>1.1027*</b>	<b>0.6</b>
<b>Mercury</b>	0.0006	0.0030	0.000041	0.0002	0.0032	<b>0.1</b>

\*The potential emissions for NO<sub>x</sub>, CO, VOC, PE, PM<sub>10</sub> and lead exceed the PSD significance levels.

**Netting Analysis:** Because the potential NO<sub>x</sub>, CO, VOC, PE, PM<sub>10</sub> and lead exceed the PSD significance levels, a netting analysis was conducted. The following table summarizes the net emissions

increases at the facility from the installation of K002, P009 and P903 and the removal of K001, P002, P901 and P902. The emissions listed for P903 are the unit's potential emissions, which are based on emission factors developed during a recent stack test, the maximum hourly process weight rate (60 tons per hour) and 8760 hours per year operation. The emissions for K002 are the unit's potential emissions, which are based on the maximum VOC content and the maximum hourly number of gallons of coating and 8760 hours of operation. The emissions for P009 are the unit's potential emissions which are based on emission factors developed during a recent stack test and restricted annual fuel usage. The emissions listed for K001 are the unit's actual emissions, which are based on the maximum VOC content of the coatings used and the 2 year average coating usage from 1994 and 1995. The emissions listed for P002 are the unit's actual emissions, which are based on emission factors developed during a recent stack test and the 2 year average fuel usage from 1986 and 1987. The emissions for P901 and P902 are the units' actual emissions, which are based on emission factors developed during a recent stack test and the 2 year average steel production for 1995 and 1997 (the production data from 1996 was not used because it did not represent normal operations due to transformer malfunctions).

<b>Emissions Unit</b>	<b>Total PE (point + fugitive) (tons)</b>	<b>Total PM<sub>10</sub> (point + fugitive) (tons)</b>	<b>SO<sub>2</sub> (tons)</b>	<b>VOC (tons)</b>	<b>CO (tons)</b>	<b>NO<sub>x</sub> (tons)</b>	<b>Lead (point + fugitive) (tons)</b>	<b>Mercury (point + fugitive) (tons)</b>
<b>P903</b>	+48.74 (3.85 + 44.89)	+29.88 (3.85 + 26.03)	+3.85	+71.66	+1244.56	+48.27	+1.1027 (0.0075 + 1.0952)	+0.0032 (0.003 + 0.0002)
<b>P901/P902</b>	-319.55 (1.24 + 318.31)	-185.87 (1.24 + 184.63)	-21.64	-50.81	-465.77	-35.62	-7.86 (0.06 + 7.8)	-0.091 (0.09 + 0.001)
<b>P002</b>	-17.17	-17.17		-2.11	-39.63	-227.16		
<b>P009</b>	+19.50	+19.50		+2.40	+45.00	+258.00		
<b>K001</b>				-47.17				
<b>K002</b>				+59.44				
<b>Net Total</b>	-268.48	-153.66	+17.79	+33.41	<b>+784.16</b>	<b>+43.49</b>	-6.76	-0.088
<b>PSD Significance Levels (tons)</b>	<b>25</b>	<b>15</b>	<b>40</b>	<b>40</b>	<b>100</b>	<b>40</b>	<b>0.6</b>	<b>0.1</b>

\*The potential emissions for NO<sub>x</sub> and CO exceed the PSD significance levels.

**Netting Analysis with Synthetic Minor Restrictions:** The facility would trigger the PSD significance levels for NO<sub>x</sub> and CO if the potential emissions of P903 were used to establish the emissions unit's limits. The facility, however, wishes to avoid triggering PSD significance levels for criteria pollutants. To accomplish this, both netting and synthetic minor restrictions were required. The facility has accepted federally enforceable restrictions on hourly process weight rate (60 tons/hr based on a 24-hour averaging period) and hours of operation (8000 hours/yr).

The following table summarizes the net emissions at the facility from the installation of K002 and P009, the removal of K001, P002, P901 and P902 and with the federally enforceable restrictions on hourly process weight rate and hours of operation for P903.

<b>Emissions Unit</b>	<b>Total PE (point + fugitive) (tons)</b>	<b>Total PM<sub>10</sub> (point + fugitive) (tons)</b>	<b>SO<sub>2</sub> (tons)</b>	<b>VOC (tons)</b>	<b>CO (tons)</b>	<b>NOx (tons)</b>	<b>Lead (point + fugitive) (tons)</b>	<b>Mercury (point + fugitive) (tons)</b>
<b>P903</b>	+44.51 (3.52 + 40.99)	+27.29 (3.52 + 23.77)	+3.52	+65.44	+1136.60	+44.08	+1.01 (0.01 + 1.0)	+0.0026 (0.0024 + 0.0002)
<b>P901/P902</b>	-319.55 (1.24 + 318.31)	-185.87 (1.24 + 184.63)	-21.64	-50.81	-465.77	-35.62	-7.86 (0.06 + 7.8)	-0.091 (0.09 + 0.001)
<b>P002</b>	-17.17	-17.17		-2.11	-39.63	-227.16		
<b>P009</b>	+19.50	+19.50		+2.40	+45.00	+258.00		
<b>K001</b>				-47.17				
<b>K002</b>				+59.44				
<b>Net Total</b>	-272.71	-156.25	-18.12	+27.19	<b>+676.20</b>	+39.30	-6.85	-0.088
<b>PSD Significance Levels (tons)</b>	<b>25</b>	<b>15</b>	<b>40</b>	<b>40</b>	<b>100</b>	<b>40</b>	<b>0.6</b>	<b>0.1</b>

#### **D. Conclusion**

With the synthetic minor restrictions and the removal of K001, P002, P901 and P902, the installation of P903 will not trigger the PSD significance levels for PE, PM<sub>10</sub>, VOC, SO<sub>2</sub>, NOx, lead or mercury. Therefore, a PSD review is not required for these pollutants. However, the installation of P903 does trigger the significance level for CO. Therefore, a PSD review is required for CO.

**PUBLIC NOTICE**  
**OHIO ENVIRONMENTAL PROTECTION AGENCY**  
**ISSUANCE OF DRAFT PERMIT TO INSTALL**  
**SUBJECT TO PREVENTION OF SIGNIFICANT DETERIORATION REVIEW**  
**TO MARION STEEL COMPANY**

Public Notice is hereby given that the Staff of the Ohio Environmental Protection Agency (EPA) has recommended to the Director that the Ohio EPA issue a draft action of a Permit to Install (PTI) to Marion Steel Company, located in Marion County, Ohio. The draft action (permit no. 03-14079) was issued on January 27, 2004. This draft permit proposes to install an electric arc furnace to replace two older electric arc furnaces.

Due to the proposed modification, an increase in actual air emissions of several pollutants will result. The proposed allowable criteria pollutant air emission rates which result from net increases at the facility are listed below, in tons per year.

Pollutant	Net Change	PSD Significance Level
CO	676.2	100
NO <sub>x</sub>	39.3	40
SO <sub>2</sub>	-18.1	40
VOC	27.2	40
PM	-272.7	25
PM <sub>10</sub>	-156.2	15
Lead (Pb)	-6.8	0.6
Mercury	-0.088	0.1

This facility is subject to the applicable attainment provisions of the Ohio EPA permit to install requirements (OAC 3745-31).

The Ohio EPA allows sources to consume less than one half the available increment for pollutants that have increments (NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>) and one quarter of the National Ambient Air Quality Standards (NAAQS) for CO and Pb. This facility has demonstrated that the impact from the new sources meets these criteria.

Within 30 days from the date of this notice, any interested party may submit comments or request a public hearing. Comments are to be sent to Andrea Chapman of the Northwest District Office, Ohio Environmental Protection Agency, 347 North Dunbridge Road, Bowling Green, Ohio, 43402.

Copies of the draft permit application and technical support information may be reviewed and/or copies made by first calling to make an appointment at the Northwest District Office at the above address during normal business hours. Telephone number: (419) 352-8461.

**STAFF DETERMINATION FOR THE APPLICATION TO CONSTRUCT  
UNDER THE PREVENTION OF SIGNIFICANT DETERIORATION REGULATIONS  
FOR THE MARION STEEL COMPANY  
MARION COUNTY, OHIO  
PTI NUMBER 03-14079**

The Clean Air Act and regulations promulgated thereunder require that major air pollution sources undergoing construction or modification comply with all applicable Prevention of Significant Deterioration (PSD) provisions and nonattainment area New Source Review requirements. The federal PSD rules govern emission increases in attainment areas for major sources, which are sources with the potential to emit 250 tons per year or more of any pollutant regulated under the Clean Air Act, or 100 tons per year or more if the source is included in one of 28 source categories. In nonattainment areas, the definition of major source is one having at least 100 tons per year potential emissions. A major modification is one resulting in a contemporaneous increase in emissions which exceeds the significance level of one or more pollutants. Any changes in actual emissions within a five-year period are considered to be contemporaneous. In addition, Ohio now has incorporated the PSD and NSR requirements by rule under OAC 3745-31.

Both PSD and nonattainment rules require that certain analyses be performed before a facility can obtain a permit authorizing construction of a new source or major modification to a major source. The principal requirements of the PSD regulations are:

- 1) Best Available Control Technology (BACT) review - A detailed engineering review must be performed to ensure that BACT is being installed for the pollutants for which the new source is a major source.
- 2) Ambient Air Quality Review - An analysis must be completed to ensure the continued maintenance of the National Ambient Air Quality Standards (NAAQS) and that any increases in ambient air pollutant concentrations do not exceed the incremental values set pursuant to the Clean Air Act.

For nonattainment areas, the requirements are:

- 1) Lowest Achievable Emissions Rate (LAER) - New major sources must install controls that represent the lowest emission levels (highest control efficiency) that has been achieved in practice.
- 2) The emissions from the new major source must be offset by a reduction of existing emissions of the same pollutant by at least the same amount, and a demonstration must be made that the resulting air quality shows a net air quality benefit. This is more completely described in the Emission Offset Interpretative Ruling as found in Appendix S of 40 CFR Part 51.
- 3) The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing State Implementation Plan (SIP) or are on an approved schedule resulting in full compliance with the SIP.

For rural ozone nonattainment areas, the requirements are:

- 1) LAER - New major sources must install controls that represent the lowest emissions levels (highest control efficiency) that has been achieved in practice.

- 2) The facility must certify that all major sources owned or operated in the state by the same entity are either in compliance with the existing SIP or are on an approved schedule resulting in full compliance with the SIP.

Finally, New Source Performance Standards (NSPS), SIP emission standards and public participation requirements must be followed in all cases.

### **Site Description**

The Marion Steel Company is in Marion, Ohio, which is located in Marion County. This area is classified as attainment for all of the criteria pollutants, total suspended particulates, particulate matter less than 10 microns, sulfur dioxide, nitrogen oxides, carbon monoxide, volatile organic compounds (ozone) and lead.

### **Facility Description**

The Marion Steel Company is a non-integrated mini-mill located in Marion, Ohio. The facility produces carbon steel bar stock, angle reinforcing rod and sign post stock. Operations at the facility include storage of scrap steel, melting in the electric arc furnace (EAF), billet casting, reheating, hot rolling, painting of sign posts and storage of finished products.

### **Process Description**

The EAF is a large refractory-lined cylindrical vessel of heavy, welded steel plates having a bowl-shaped hearth and a dome shaped roof fitted with a refractory roof through which 3 vertical graphite electrodes are inserted. The electrodes are mounted on a superstructure above the furnace and are lowered and raised through holes in the furnace roof. Water-cooled glands are provided at the holes to cool the electrodes and minimize the gap between the electrodes and roof openings to reduce fugitive emissions, noise levels, electrode oxidation and heat losses. The furnace is powered via a transformer that regulates electricity to the EAF by connection to a high voltage supply. Electrode movement is accomplished by automatic controls. Melting is accomplished by the heat supplied by direct radiation from the arcs formed between the electrodes of the EAF and the metallic charge, by direct radiation from the furnace lining and by the resistance of the metal between the arc paths.

The metal melting process operation consists of the following: (1) furnace charging in which metal, scrap, alloys, carbon and flux are added to the furnace; (2) melting, during which the furnace remains closed; (3) refining operations; (4) slagging operations; and (5) tapping the molten metal into a continuous caster. When the electrodes are raised, the furnace roof is swung aside and charge materials are dropped into the furnace via a drop-bottom charge bucket with an electromagnet that is suspended from an overhead crane. Additional alloying agents, as required, are added through a separate hole in the furnace roof. Charging of materials is completed within a few minutes.

Air emissions from the operation of the EAF consist of both point source and fugitive emissions including particulate emissions (PE), carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), volatile organic compounds (VOC), small quantities of lead (Pb), zinc (Zn) and manganese (Mn) and trace quantities of arsenic, cadmium, chromium, copper, magnesium, mercury, nickel and vanadium (as determined from baghouse dust analysis).

The point source emissions are generated at the furnace during periods when the EAF roof is closed (i.e., during melting and refining operations) and the direct shell evacuation system is operative. Fugitive emissions are generated during periods when the EAF roof is open (i.e., charging) or when the direct shell evacuation system cannot operate (i.e., charging and tapping).

The quantity and type of emissions depend on the scrap type and composition, scrap quality, number of back charges, refining procedures and tapping duration and temperature. The majority of the emissions from the EAF are PE, both ferrous and non-ferrous oxides. Emissions are highest during meltdown and refining operations with charging and tapping emissions representing 5% of the total emissions during a heat.

Charging the open furnace produces emissions that vary depending on the cleanliness and makeup of the scrap. Typically, No.1 and No. 2 grades of scrap are charged. Most of the charging emissions result from (1) vaporization of oil, grease or dirt introduced with any turnings, borings or chips; (2) oxidation of organic matter that may adhere to scrap; and (3) the vaporization of water from wet or icy scrap. Charging emissions are comprised of PE, CO, VOC and soot. CO is assumed to be quickly oxidized to CO<sub>2</sub> in ambient air.

During melting/refining/slagging operations, the emissions consist of (1) metallic and mineral oxide particulates generated from vaporization of iron and the transformation of mineral additives; (2) some CO from combustion losses of the graphite electrodes, carbon additives and steel carbon; and (3) VOCs from the vaporization and combustion of oil and impurities remaining on the scrap charge. During tapping operations, fumes consisting of iron oxides are generated.

### **Modifications**

The Marion Steel Company has installed a 60 ton per hour electric arc furnace (emissions unit P903). This PTI (#03-14079) is a modification to address permitting issues associated with new emissions data since the installation of the electric arc furnace. A new electric arc furnace, emissions unit P903, was installed in 1998 to replace two existing electric arc furnaces, P901 and P902.

### **New Source Review (NSR) /PSD Applicability**

The facility uses an EAF that generates PE, for which an emission standard applies, and is therefore, considered an “affected facility” subject to 40 CFR, Part 60, Subpart AAa, “Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 7, 1983”. This rule has an emission standard of 0.0052 grains/dry standard cubic foot and opacity limits of 3% for the baghouse, 6% for the melt shop and 10% for the dust handling system.

The Marion Steel Company facility is currently classified as a PSD “major” stationary source because it is one of the 28 source categories (Iron and Steel Mills) with potential CO, NO<sub>x</sub> and VOC emissions exceeding 100 tons per year in an attainment area. The Marion Steel facility is located in Marion County, which is currently in attainment for all criteria pollutants. Any “major” stationary source which is proposing the emission of a regulated pollutant in excess of PSD significance levels will be required to undergo a PSD analysis for that particular pollutant.

Table 1 shows the contemporaneous increases and decreases in emissions (from the netting analysis) from the installation of the EAF.

**Table 1**

<b>Pollutant</b>	<b>Contemporaneous Increases/Decreases (Netting)</b>	<b>PSD Significance Level</b>
CO	+676.20	100
NO <sub>x</sub>	+39.30	40
SO <sub>2</sub>	-18.12	40
VOC	+27.19	40

<b>Pollutant</b>	<b>Contemporaneous Increases/Decreases (Netting)</b>	<b>PSD Significance Level</b>
PM <sup>a</sup>	-272.71	25
PM <sub>10</sub> <sup>a</sup>	-156.25	15
Pb <sup>a</sup>	-6.85	0.6
Hg <sup>a</sup>	-0.088	0.1

<sup>a</sup>Includes fugitive and point source emissions.

Based upon the above information, a PSD review is required for CO.

### **BACT Review**

The Marion Steel Company has installed an electric arc furnace at their facility in Marion, Ohio which is located in Marion County. Under Section 107 of the Clean Air Act as of June 24, 1992, this area was classified as attainment for all of the criteria pollutants, i.e., total suspended particulate, particulate matter less than 10 microns, sulfur dioxide, nitrogen oxides, carbon monoxide, volatile organic compounds (ozone) and lead.

The Marion Steel Company facility is subject to PSD regulations which mandates a case-by-case Best Available Control Technology (BACT) analysis be performed for the following pollutant: CO. The application used a “top-down” approach to determine an appropriate level of control.

### **BACT Analysis Background and Assumptions**

Potentially applicable emission control technologies were identified by researching the U.S. EPA’s control technology database, USEPA/State/Local air quality permits, technical literature, and control equipment vendor information and by using Marion Steel Company process knowledge and engineering experience. The RACT/BACT/LAER Clearinghouse (RBLC), a database made available to the public through the U.S. EPA’s Office of Air Quality Planning and Standards (OAQPS) Technology Transfer Network (TTN), list technologies that have been approved in PSD permits as BACT for numerous process units. Process units in the database are grouped into categories by industry.

A search of the RBLC database was performed to identify the emission control technologies and emissions levels that were determined by permitting authorities as BACT for emission sources similar to the EAF.

### **Carbon Monoxide Emissions**

CO emissions are generated from combustion losses of the graphite electrodes, carbon additives and steel carbon content during melting, refining and slagging operations. CO will be emitted as a byproduct of incomplete combustion from potential sources such as charged and injected carbon, scrap steel, electrodes, and “foaming slag” operating practices. The electric arc furnace can generate CO as a result of oxidation of carbon introduced into the furnace charge to refine the steel and as a result of the sublimation/oxidation of the carbon electrode. Increases in electrical power and use of oxygen lancing can also cause an increase in CO emissions. Factors influencing emissions from an EAF include furnace size, type/composition of scrap, quality of scrap, quality of final product, process melting rate, number of back charges, refining procedures and tapping duration and temperature.

The proposed CO emissions limit is based on a stack test derived emissions factor from a January 2003 stack test of the electric arc furnace. Specifically, the requested emissions level proposed in the PSD application for CO is 4.74 lb/ton of steel produced or 284.15 pounds of CO per hour. The existing EAF is equipped with direct shell evacuation controls for mitigation of CO emissions. CO is assumed to be quickly oxidized to CO<sub>2</sub> in the ambient air.

## Potential EAF CO Control Alternatives

The alternatives available to control CO emissions from the existing EAF include the following:

- 1) Operating Practice Modifications;
- 2) Flaring of CO Emissions;
- 3) CO Oxidation Catalysts;
- 4) Post-Combustion Reaction Chamber;
- 5) Catalytic Incineration;
- 6) Oxygen Injection; and
- 7) Direct Shell Evacuation (DSE) controls.

## Technical Feasibility of CO Control Alternatives

The test for technical feasibility of any control option is whether it is both available and applicable to reducing CO emissions from the existing EAF. The previously listed information resources were consulted to determine the extent of applicability of each identified control alternative.

### Operating Practice Modifications

Due to customer demands on quality and to stay competitive in the marketplace, the mill incorporates an improved foamy process to produce steel. In this process, carbon and oxygen are blown into the furnace below the slag line, creating expanding “foam”. The process will utilize a greater amount of charge and injection carbon to produce a competitive, marketable product. In this process, additional chemical energy is produced along with CO (due to oxidation of carbon) and that is intrinsically related to product quality. This process reduces electrical usage and extends the equipment life.

Due to marketplace demands on the type of products to be manufactured at the mill and the required product quality, Marion Steel Company does not propose any additional operating practice modifications that will alter CO emissions from the existing EAF.

### Flaring of CO Emissions

Based upon a review of the previously listed information resources, there is no known application of flaring EAF exhaust gases. Flaring of emissions for CO destruction would require raising the exhaust gas temperature to 1,300 °F at a residence time of 0.5 second. The exhaust gas stream will be approximately 470,000 ACFM at 250 °F. Thus, based on the relatively large gas volumetric flow at a substantial temperature differential, the auxiliary fuel requirements needed to operate the flare would be overwhelmingly large. Additionally, it can be speculated as to whether the flare would actually result in a decrease in CO emissions or increase thereof from supplemental fuel combustion, which would also result in an increase of NO<sub>x</sub> emissions. Consequently, this control alternative is considered technically infeasible for EAF exhausts and thus, will not be considered any further in this BACT analysis.

### CO Oxidation Catalysts

Based upon a review of the previously listed information resources, there is no known application of CO oxidation catalysts to control CO emissions from an EAF.

The optimal working temperature range for CO oxidation catalysts is approximately 850 °F to 1,100 °F with a minimum exhaust gas stream temperature of 500 °F for minimally acceptable CO control. Exhaust gases from the EAF will undergo rapid cooling as they are ducted from the furnace. Thus, the temperature will be far below the minimum 500 °F threshold for effective operation of CO oxidation catalysts. Additionally, the particulate loading in the exhaust gas stream is anticipated to be too high for the efficient operation of a CO oxidation catalyst. Masking effects such as plugging and coating of the catalyst surface would almost certainly result in impractical maintenance requirements, and would significantly degrade the performance of the catalyst. Consequently, this control alternative is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

## Post Combustion Reaction Chambers

Based upon a review of the previously listed information resources, there is no known successful application of duct burners or thermal incinerators to control CO emissions from an EAF. It should be noted that this type of technology has recently been proposed for EAF's in the United States; however, the feasibility of these units to effectively reduce CO emissions, without resulting in severe operational problems, is unknown. Further, such units are expected to consume large quantities of natural gas and oxygen, resulting in excessive annual operating costs.

The principle of destruction within post combustion chambers is to raise the EAF exhaust gases to a sufficiently high temperature and for a minimum amount of time to facilitate oxidation. The combustion chamber configuration must provide effective mixing within the chamber with an acceptable residence time. Recuperative heat exchangers can be used with these systems to recover a portion of the exiting exhaust gas heat and reduce the auxiliary fuel consumption.

The amount of CO which could be oxidized with post combustion systems is uncertain, and precise performance guarantees are expected to be difficult to obtain from equipment manufacturers because of the lack of operating experience. In addition, there is the potential for additional emissions of NOX from auxiliary fuel combustion. Further, due to the heat and particulate loading, the burners would have a short life expectancy, and may sustain severe maintenance and reliability problems. Additionally, a single or multiple duct burner system would not be able to heat the relatively cool gases from the EAF during cold cycling.

Potentially, there are two locations where post combustion chambers can be installed, i.e., upstream or downstream of an EAF baghouse. Locating upstream of the baghouse would take advantage of slightly elevated temperature in the exhaust gas stream. However, at this location, the post combustion chamber would be subject to high particulate loading. The units would be expected to foul frequently from the particulate accumulation, and the burners would have severe maintenance and reliability problems. Thus, the installation of the post combustion chamber upstream of the baghouse is considered technically infeasible.

Alternatively, the post combustion chamber could be installed downstream of the EAF baghouse. However, at this location, fouling due to particulate matter can occur and more importantly, even cooler exhaust temperatures would be encountered. These cooler temperatures would greatly increase the auxiliary fuel requirements. The associated combustion of additional auxiliary fuel will result in an unacceptable increase in operating costs. Further the combustion of additional fuel will result in increases in emissions to the atmosphere.

Based upon the above discussions, the use of a post combustion chamber is considered technically infeasible for the existing EAF and will not be considered any further in this BACT analysis.

## Catalytic Incineration

Based upon a review of the previously listed information resources, there is no known application of catalytic incineration to control CO emissions from EAF's. Catalytic incinerators use a bed of catalyst that facilitates the overall combustion of combustible gases. The catalyst increases the reaction rate and allows the conversion of CO to CO<sub>2</sub> at lower temperatures than a thermal incinerator. The catalyst is typically a porous noble metal material, which is supported in individual compartments with the unit. An auxiliary fuel-fired burner ahead of the bed heats the entering exhaust gases to 500 °F to 600 °F to maintain proper bed temperature. Recuperative heat exchangers are used to recover the exiting exhaust gas heat and reduce the auxiliary fuel consumption. Secondary energy recovery is typically 70 percent.

Catalytic incineration systems are limited in application due to potential poisoning, deactivation, and/or blinding of the catalyst. Lead, arsenic, vanadium, and phosphorus are generally considered poisons to catalysts and deactivate the available reaction sites on the catalyst surface. Particulate can also build up on the catalyst, effectively blocking the porous catalyst matrix and rendering the catalyst inactive. In cases of significant levels of poisoning compounds and particulate loading, catalyst replacement costs are significant.

As in the thermal incineration discussion, potentially, there are two locations where the incinerator can be installed, i.e., upstream or downstream of the EAF baghouse. For the same reasons discussed earlier (e.g., fouling due to particulate matter), the upstream location is considered technically infeasible. Alternatively, the incinerator can be installed downstream of the EAF baghouse. However, even at this location, fouling due to particulate matter

can occur, and further, the exhaust will be at a lower temperature. These cooler temperatures would greatly increase auxiliary fuel requirements. The associated combustion of additional auxiliary fuel will result in an unacceptable increase in operating costs. Further, the combustion of additional fuel will result in increases in emissions to the atmosphere.

Due to the lack of application of catalytic incineration in the steel industry and potentially adverse technology applicability issues, this control alternative is considered technically infeasible and will not be considered any further in this BACT analysis.

### Oxygen Injection

Based upon review of the previously listed information resources, there is no known application of oxygen injection for controlling CO emissions from an EAF. A theoretical means of reducing CO would be oxygen injection at the entrance of the ductwork to increase oxidation of the available CO to CO<sub>2</sub>. The increase in CO oxidation which could be achieved, however, is unknown. This approach would be purely experimental and is a procedure that is currently not conducted in EAF operations in steel mills in the United States. Oxygen injection directly into the furnace is an experimental operating practice in Europe used to increase the heat input to the melt, but the practice has not been demonstrated to reduce CO emissions.

Typically, the DSE system will draw air into the duct, creating an oxygen-rich mixture of EAF exhaust gases where CO is oxidized. The addition of oxygen is expected to provide little if any additional conversion of CO. The capability is also limited due to the cyclic operating schedule (i.e., hot-cold cycling). Exhaust gas temperatures fluctuate during each melt and at times, drop below 1,350 °F. It is estimated that this will occur for 5 to 10 minutes during each melt. The minimum temperature encountered is estimated at approximately 350 °F. Thus, during these periods, the thermal destruction efficiency is expected to decrease, resulting in elevated CO emissions. Consequently, this control alternative is considered technically infeasible for this application and will not be considered any further in this BACT analysis.

### Direct Shell Evacuation (DSE) Controls

In the steel industry, there are generally two principal capture systems employed during EAF operation to control the process emissions generated during melting and refining. One is the DSE system and the other is the side draft hood system. Side draft hoods require higher air flow rates than a DSE system and are not widely used. Based upon a review of the previously listed information resources, DSE controls (i.e., fourth-hole furnace control system) continue to be the primary control technology for controlling CO emissions from an EAF. The existing EAF is equipped with DSE controls for mitigation of the proposed CO emissions.

A DSE system consists of a water-cooled duct connected to the EAF through the furnace roof's fourth-hole. This duct is connected to the melt shop canopy collector system which further directs exhaust gases to the EAF baghouse. During melting and refining, a slight negative pressure is maintained within the furnace to withdraw exhaust gases through the DSE duct. At the point where the DSE duct meets the fourth-hole, there is a gap that allows combustion air to enter, providing oxygen to oxidize the CO which is present. The DSE system allows excellent process emissions capture and combustion of CO, and requires the lowest air volume of other EAF capture devices.

Without manifestation of a DSE system on the EAF, a greater quantity of CO would exit the furnace. Also during operation, the furnace shells would develop a negative pressure, thus preventing an in-draft of air/oxygen at the doors which facilitates CO oxidation in the furnace shell. The lack of negative pressure would also prevent the in-draft of air/oxygen at the gap between the fourth-hole elbow and duct, thereby preventing additional CO oxidation in the water-cooled evacuation ductwork.

### Evaluation of Most Effective CO Controls for EAF

Various control alternatives were reviewed for technical feasibility in controlling CO emissions from the existing EAF. With the exception of DSE controls, the applicability of the remaining control options was determined to be technically infeasible. Based on a review of the information resources referenced earlier, it is revealed that these control alternatives have not been successfully implemented to reduce CO emissions from EAF's. Thus the projected use of any of these technologies would be considered a "technology transfer." Since, only a single control option was ascertained to be technically feasible, no ranking of control alternatives has been provided.

A review of the RBLC database revealed that other steel mills have similar emissions limits of CO as the Marion Steel Company. No other mills have proposed or successfully implemented any controls besides DSE. The other controls options have been shown to be technically infeasible.

Based on a review of similar EAF melt shop applications, the proposed controls and emission limit represent best available control technology for the existing EAF application.

#### Proposal for CO BACT for EAF

In conclusion, BACT for controlling CO emissions from the existing EAF is proposed as the use of post combustion and the existing DSE controls to meet a CO emission rate of 4.74 lb/ton of steel produced. Additionally, from 1999 through 2003, Marion Steel Company has spent approximately \$1,000,000.00 on improvements to the air pollution control system, hence, Marion Steel Company maintains that the air pollution controls associated with the EAF are “State-of-the-Art”.

#### Site Description/Air Quality Evaluation

The Marion Steel Company is located in Air Quality Control Region (AQCR) 175. The area is attainment or attainment/unclassifiable for total suspended particulates, particulate matter less than 10 microns, sulfur dioxide, nitrogen oxides, carbon monoxide, volatile organic compounds (ozone) and lead.

#### Ambient Air Quality Monitoring Requirements

U.S. EPA regulations require a year of ambient air quality data to be obtained as part of the PSD application. An applicant may conduct monitoring on-site, model to demonstrate a “de minimus” impact, or used existing air quality data to fill some of the requirements of a PSD ambient air quality analysis. If monitoring is required, U.S. EPA has set up specific conditions on the acceptability of existing air quality monitors is to ensure the monitor is representative of air quality in the area.

In this instance, MS has conducted ambient air quality modeling that predicts the ambient air quality impact of the source(s) to be more than the monitoring de minimus concentrations for CO. Therefore, MS would-be required to conduct pre-application monitoring unless there is representative existing data. Ohio EPA identified existing monitoring data in Franklin as a conservative, representative data set for this location. A summary of the modeling is below.

<u>Pollutant</u>	<u>Averaging Period</u>	<u>Predicted Concentration</u>	<u>Monitoring De Minimus Concentration</u>
CO	8-hour high	1497 ug/m <sup>3</sup>	575 ug/m <sup>3</sup>

#### Modeling

Only CO exceeded the PSD significant emission rates. Air quality dispersion modeling was conducted to assess the effect of this project on ambient air quality standards and PSD increments. The U.S. EPA Industrial Source Complex-Short Term model (ISCST3, Version 02035) model was used for the refined modeling analysis. .

The ISCST3 model was the appropriate model for the simple terrain analysis due to the need to incorporate building wake effects, the need to predict both short-term and long-term (annual) average concentrations, and the need to incorporate impacts from multiple and separated emissions units.

The ISCST3 model was run with the regulatory default options (stack-tip downwash, buoyancy-induced dispersion, final plume rise), default wind speed profile categories, default potential temperature gradient, and no pollutant decay.

The ISCST3, Version 02035 model was run utilizing the National Weather Service meteorological data processed using the U.S. EPA PCRAMMET program. OEPA provided five years of the most recent PCRAMMET processed meteorological data on our bulletin board system. Following OEPA modeling guidance concerning representative meteorological data for various counties, the Columbus Surface, Dayton Upper Air (1987-1991) PCRAMMET data were used in the refined modeling analysis.

Building wake effects will influence emissions from stacks with heights less than Good Engineering Practice (GEP). The ISCST3 model requires input of building heights and projected building widths for 36 wind directions. The U.S. EPA Building Profile Input Program (BPIP) was used to determine the direction-specific building dimensions.

Significant Impact Analysis

ISCST3 was applied to the sources at the proposed facility to determine if the proposed facility would have impacts above the PSD significant impact increments. Peak facility impacts are presented in the table below:

		<u>Facility Impacts</u>	<u>PSD Significance Increments</u>
CO	1-hour high	2297 ug/m <sup>3</sup>	2000 ug/m <sup>3</sup>
	8-hour high	1497 ug/m <sup>3</sup>	500 ug/m <sup>3</sup>

PSD and NAAQS Analyses

The SIA modeling shows that the highest CO impacts for the 1-hour and 8-hour averaging times are 2297 ug/m<sup>3</sup> and 1497 ug/m<sup>3</sup>, respectively. These concentrations exceed the PSD significant impact levels of 2000 ug/m<sup>3</sup> and 500 ug/m<sup>3</sup>, respectively. Since the SIA analysis exceeds the PSD significance impact thresholds, PSD and NAAQS modeling analyses were required.

PSD Increment Analysis

There are no PSD increments for CO. Ohio EPA restricts individual project impacts to one quarter of the NAAQS. This is summarized below.

		<u>Facility Impacts</u>	<u>Ohio Acceptable Impacts</u>
CO	1-hour high	2297 ug/m <sup>3</sup>	10,000 ug/m <sup>3</sup>
	8-hour high	1497 ug/m <sup>3</sup>	2,500 ug/m <sup>3</sup>

NAAQS Analysis

Project impacts are combined with the impact of potential interacting sources and a monitored background to account for sources not explicitly included in the model. Total impacts were below the NAAQS.

		<u>Model Impacts</u>	<u>Monitored Background</u>	<u>Total Impact</u>	<u>NAAQS</u>
CO	1-hour high	2297 ug/m <sup>3</sup>	3083 ug/m <sup>3</sup>	5380 ug/m <sup>3</sup>	40,000 ug/m <sup>3</sup>
	8-hour high	1497 ug/m <sup>3</sup>	1947 ug/m <sup>3</sup>	3444 ug/m <sup>3</sup>	10,000 ug/m <sup>3</sup>

## Toxic Analysis

Manganese, Lead and Zinc were evaluated as part of this application. A reduced receptor grid was submitted with this portion of the analysis which had eliminated most receptors. Ohio EPA reevaluated the Manganese impact to assure that the receptor grid was adequate to capture the peak impact. The revised Manganese impact, which was closest to the modeling goal (MAGLC) and the impacts were still acceptable.

Pollutant	Modeled Impact	Acceptable Impact
Zinc	26.44 ug/m <sup>3</sup>	238.0 ug/m <sup>3</sup>
Manganese	4.05 ug/m <sup>3</sup>	4.76 ug/m <sup>3</sup>
Lead	0.17 ug/m <sup>3</sup>	0.375 ug/m <sup>3</sup>

The peak Zinc and Manganese impacts were peak 1-hour impacts for comparison to the MAGLC. The peak lead concentration was a peak monthly average which was less than the allowable quarterly average concentration (1/4 NAAQS).

## Secondary Impact

The closest Class I area to the MS Facility are the Dolley Sods and Otter Creek Class I wilderness areas which are over 250 miles to the southeast. Federal PSD regulation regulations require that the reviewing authority provide written notification of projects which may affect a Class 1 area. "May effect" is typically interpreted by EPA as a major source or major modification within 100 kilometers. Since the MS Facility is located greater than 100 kilometers from any Class I area, and all modeled impacts are below Significant Impact Levels, the MS Facility was not subject to the visibility analysis modeling.

Most of the designated vegetation screening levels are equivalent to or exceed NAAQS and/or PSD increments, so that satisfaction of NAAQS and PSD increment assures compliance with sensitive vegetation screening levels. For SO<sub>2</sub> 3-hour and annual averaging periods, sensitive screening levels are more stringent than comparable NAAQS standards. The MS facility does not have significant emissions of SO<sub>2</sub>.

It is not expected that there will be regional population, commercial, or industrial growth associated with this project.

## **Conclusions**

Based upon the analysis of the permit to install application and its supporting documentation provided by the Marion Steel Company, the Ohio EPA staff has determined the installation will comply with all applicable State and Federal environmental regulations and that the requirements for BACT are satisfied. Therefore, the Ohio EPA staff recommends that a permit to install be issued to the Marion Steel Company Facility.



State of Ohio Environmental Protection Agency

Street Address:  
Lazarus Gov. Center  
122 S. Front Street  
Columbus, OH 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

Mailing Address:  
Lazarus Gov. Center  
P.O. Box 1049  
Columbus, OH 43216-1049

**RE: DRAFT PERMIT TO INSTALL  
MARION COUNTY  
Application No: 03-14079**

**CERTIFIED MAIL**

Y	TOXIC REVIEW
Y	PSD
Y	SYNTHETIC MINOR
	CEMS
	MACT
AAa	NSPS
	NESHAPS
Y	NETTING
	MAJOR NON-ATTAINMENT
Y	MODELING SUBMITTED
	GASOLINE DISPENSING FACILITY

**DATE:** 1/27/2004

Marion Steel Company  
Scott Conway  
912 Cheney Avenue  
Marion, OH 43302

You are hereby notified that the Ohio Environmental Protection Agency has made a draft action recommending that the Director issue a Permit to Install for the air contaminant source(s) [emissions unit(s)] shown on the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the proposed installation. A public notice concerning the draft permit will appear in the Ohio EPA Weekly Review and the newspaper in the county where the facility will be located. Public comments will be accepted by the field office within 30 days of the date of publication in the newspaper. Any comments you have on the draft permit should be directed to the appropriate field office within the comment period. A copy of your comments should also be mailed to Robert Hodanbosi, Division of Air Pollution Control, Ohio EPA, P.O. Box 1049, Columbus, OH, 43266-0149.

A Permit to Install may be issued in proposed or final form based on the draft action, any written public comments received within 30 days of the public notice, or record of a public meeting if one is held. You will be notified in writing of a scheduled public meeting. Upon issuance of a final Permit to Install a fee of **\$2500** will be due. Please do not submit any payment now.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469. If you have any questions about this draft permit, please contact the field office where you submitted your application, or Mike Ahern, Field Operations & Permit Section at (614) 644-3631.

Very truly yours,

Michael W. Ahern, Supervisor  
Field Operations and Permit Section  
Division of Air Pollution Control

CC: USEPA

NWDO

**MARION COUNTY**

**PUBLIC NOTICE  
OHIO ENVIRONMENTAL PROTECTION AGENCY  
ISSUANCE OF DRAFT PERMIT TO INSTALL  
SUBJECT TO PREVENTION OF SIGNIFICANT DETERIORATION REVIEW  
TO MARION STEEL COMPANY**

Public Notice is hereby given that the Staff of the Ohio Environmental Protection Agency (EPA) has recommended to the Director that the Ohio EPA issue a draft action of a Permit to Install (PTI) to Marion Steel Company, located in Marion County, Ohio. The draft action (permit no. 03-14079) was issued on January 27, 2004. This draft permit proposes to install an electric arc furnace to replace two older electric arc furnaces.

Due to the proposed modification, an increase in actual air emissions of several pollutants will result. The proposed allowable criteria pollutant air emission rates which result from net increases at the facility are listed below, in tons per year.

Pollutant	Net Change	PSD Significance Level
CO	676.2	100
NO <sub>x</sub>	39.3	40
SO <sub>2</sub>	-18.1	40
VOC	27.2	40
PM	-272.7	25
PM <sub>10</sub>	-156.2	15
Lead (Pb)	-6.8	0.6
Mercury	-0.088	0.1

This facility is subject to the applicable attainment provisions of the Ohio EPA permit to install requirements (OAC 3745-31).

The Ohio EPA allows sources to consume less than one half the available increment for pollutants that have increments (NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>) and one quarter of the National Ambient Air Quality Standards (NAAQS) for CO and Pb. This facility has demonstrated that the impact from the new sources meets these criteria.

Within 30 days from the date of this notice, any interested party may submit comments or request a public hearing. Comments are to be sent to Andrea Chapman of the Northwest District Office, Ohio Environmental Protection Agency, 347 North Dunbridge Road, Bowling Green, Ohio, 43402.

Copies of the draft permit application and technical support information may be reviewed and/or copies made by first calling to make an appointment at the Northwest District Office at the above address during normal business hours. Telephone number: (419) 352-8461.

**DRAFT PERMIT TO INSTALL 03-14079**

Application Number: 03-14079  
APS Premise Number: 0351010017  
Permit Fee: **To be entered upon final issuance**  
Name of Facility: Marion Steel Company  
Person to Contact: Scott Conway  
Address: 912 Cheney Avenue  
Marion, OH 43302

Location of proposed air contaminant source(s) [emissions unit(s)]:  
**912 Cheney Avenue**  
**Marion, Ohio**

Description of proposed emissions unit(s):  
**Modification to electric arc furnace.**

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Director

## Part I - GENERAL TERMS AND CONDITIONS

### A. State and Federally Enforceable Permit To Install General Terms and Conditions

#### 1. Monitoring and Related Recordkeeping and Reporting Requirements

- a. Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:
  - i. The date, place (as defined in the permit), and time of sampling or measurements.
  - ii. The date(s) analyses were performed.
  - iii. The company or entity that performed the analyses.
  - iv. The analytical techniques or methods used.
  - v. The results of such analyses.
  - vi. The operating conditions existing at the time of sampling or measurement.
- b. Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.
- c. Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:
  - i. Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
  - ii. Quarterly written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the appropriate Ohio EPA District Office or local air agency. The written reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See B.9 below if no deviations occurred during the quarter.
  - iii. Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, and reporting requirements contained in this permit shall be submitted to the appropriate Ohio EPA District Office or local air agency every

six months, i.e., by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.

- iv. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

## **2. Scheduled Maintenance/Malfunction Reporting**

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

## **3. Risk Management Plans**

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

## **4. Title IV Provisions**

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.

## **5. Severability Clause**

A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.

## **6. General Requirements**

- a. The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and reissuance, or modification, or for denial of a permit renewal application.

- b. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.
- c. This permit may be modified, reopened, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.
- d. This permit does not convey any property rights of any sort, or any exclusive privilege.
- e. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

**7. Fees**

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable Permit To Install fees within 30 days after the issuance of this Permit To Install.

**8. Federal and State Enforceability**

Only those terms and conditions designated in this permit as federally enforceable, that are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA, the State, and citizens under the Act. All other terms and conditions of this permit shall not be federally enforceable and shall be enforceable under State law only.

**9. Compliance Requirements**

- a. Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.
- b. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:
  - i. At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.

- ii. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.
  - iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
  - iv. As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.
- c. The permittee shall submit progress reports to the appropriate Ohio EPA District Office or local air agency concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually, or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:
- i. Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
  - ii. An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

## **10. Permit To Operate Application**

- a. If the permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77, the permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if the proposed new or modified source(s) would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification must be obtained before the operation of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d).
- b. If the permittee is required to apply for permit(s) pursuant to OAC Chapter 3745-35, the source(s) identified in this Permit To Install is (are) permitted to operate for a period of up to one year from the date the source(s) commenced operation. Permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the source(s) covered by this permit.

## **11. Best Available Technology**

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

**12. Air Pollution Nuisance**

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

**B. State Only Enforceable Permit To Install General Terms and Conditions**

**1. Compliance Requirements**

The emissions unit(s) identified in this Permit to Install shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

**2. Reporting Requirements**

The permittee shall submit required reports in the following manner:

- a. Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
- b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

**3. Permit Transfers**

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

**4. Termination of Permit To Install**

This permit to install shall terminate within eighteen months of the effective date of the permit to install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

**5. Construction of New Sources(s)**

The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the

Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources cannot meet the requirements of this permit or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

**6. Public Disclosure**

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

**7. Applicability**

This Permit To Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate Permit To Install for the installation or modification of any other emissions unit(s) are required for any emissions unit for which a Permit To Install is required.

**8. Construction Compliance Certification**

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit To Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

**9. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations (See Section A of This Permit)**

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

**C. Permit To Install Summary of Allowable Emissions**

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

**SUMMARY (for informational purposes only)  
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS**

<u>Pollutant</u>	<u>Tons Per Year</u>
PE	3.52
Fugitive PE	40.99
Fugitive PM <sub>10</sub>	23.77
NOx	44.08
SO <sub>2</sub>	3.52
VOC	65.44
CO	1136.60
Pb	0.01
Fugitive Pb	1.0
Hg	0.0024
Fugitive Hg	0.0002

**Part II - FACILITY SPECIFIC TERMS AND CONDITIONS**

**A. State and Federally Enforceable Permit To Install Facility Specific Terms and Conditions**

None

**B. State Only Enforceable Permit To Install Facility Specific Terms and Conditions**

None

**Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**

**A. State and Federally Enforceable Section**

**I. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P903 - 60 tons/hr electric arc furnace with baghouse and dust handling system (Modification of PTI #03-03928 issued on March 29, 1989 for include federally enforceable limits)	OAC rule 3745-31-05(A)(3) OAC rule 3745-31-05(C)	See A.I.2.a, A.I.2.i, and A.I.2.1  <u>Baghouse stack emissions:</u> 0.88 lbs particulate emissions (PE)/hr, 3.52 tons of PE per rolling, 12-month period (See A.I.2.b & A.I.2.h)  0.88 lb sulfur dioxide (SO <sub>2</sub> )/hr, 3.52 tons of SO <sub>2</sub> per rolling, 12-month period (See A.I.2.b)  11.02 lbs nitrogen oxides (NO <sub>x</sub> )/hr, 44.08 tons of NO <sub>x</sub> per rolling, 12-month period (See A.I.2.b)  16.36 lbs volatile organic compounds (VOC)/hr, 65.44 tons of VOC per rolling, 12-month period (See A.I.2.b)  0.0018 lb lead (Pb)/hr, 0.01 tons of Pb per rolling, 12-month period (See A.I.2.b)  0.0006 lb mercury (Hg)/hr, 0.0024 tons of Hg per rolling, 12-month period (See A.I.2.b)  <u>Fugitive Emissions:</u>  40.99 tons of fugitive PE per rolling, 12-month period (See A.I.2.b)  23.77 tons of fugitive PM <sub>10</sub> per rolling, 12-month period (See A.I.2.b)  1.0 tons of fugitive Pb per rolling, 12-month period (See A.I.2.b)

OAC rule 3745-31-10 through 3745-31-20	0.0002 tons of fugitive Hg per rolling, 12-month period (See A.I.2.b)
	284.15 lbs CO/hr, 1136.60 tons of CO per rolling, 12-month period
OAC rule 3745-17-07(A)	See A.I.2.c
OAC rule 3745-17-07(B)	See A.I.2.d
OAC rule 3745-17-08(B)	See A.I.2.e
OAC rule 3745-17-11(B)	See A.I.2.f
OAC rule 3745-18-06(E)	See A.I.2.g
40 CFR, Part 60, Subpart AAa	See A.I.2.g
	See A.I.2.j and A.I.2.k

**2. Additional Terms and Conditions**

**2.a** Best Available Technology (BAT) for this emissions unit has been determined to be the following:

- i. use of a baghouse with a removal efficiency of 99% for PE;
- ii. use of a direct-shell evacuation control system (DEC) during refining and melting;
- iii. use of a segmented canopy hood, scavenger ducting, cross-draft partitioning and closed roof monitors that achieve a 99.5% overall (capture and control) efficiency for fugitive emissions and also includes compliance with the requirements of 40 CFR, Part 60, Subpart AAa.

**2.b** The permittee has requested the following federally enforceable emission limitations established pursuant to OAC rule 3745-31-05(C) based on a daily average throughput rate and hours of operation restrictions (See A.II.1 and A.II.2) for purposes of avoiding "Prevention of Significant Deterioration" analysis:

Baghouse stack emissions:

- 0.88 lbs PE/hr, 3.52 tons of PE per rolling, 12-month period
- 0.88 lb SO<sub>2</sub>/hr, 3.52 tons of SO<sub>2</sub> per rolling, 12-month period
- 11.02 lbs NO<sub>x</sub>/hr, 44.08 tons of NO<sub>x</sub> per rolling, 12-month period
- 16.36 lbs VOC/hr, 65.44 tons of VOC per rolling, 12-month period
- 0.0018 lb Pb/hr, 0.01 tons of Pb per rolling, 12-month period
- 0.0006 lb mercury (Hg)/hr, 0.0024 tons of Hg per rolling, 12-month period

Fugitive Emissions:

40.99 tons of fugitive PE per rolling, 12-month period

23.77 tons of fugitive PM<sub>10</sub> per rolling, 12-month period

1.0 tons of fugitive Pb per rolling, 12-month period

0.0002 tons of fugitive Hg per rolling, 12-month period

- 2.c** The permittee shall employ Best Available Control Technology (BACT) on this emissions unit. BACT has been determined to be an emission limitation of 284.15 lbs CO/hr and 1136.60 tons of CO per rolling, 12-month period. The BACT analysis determined that no controls were cost-effective.
- 2.d** The opacity limitation specified by this rule is less stringent than the opacity limitation established pursuant to 40 CFR, Part 60, Subpart AAa.
- 2.e** This emissions unit is exempt from the visible emissions limitations specified in OAC rule 3745-17-07(B), pursuant to OAC rule 3745-17-07(B)(11)(e).
- 2.f** This facility is not located within an "Appendix A" area as identified in OAC rule 3745-17-08 (it is located in Marion County). Therefore, pursuant to OAC rule 3745-17-08(A), this emissions unit is exempt from the requirements of OAC rule 3745-17-08(B).
- 2.g** The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(C).
- 2.h** All PE from the baghouse stack is particulate matter less than 10 microns in size (PM<sub>10</sub>).
- 2.i** The requirements of this rule also includes compliance with OAC rule 3745-31-05(C) and OAC rule 3745-31-10 through 3745-31-20 and 40 CFR 60.272(a)(2) & 40 CFR 60.272(a)(3).
- 2.j** The permittee shall not cause to be discharged into the atmosphere any gases which:
- i. exit from the stack of the baghouse controlling the EAF and exhibit 3% opacity or greater; and
  - ii. exit from the melt shop due solely to the operation of the EAF and exhibit 6% opacity or greater.
- 2.k** The standard for particulate matter specified by 40 CFR 60.272a(a)(1) is less stringent the emission limit established pursuant to OAC rule 3745-31-05(C). The standard for particulate matter specified by 40 CFR 60.272a(b) is less stringent the emission limit established pursuant to OAC rule 3745-31-05(A)(3).
- 2.l** There shall be no visible particulate emissions from the building enclosing the baghouse dust handling system.

**II. Operational Restrictions**

1. The permittee shall not exceed an hourly throughput rate in this emissions unit of 60 tons of steel based on a daily average.

2. The maximum annual operating hours for this emissions unit, shall not exceed 8000 hours, based upon a rolling, 12-month summation of the operating hours.

To ensure enforceability during the first 12 calendar months of operation 8000 hours, the permittee shall not exceed the operating hours levels specified in the following table:

Month(s)	Maximum Allowable Cumulative Operating Hours
1	667
1-2	1334
1-3	2001
1-4	2668
1-5	3335
1-6	4002
1-7	4669
1-8	5336
1-9	6003
1-10	6670
1-11	7337
1-12	8000

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual operating hours limitation shall be based upon a rolling, 12-month summation of the operating hours.

3. The pressure drop across the baghouse shall be maintained in the range of ½ to 8 inches of water while the emissions unit is in operation. The listed pressure drop range applies at all times, except during periods of cleaning, new bag installations and other scheduled maintenance operations.
4. The permittee shall follow the procedures outlined in its "Scrap Management Program" in order to minimize the use of scrap that contains mercury, lead, oils, plastics, and organic materials that are charged in the EAF. The "Scrap Management Program" was reviewed and approved by NWDO and shall be viewed as part of the operational requirements for the EAF permit. Any change to the "Scrap Management Program" that would increase the amount of these compounds present in the scrap, or result in the emissions of an air contaminant not previously emitted, must be approved by NWDO.
5. The control system fan motor amperes and all damper positions or the volumetric flow rate through each separately ducted hood shall be maintained at the appropriate levels established during the most recent emission testing that demonstrated that the emissions unit was in compliance.

### III. Monitoring and/or Recordkeeping Requirements

1. Observations of the opacity of the visible emissions from the baghouse shall be performed by a certified VE observer as follows:
  - a. Visible emission observations shall be conducted at least once per day when the furnace is operating in the melting and refining period.
  - b. Visible emission observations shall be taken in accordance with Method 9 of 40 CFR, Part 60, Appendix A, and, for at least three 6-minute periods, the opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of the visible emissions, only one set of three 6-minute observations will be required. In this case, Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident.
  - c. Records shall be maintained of any 6-minute average that is in excess of the emission limitation specified in A.I.2.j.
2. Observations of melt shop opacity shall be performed by a certified visible emission observer as follows:
  - a. Shop opacity observations shall be conducted at least once per day when the furnace is operating in the meltdown and refining period.
  - b. Shop opacity shall be determined as the arithmetic average of 24 consecutive 15-second opacity observations of emissions from the shop taken in accordance with Method 9.
  - c. Shop opacity shall be recorded for any point(s) where visible emission are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of visible emissions, only one observation of shop opacity will be required. In this case, the shop opacity observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident.
3. The permittee shall either: check and record the control system fan motor amperes and damper position on a once-per-shift basis; install, calibrate, operate and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood; or install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate at the control device inlet and check and record damper positions on a once-per-shift basis. The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring devices shall have an accuracy of +/-10 percent over their normal operating range and shall be calibrated according to the manufacturer's instructions. The permittee may be required to demonstrate the accuracy of the monitoring devices relative to Methods 1 and 2 of Appendix A of 40 CFR Part 60.
4. When the permittee is required to demonstrate compliance with the VE limitation in section A.I.2.j.ii and at any other time that the Director (the appropriate Ohio EPA District Office or local air agency) may require, either the control system fan motor amperes and all damper positions or the volumetric flow rate through each separately ducted hood shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the affected facility subject to A.III.3.

The permittee may petition the Director for reestablishment of these parameters whenever the permittee can demonstrate to the Administrator's satisfaction that the affected facility operating conditions upon which the parameters were previously established are no longer applicable. The values of these parameters as determined during the most recent demonstration of compliance shall be maintained at the appropriate levels for each applicable period. Operation at other than baseline values may be considered by the Director (the appropriate Ohio EPA District Office or local air agency) to be unacceptable operation and maintenance of the affected facility.

5. The permittee shall perform monthly operational status inspections of the equipment that is important to the performance of the total capture systems (i.e., pressure sensors, dampers, and damper switches). These inspections shall include observations of the physical appearance of the equipment (e.g., presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion. Any deficiencies shall be recorded and proper maintenance performed. The permittee may petition the Director (the appropriate Ohio EPA District Office or local air agency) to approve any alternative to monthly operational status inspections that will provide a continuous record of the operation of each emission capture system.
6. The permittee shall maintain daily records of the following:
  - a. the tons of steel produced;
  - b. the number of hours the EAF was operated; and
  - c. the average hourly production rate (b divided by c).
7. The permittee shall maintain monthly records of the following information:
  - a. the operating hours for each month; and
  - b. beginning after the first 12 calendar months of operation following the issuance of this permit, the rolling, 12-month summation of the operating hours.

Also, during the first 12 calendar months of operation following the issuance of this permit, the permittee shall record the cumulative operating hours for each calendar month.

8. The permittee shall maintain monthly records of the following information:
  - a. the calculated PE emissions for each month, in tons, using the following equation:  
$$\text{PE emissions} = (0.88 \text{ lb/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs});$$
  - b. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of PE emissions;
  - c. the calculated SO<sub>2</sub> emissions for each month, in tons, using the following equation:  
$$\text{SO}_2 \text{ emissions} = (0.88 \text{ lb/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs});$$
  - d. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of SO<sub>2</sub> emissions;

- e. the calculated NO<sub>x</sub> emissions for each month, in tons, using the following equation:  
$$\text{NO}_x \text{ emissions} = (11.02 \text{ lbs/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs});$$
- f. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of NO<sub>x</sub> emissions;
- g. the calculated VOC emissions for each month, in tons, using the following equation:  
$$\text{VOC emissions} = (16.36 \text{ lbs/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs});$$
- h. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of VOC emissions;
- i. the calculated Pb emissions for each month, in tons, using the following equation:  
$$\text{Pb emissions} = (0.0018 \text{ lb/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs});$$
- j. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of Pb emissions;
- k. the calculated Hg emissions for each month, in tons, using the following equation:  
$$\text{Hg emissions} = (0.0006 \text{ lb/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs});$$
- l. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of Hg emissions;
- m. the calculated fugitive PE emissions for each month, in tons, using the following equation:  
$$\text{fugitive PE emissions} = (10.25 \text{ lbs/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs});$$
- n. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of fugitive PE emissions;
- o. the calculated fugitive PM<sub>10</sub> emissions for each month, in tons, using the following equation:  
$$\text{fugitive PM}_{10} \text{ emissions} = (5.94 \text{ lbs/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs});$$
- p. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of fugitive PM<sub>10</sub> emissions;
- q. the calculated fugitive Pb emissions for each month, in tons, using the following equation:  
$$\text{fugitive Pb emissions} = (0.25 \text{ lb/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs});$$
- r. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of fugitive Pb emissions;

- s. the calculated fugitive Hg emissions for each month, in tons, using the following equation:  
$$\text{fugitive Hg emissions} = (0.0002 \text{ lb/hr}) \times (\text{A.III.7.a}) \times (\text{ton}/2000 \text{ lbs}); \text{ and}$$
  - t. beginning the first month after 12 calendar months of operation, the rolling 12-month summation of fugitive Hg emissions;
9. The permittee shall properly operate and maintain equipment to monitor the pressure drop across the baghouse while the emissions unit is in operation. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s). The permittee shall record the pressure drop across the baghouse on a once per shift basis.
  10. The permittee shall obtain a sample of the EAF baghouse dust on a monthly basis. At a minimum, the samples shall be analyzed for the magnesium, manganese, lead, zinc, and mercury contents. The results shall be reported in weight percent. This analysis shall be conducted in accordance with U.S. EPA test methods and procedures.
  11. The permittee shall keep daily records that indicate whether or not scrap was handled in accordance with the permittee's "Scrap Management Program".

#### **IV. Reporting Requirements**

1. The permittee shall submit semiannual written reports that:
  - a. identify all exceedances of gasses which exit from the stack of the baghouse controlling the EAF and exhibit 3% opacity or greater;
  - b. indicate a period of excess emission for opacity observations of gasses which exit from the melt shop due solely to the operation of the EAF and exhibit 6% opacity or greater. Excess emissions shall be reported in accordance with 40 CFR Part 60.7(c).

These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit deviation (excursions) reports which identify any exceedances of the following:
  - a. daily average hourly throughput rate specified in section A.II.1 of this permit.
  - b. the rolling, 12-month operating hours limitation specified in section A.II.2 and, for the first 12 calendar months of operation following the issuance of this permit, all exceedances of the maximum allowable cumulative operating hours levels.
  - c. the rolling, 12-month emissions limitations specified in section A.I.1 of this permit.
  - d. all periods of time during which the pressure drop across the baghouse did not comply with the allowable range specified in section A.II.3 of the terms and conditions of this permit.

- e. all periods of time during which the scrap was not handled in accordance with the permittee's "Scrap Management Program".

The deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

- 3. The permittee shall submit semiannual written reports that identify operation of control system fan motor amperes at values exceeding  $\pm$  15 percent of the value established under A.III.4 or operation at flow rates lower than those established under A.III.4. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.
- 4. The permittee shall submit the results of all baghouse dust analyses. The results shall be submitted within 30 days after the analysis is completed.

## **V. Testing Requirements**

- 1. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
  - a. The emission testing shall be conducted within 3 months after issuance of this permit.
  - b. The emission testing shall be conducted to demonstrate compliance with the allowable mass emission rates for PE, NO<sub>x</sub>, CO, SO<sub>2</sub>, VOC, Pb and Hg.
  - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: for PE, Method 5D of 40 CFR, Part 60, Appendix A; for NO<sub>x</sub>, Methods 1 through 4 and 7 of 40 CFR, Part 60, Appendix A; for CO, Methods 1 through 4 and 10 of 40 CFR, Part 60, Appendix A; for SO<sub>2</sub>, Methods 1 through 4 and 6 of 40 CFR, Part 60, Appendix A; for VOC, Methods 1 through 4 and Method 18, 25 or 25A of 40 CFR, Part 60, Appendix A; Pb, Methods 1 through 4 and 12 or 29 of 40 CFR, Part 60, Appendix A; and for Hg, Methods 1 through 4 and 29 of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.
  - d. Method 5D shall be used for positive-pressure fabric filters to determine the PE concentration and volumetric flow rate of the effluent gas. The sampling time and sample volume for each run shall be at least 4 hours and 4.50 dscm (160 dscf) and the sampling time shall include an integral number of heats.
  - e. The test runs shall be conducted concurrently, unless inclement weather interferes.
  - f. The tests shall be conducted while the emissions unit is operating at its maximum capacity, unless otherwise specified or approved by the appropriate Ohio EPA District Office or local air agency.
- 2. During the PE testing, the permittee shall obtain the following additional information:
  - a. for all heats covered by the test:
    - i. charge weights and materials, and tap weights and materials;

- ii. heat times, including start and stop times, and a log of process operation, including periods of no operation during testing.
    - iii. control device operation log; and
  - b. The control system fan motor amperes and all damper positions or the volumetric flow rate through each separately ducted hood shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the affected facility.
3. Concurrent with the PE testing, opacity observations shall be performed to demonstrate compliance with the opacity limitations contained in A.I.2.j.i and A.I.2.j.ii. The opacity testing shall be conducted in accordance with 40 CFR Part 60.8.

Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission tests.

Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate Ohio EPA District Office or local air agency.

The report shall also include all information required by 40 CFR 60.276a(f).

4. Compliance with the emission limitations in Section A.I.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:

- a. Emission Limitation: 0.88 lb PE/hr

Applicable Compliance Method: The lbs/hr limitation was developed by multiplying the daily average hourly throughput rate of 60 tons/hr by the emission factor of 0.1466 lb/ton (based on January 2003 stack test) and applying a 99% baghouse control efficiency. The permittee shall demonstrate compliance with the mass limitations by emissions testing conducted in accordance with Methods 1-5 of 40 CFR, Part 60, Appendix A (See A.V.1).

- b. Emission Limitation: 3.52 tons of PE per rolling, 12-month period

Applicable Compliance Method: The tons of PE per rolling, 12-month period limitation was developed by multiplying the lb PE/hr limitation by the maximum annual operating schedule of 8000 hrs/yr and dividing by 2000 lbs/ton. The permittee shall demonstrate

compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- c. Emission Limitation: 40.99 tons of fugitive PE per rolling, 12-month period, 23.77 tons of fugitive PM<sub>10</sub> per rolling, 12-month period

Applicable Compliance Method: The tons of fugitive PE and PM<sub>10</sub> per rolling, 12-month period limitation was developed by multiplying the adjusted AP-42 emission factors from Table 12.5-1 (revised 10/86) of 34.16 lbs PE/ton of steel produced and 19.81 lbs PM<sub>10</sub>/ton of steel produced, the daily average hourly throughput rate of 60 tons/hr, the capture and control efficiency of 99.5% and the maximum annual operating schedule of 8000 hrs/yr and dividing by 2000 lbs/ton. The permittee shall demonstrate compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- d. Emission Limitation: 11.02 lbs NO<sub>x</sub>/hr, 44.08 tons of NO<sub>x</sub> per rolling, 12-month period

Applicable Compliance Method: The lbs/hr limitation was developed by multiplying the daily average hourly throughput rate of 60 tons/hr by the emission factor of 0.18366 lb/ton (based on January 2003 stack test). The permittee shall demonstrate compliance with the hourly NO<sub>x</sub> limitation by emissions testing conducted in accordance with Methods 1-4 and 7 of 40 CFR, Part 60, Appendix A (See A.V.1).

The tons per rolling 12-month period limitation was developed by multiplying the lbs/hr limitation by the maximum annual operating schedule of 8000 hrs/yr and dividing by 2000 lbs/ton. The permittee shall demonstrate compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- e. Emission Limitation: 0.88 lbs SO<sub>2</sub>/hr, 3.52 tons of SO<sub>2</sub> per rolling, 12-month period

Applicable Compliance Method: The lbs/hr limitation was developed by multiplying the daily average hourly throughput rate of 60 tons/hr by the emission factor of 0.01465 lb/ton (based on January 2003 stack test). The permittee shall demonstrate compliance with the hourly SO<sub>2</sub> limitation by emissions testing conducted in accordance with Methods 1-4 and 6 of 40 CFR, Part 60, Appendix A (See A.V.1).

The tons per rolling 12-month period limitation was developed by multiplying the lbs/hr limitation by the maximum annual operating schedule of 8000 hrs/yr and dividing by 2000 lbs/ton. The permittee shall demonstrate compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- f. Emission Limitation: 16.36 lbs VOC/hr, 65.44 tons of VOC per rolling, 12-month period

Applicable Compliance Method: The lbs/hr limitation was developed by multiplying the daily average hourly throughput rate of 60 tons/hr by the emission factor of 0.27273 lb/ton (based on September 2001 stack test). The permittee shall demonstrate compliance with the hourly VOC limitation by emissions testing conducted in accordance with Methods 1-4 and 18, 25 or 25A of 40 CFR, Part 60, Appendix A (See A.V.1).

The tons per rolling 12-month period limitation was developed by multiplying the lbs/hr limitation by the maximum annual operating schedule of 8000 hrs/yr and dividing by

2000 lbs/ton. The permittee shall demonstrate compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- g. Emission Limitation: 0.0018 lb Pb/hr, 0.01 tons of Pb per rolling, 12-month period

Applicable Compliance Method: The lbs/hr limitation was developed by multiplying the daily average hourly throughput of 60 tons/hr by the emission factor of 0.00003 lb/ton (based on January 2003 stack test). The permittee shall demonstrate compliance with the hourly Pb limitation by emissions testing conducted in accordance with Methods 1-4 and 12 or 29 of 40 CFR, Part 60, Appendix A.

The tons per rolling 12-month period limitation was developed by multiplying the lbs/hr limitation by the maximum annual operating schedule of 8000 hrs/yr and dividing by 2000 lbs/ton. The permittee shall demonstrate compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- h. Emission Limitation: 1.0 tons of fugitive Pb per rolling, 12-month period

Applicable Compliance Method: The tons of fugitive Pb per rolling, 12-month period limitation was developed by multiplying the adjusted AP-42 emission factors from Table 12.5-1 (revised 10/86) of 34.16 lbs PE/ton of steel produced, the daily average hourly throughput rate of 60 tons/hr, the capture and control efficiency of 99.5%, 2.44% (the % of Pb determined from baghouse dust analysis) and the maximum annual operating schedule of 8000 hrs/yr and dividing by 2000 lbs/ton. The permittee shall demonstrate compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- i. Emission Limitation: 0.0006 lb Hg/hr, 0.0024 tons of Hg per rolling, 12-month period

Applicable Compliance Method: The lbs/hr limitation was developed by multiplying the daily average hourly throughput of 60 tons/hr by the emission factor of 0.00001 lb/ton (based on January 2003 stack test). The permittee shall demonstrate compliance with the hourly Hg limitation by emissions testing conducted in accordance with Methods 1-4 and 29 of 40 CFR, Part 60, Appendix A.

The tons per rolling 12-month period limitation was developed by multiplying the lbs/hr limitation by the maximum annual operating schedule of 8000 hrs/yr and dividing by 2000 lbs/ton. The permittee shall demonstrate compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- j. Emission Limitation: 0.0024 tons of fugitive Hg per rolling, 12-month period

Applicable Compliance Method: The tons of fugitive Hg per rolling, 12-month period limitation was developed by multiplying the adjusted AP-42 emission factors from Table 12.5-1 (revised 10/86) of 34.16 lbs PE/ton of steel produced, the daily average hourly throughput rate of 60 tons/hr, the capture and control efficiency of 99.5%, 0.0004% (the % of Hg determined from baghouse dust analysis) and the maximum annual operating schedule of 8000 hrs/yr and dividing by 2000 lbs/ton. The permittee shall demonstrate compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- k. Emission Limitation: 284.15 lbs CO/hr, 1136.60 tons of CO per rolling, 12-month period

Applicable Compliance Method: The lbs/hr limitation was developed by multiplying the daily average hourly throughput rate of 60 tons/hr by the emission factor of 4.73577 lb/ton (based on January 2003 stack test). The permittee shall demonstrate compliance with the hourly CO limitation by emissions testing conducted in accordance with Methods 1-4 and 10 of 40 CFR, Part 60, Appendix A (See A.V.1).

The tons per rolling 12-month period limitation was developed by multiplying the lbs/hr limitation by the maximum annual operating schedule of 8000 hrs/yr and dividing by 2000 lbs/ton. The permittee shall demonstrate compliance with the tons per rolling 12-month period limitation by the recordkeeping in section A.III.8.

- l. Emission Limitation: 3% opacity from the exit of the EAF baghouse

Applicable Compliance Method: The permittee shall demonstrate compliance with the visible emissions limitation above pursuant to Method 9 of 40 CFR, Part 60, Appendix A.

- m. Emission Limitation: 6% opacity from the exits of the melt shop due solely to the operation of the EAF

Applicable Compliance Method: The permittee shall demonstrate compliance with the visible emissions limitation above pursuant to Method 9 of 40 CFR, Part 60, Appendix A.

- n. Emission Limitation: There shall be no visible emissions from the building enclosing the baghouse dust handling system.

Applicable Compliance Method: The permittee shall demonstrate compliance with the visible emissions limitation above pursuant to Method 22 of 40 CFR, Part 60, Appendix A.

## **VI. Miscellaneous Requirements**

None

**B. State Only Enforceable Section**

**I. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P903 - 60 tons/hr electric arc furnace with baghouse and dust handling system (Modification of PTI #03-03928 issued on March 29, 1989 to include federally enforceable limits)		See B.III.1 below

**2. Additional Terms and Conditions**

2.a None

**II. Operational Restrictions**

None

**III. Monitoring and/or Recordkeeping Requirements**

1. The permit to install for this emissions unit (P903) was evaluated based on the actual materials (typically coatings and cleanup materials) and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the ISCST3 (00101) model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the ISCST3 (00101) model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant:

Pollutant: Zinc

TLV (ug/m3): 10,000

Maximum Hourly Emission Rate (lbs/hr): 2.1767 (point source emissions + fugitive emissions)

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 26.44 MAGLC (ug/m3): 238.10

Pollutant: Lead

TLV (ug/m3): 50

Maximum Hourly Emission Rate (lbs/hr): 0.393 (point source emissions + fugitive emissions)

Predicted Quarterly Maximum Ground-Level Concentration (ug/m3): 0.51

Acceptable Calendar Quarter Incremental Impact (ug/m3): 1.5

Pollutant: Manganese

TLV (ug/m3): 200

Maximum Hourly Emission Rate (lbs/hr): 0.2518 (point source emissions + fugitive emissions)

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 3.08

MAGLC (ug/m3): 4.76

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the “Air Toxic Policy” is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the “Air Toxic Policy” will still be satisfied. If, upon evaluation, the permittee determines that the “Air Toxic Policy” will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the “Air Toxic Policy” include the following:
  - a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
  - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
  - c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).
3. If the permittee determines that the “Air Toxic Policy” will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a “modification” under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition [other than (VV)(1)(a)(ii)], then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the “Air Toxic Policy:”

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the “Air Toxic Policy”; and
- c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the “Air Toxic Policy” for the change.

#### IV. Reporting Requirements

None

**Marion Steel Company**

**PTI Application: 03-14079**

**Issued: To be entered upon final issuance**

**Facility ID: 0351010017**

**Emissions Unit ID: P903**

**V. Testing Requirements**

None

**VI. Miscellaneous Requirements**

None