

217/785-1705

CONSTRUCTION PERMIT  
(SUBJECT TO INTEGRATED PROCESSING)

PERMITTEE

United States Steel Corporation - Granite City Works  
Attn: Bryan Kresak, Environmental Director  
1951 State Street  
Granite City, Illinois 62040

Application No.: 11050006

I.D. No.: 119813AAI

Applicant's Designation:

Date Received: November 16, 2011

Subject: Emission Reduction Project

Date Issued:

Location: 1951 State Street, Granite City, Madison County

This Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of an emission reduction project for charging and tapping of the two existing basic oxygen process furnaces (BOPFs), as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the findings and conditions in Part 1 of this Permit.

This Permit also authorizes the Clean Air Act Permit Program (CAAPP) permit for the source (Permit 96030056) to be revised by administrative amendment, in accordance with Section 39.5(13)(c)(v) of the Environmental Protection Act (Act). This is because this Permit was subject to "Integrated Processing," i.e., this Permit was subject to procedural requirements and includes compliance requirements that are substantially equivalent to those that apply to CAAPP permits. This was done because certain provisions in CAAPP Permit 96030056 will no longer be appropriate or necessary with this emission reduction project, when particulate emissions from tapping and charging of the BOPFs are controlled with a new baghouse control system. The specific revisions that may be made by administrative amendment to Permit 96030056 pursuant to this Permit are set forth in Part 2 of this Permit.

If you have any questions on this Permit, please contact Kevin Smith at 217/782-2113.

Edwin C. Bakowski, P.E.  
Manager, Permit Section  
Division of Air Pollution Control

Date Signed: \_\_\_\_\_

ECB:KLS:psj

cc: FOS - Region 3, Illinois EPA  
CAAPP Permit File - 96030056

## PART 1: FINDINGS AND CONDITIONS FOR THE CONSTRUCTION PERMIT

### FINDINGS

#### 1. Introduction

- a. This permit authorizes an emission reduction project for particulate emissions from the two existing Basic Oxygen Process Furnaces at the source. The project involves installation of a new control system for emissions of particulate from charging and tapping of these furnaces. The existing electrostatic precipitator (ESP) would continue to be used to control particulate emissions from these furnaces from refining.

This project will include the following elements:

- Installation of a baghouse with a nominal capacity of 900,000 actual cubic feet per minute.
- Upgrade of the existing local capture hoods for charging and installation of new ductwork to connect to the new baghouse rather than to the existing ESP.
- Installation of local capture hoods for tapping and ductwork to connect to the new baghouse.
- Installation of dampers, actuators, automated operating system and other equipment associated with the new ductwork.
- Repairs and upgrades to the enclosures at each BOPF.

- b. For the purpose of this construction permit:

- i. The "BOPFs" are the two existing Basic Oxygen Process Furnaces or Basic Oxygen Furnaces (BOFs) at the Granite City Works.
- ii. The "affected BOPF baghouse" is the new baghouse for control of emissions from charging and tapping of the BOPFs.
- iii. The "affected BOPF baghouse system" is the new control system for control of emissions from charging and tapping of the BOPFs, including the capture hoods, ductwork and the BOPF baghouse.

#### 2. Integrated Processing

- a. With this emission reduction project, when particulate emissions from tapping and charging of the BOPFs are controlled with the affected BOPF baghouse system, certain requirements in the CAAPP Permit for the source that currently address the BOPFs and the existing ESP control system would no longer be appropriate or necessary. This is because particulate emissions would also be controlled by the affected BOPF baghouse system. In particular, use of flame suppression to control emissions from tapping would no longer be practical because of the presence of induced draft from the local capture hoods. The affected BOPF baghouse system would also be designed with the capacity to control particulate emissions from tapping of one BOPF and charging of the other BOPF at the same time so that certain portions of tapping and

charging of the BOPFs and oxygen blowing of the BOPFs do not have to be staggered.

- b. To make these consequences of this project for the future operation of the BOPFs clear and certain at the time that this construction permit was issued, this permit was subject to Integrated Processing pursuant to Section 39.5(13)(c)(v) of the Act and 35 IAC 270.302(e). In particular, this permit was subject to procedural requirements that are substantially equivalent to those that apply to CAAPP permits, including a public comment period and review of a proposed permit by USEPA. This permit also includes compliance requirements that are substantially equivalent to those that apply to CAAPP permits, e.g., it provides for Periodic Monitoring for the affected BOPF baghouse system. The specific changes to the CAAPP permit for the source (Permit 96030056) that may be made by administrative amendment pursuant to this construction permit to address operation of the BOPFs with the affected BOPF baghouse are set forth in Part 2 of this permit.

### 3. Applicable Regulatory Requirements

- a. This permit does not affect applicable emission standards for the BOPFs, including associated control equipment, as set forth in the CAAPP permit for the source, Permit 96030056, including the following:
  - i. Applicable emission standards of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, including standards for both captured and uncaptured emissions.
  - ii. Applicable state emission standards in 35 IAC 212.446 and related provisions pursuant to 35 IAC Part 201 Subpart I that address operation of the BOPFs during startup and malfunction or breakdown.
- c. When the new baghouse control system begins to operate and the existing ESP control system is only controlling primary particulate emissions of the BOPFs, the capture systems in the ESP control system would not be subject to operational requirements of the NESHAP, including operating parameter limits and associated operational monitoring. However, this construction permit would continue to impose such requirements on the capture systems in the ESP control system. (See Condition 1(c)(ii).)

### 4. Non-Applicability Provisions

- a. This permit is issued based on this project not constituting a major modification subject to Prevention of Significant Deterioration (PSD), 40 CFR 52.21, or Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203. This is because this project is an emission reduction project that will reduce particulate emissions and will not act to increase production or emissions of any pollutants from the BOPFs.
- b. This permit is issued based on this project, as described in the application, not constituting a modification of the BOPFs under the federal New Source Performance Standards (NSP), 40 CFR 60 Subpart Na, as the project has the primary function of reducing emissions and therefore is not a modification pursuant to 40 CFR 60.14(e)(5).

## CONDITIONS

### 1. Operational Requirements

- a. The design capacity of the affected BOPF baghouse shall be at least 900,000 acfm, so as to be able to simultaneously control tapping of one BOPF and charging of the other and to control the simultaneous tapping of both BOPFs.
- b. The Permittee shall prepare and submit to the Illinois EPA its initial revisions to the plans for the BOPFs required by the NESHAP, 40 CFR 63 Subpart FFFFF (i.e., the operation and maintenance plan required by 40 CFR 63.7800(b) and the startup, shutdown and malfunction plan required by 40 CFR 63.7810(c)) to address the affected BOPF baghouse system at least 30 days in advance of initial operation of the BOPFs with this system.
- c. When the new baghouse control system begins to operate:
  - i. The Permittee shall not conduct refining simultaneously in both BOPFs unless this mode of operation is authorized by an appropriate construction permit.
  - ii. The Permittee shall continue to operate the ESP capture systems in accordance with applicable operational requirements of the NESHAP for capture systems for secondary emissions from BOPFs (e.g. 40 CFR 63.7800(b)(1) and (3)), even though the ESP only controls primary emissions from the BOPFs.
- d. After the shakedown of the affected baghouse system is complete and in no case later than six months after initial operation of the BOPFs with the affected BOPF baghouse system, the existing ESP shall only be used for control of emissions from charging and tapping of the BOPFs during an extended outage of the affected BOPF baghouse.

### 2. Emission Limit

- a. Following completion of the shakedown period for the affected BOPF baghouse system, the emissions of particulate matter (PM) from the affected BOPF baghouse, as would be measured by USEPA Method 5, 5D or 17, shall not exceed 0.005 grains per dry standard cubic foot (gr/dcsf).

### 3-1. Emission Testing Requirements

- a. The Permittee shall have emissions testing conducted for the affected BOPF baghouse and the existing ESP by a qualified testing service as follows:
  - i. A performance test for PM emissions shall be promptly conducted, in accordance with 40 CFR 63.7824(c), following initial operation of the BOPFs with the affected BOPF baghouse system to establish new operating limits for the capture systems for the BOPFs pursuant to the NESHAP and this permit. For this purpose,

performance testing shall be conducted for operation of the BOPFs with the affected BOPF baghouse and ESP systems.

ii. A further test for PM emissions and tests for emissions of filterable PM<sub>10</sub> and PM<sub>2.5</sub>, condensable particulate matter, NO<sub>x</sub>, CO, VOM and lead shall be conducted within one year of initial operation of both BOPFs with charging and tapping controlled by the affected BOPF baghouse system. The measurements for emissions of PM and other pollutants required by these tests and the tests required by Condition 3-1(a)(iii) may be combined with other measurements required for the BOPFs if measurements are conducted within the time periods specified by these conditions. In conjunction with this emission testing, the Permittee shall conduct or have conducted measurements as necessary to evaluate the actual operation and capture efficiency achieved by the hoods for charging and tapping as compared to their design. These tests and measurements shall be the basis of the Project Report required by Condition 6(d) for the affected BOPF baghouse system.

iii. A follow-up test for emissions of PM, filterable PM<sub>10</sub> and PM<sub>2.5</sub>, condensable particulate matter and lead shall be conducted between 24 and 36 months of the completion of the emission testing required by Condition 3-1(a)(ii).

b. i. Testing for PM emissions shall be conducted using applicable methods and procedures specified by the NESHAP.

ii. Applicable USEPA test methods and procedures shall be used for testing of emissions of pollutants other than PM, including the following methods for measurement of the emissions of different pollutants, unless other methods are approved by the Illinois EPA as part of the approval of a test plan. Refer to 40 CFR 60, Appendix A, and 40 CFR 51, Appendix M, for USEPA test methods.

Filterable PM <sub>10</sub> and PM <sub>2.5</sub>	Method 201 or 201A
Condensable Particulate Matter	Method 202

iii. During all test runs for emissions of PM and filterable PM<sub>10</sub> and PM<sub>2.5</sub> required by Condition 3-1(a), observations of the opacity of the exhaust from the roof monitor of the BOPF shop shall also be conducted in accordance with applicable methods and procedures of the NESHAP and information recorded on the timing of charging, refining, tapping and deslagging of each BOPF, so opacity data may be correlated with the operation of the BOPFs.

c. The Permittee shall submit a written plan to the Illinois EPA for review and comment for this testing. This plan shall be submitted at least 60 days prior to the actual date of testing and include the following information at a minimum:

i. A description of the planned emission test.

ii. The person(s) who will be performing sampling and analysis and their experience with similar tests.

- iii. The specific operating conditions under which testing will be performed, including a discussion of why these conditions will appropriately address operation of the BOPFs and associated control systems and the levels of operating parameters of the control systems at or within which compliance is intended to be shown.
  - iv. The specific determination of emissions intended to be made, including sampling and monitoring locations.
  - v. The test methods that will be used, with the specific analysis method.
  - vi. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
  - vii. A statement that the testing will be performed by a qualified independent testing service.
- d.
- i. Prior to carrying out each set of emission tests, the Permittee shall notify the Illinois EPA a minimum of 30 days prior to the scheduled date of these tests with the exact date and time that testing would begin, to enable the Illinois EPA to witness these tests.
  - ii. If the scheduled date for testing is changed, the Permittee shall inform the Illinois EPA within 5 working days of the new date and time for testing.
  - iii. Notwithstanding the above, the Illinois EPA may, at its discretion, accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- e.
- The Permittee shall submit three copies of the Final Report(s) for emissions tests to the Illinois EPA no later than 60 days after completion of sampling. The Final Report shall include at a minimum:
- i. General information, i.e., date of test, names of testing personnel, and names of Illinois EPA observers.
  - ii. A summary of the measured emissions in pounds per hour, lbs/ton steel and, for particulate matter, in gr/dscf.
  - iii. Detailed data for operating parameters of the control system during testing, including data recorded by the operational monitoring systems and, as applicable, proposed operating parameter limits based on the emission testing.
  - iv. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.
  - v. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.

- vi. A comparison of measured data to applicable emission standards and limits and a statement whether compliance was demonstrated.
  - vii. The data for opacity of the exhaust through the roof monitor of the BOPF shop during testing and the timing of charging, refining, tapping and deslagging of the BOPFs, as determined and recorded pursuant to Condition 3-1(b)(iii), accompanied by copies of the certification(s) pursuant to USEPA Method 9 of the individual(s) who made the observations of opacity.
- f. The Permittee shall retain copies of these reports for these emission tests for at least five years beyond the date that an emission test report is superseded by subsequent testing for all pollutants.

#### 3-2. Additional Testing Requirements

- a. In conjunction with the emission testing required by Condition 3-1(a)(ii) or (iii), the Permittee shall conduct or have conducted measurements as necessary for a determination of the PM control efficiency of the affected BOPF baghouse during normal operation of the BOPFs, including associated control systems, which efficiency may be determined either "directly" (e.g., by measurements of the PM loading at the inlet of the affected BOPF baghouse for comparison to the measured PM emission rate) or "indirectly" (e.g., by recordkeeping for the amount of material collected by this baghouse over a week or month, to determine an average collection rate per hour or per steel production cycle, for comparison to the measured emission rate).
- b. These measurements and the determination of the PM control efficiency of the affected BOPF baghouse, in percent, shall be included in the relevant report for emission testing pursuant to Condition 3-1(e).

#### 4. Monitoring and Instrumentation Requirements

- a. The Permittee shall fulfill applicable monitoring requirements of the NESHAP, 40 CFR 63 Subpart FFFFFF, for the affected BOPF baghouse system, including:
  - i. Monitoring, as required by 40 CFR 63.7800(b)(3) and 63.7830(a), for selected operating parameters of each capture system that are appropriate for its design and representative and reliable indicators of the performance of the capture system. At a minimum, the selected parameters must include parameters that indicate the level of the ventilation draft and the damper position settings for the capture system when operating to collect emissions, including revised settings for seasonal variations. The selection of operating parameters must be supported by documentation in the revised operation and maintenance plan for the BOPFs.
  - ii. Operating a bag leak detection system on the affected BOPF baghouse, as required by 40 CFR 63.7830(b)(1) and 63.7833(c)(1) and (4), with timely initiation of appropriate corrective action(s) in the event that the bag leak detection system alarm

is triggered and fulfillment of associated recordkeeping and reporting requirements.

- iii. The Permittee shall make its initial revisions, as needed to address the affected BOPF baghouse system, to the site-specific monitoring plan for the BOPFs required by 40 CFR 63.7831(a), at least 30 days in advance of initial operation of the BOPFs with the affected BOPF baghouse system.
  - b. The Permittee shall monitor the following operating parameters for the affected BOPF baghouse system if not otherwise monitored pursuant to the NESHAP. For this purpose, the Permittee may either directly monitor these parameters or indirectly derive and automatically record data for these parameters from other operating parameters that are continuously monitored.
    - i. The actual volumetric flow rate, in cubic feet per minute (acfm), through each separately ducted hood.
    - ii. The actual volumetric flow rate (acfm) at the inlet to the baghouse.
  - c. When the new baghouse control system begins to operate and the ESP is only controlling primary emissions, the Permittee shall continue to conduct operational monitoring for the capture systems associated with the ESP in accordance with relevant monitoring requirements of the NESHAP (e.g., 40 CFR 63.7830(a) and 63.7831(e)), even though the ESP only controls primary emissions of the BOPFs.
5. Recordkeeping Requirements
- a. The Permittee shall maintain a file or other records that contain the following information for the affected BOPF baghouse system:
    - i. Design data for the capture hoods for charging and tapping, including the analysis for the levels of capture achieved by the hoods for emissions of particulate, i.e., percentages of total emissions from charging and tapping that are collected and directed to the affected BOPF baghouse.
    - ii. The manufacturer's specifications for the capacity (acfm and scfm) and particulate emissions (gr/dscf) of the affected BOPF baghouse and the manufacturer's recommended operating and maintenance procedures for this baghouse.
  - b. After charging and tapping of both BOPFs first begin to be controlled with the affected BOPF baghouse system, the Permittee shall keep records of the following information for the BOPFs. The preparation of these records by the Permittee may be automated or these records may be prepared manually or by a combination of manual and automated methods. These records may be combined with other records that are kept by the Permittee for the BOPFs.
    - i. Records for the BOPFs for the total number of steel production cycles per day (24-hours).

- ii. Records for the following information, as calculated from data monitored pursuant to Condition 4(b):
    - A. The average flow rate through each separately ducted hood for each BOPF for each steel production cycle (acfm).
    - B. The average flow rate at the inlet to the affected BOPF baghouse per steel production cycle (acfm/cycle), daily (24-hour) average.
    - C. The average flow rate at the inlet to the ESP per steel production cycle (acfm/cycle), daily (24-hour) average.
  - c. After tapping and charging of both BOPFs first begin to be controlled with the affected BOPF baghouse system, the Permittee shall keep records for periods when charging or tapping of a BOPF is not controlled by this system, including a description of the event, the probable cause(s) of the event, the remedial action(s) taken and any measure(s) taken to prevent similar events in the future.
  - d. The Permittee shall retain records required by this permit and make them available to the Illinois EPA and USEPA in accordance with Condition 5.9.6(a) and (b) of the CAAPP permit for the source, Permit 96030056.
6. Reporting Requirements
- a. The Permittee shall notify the Illinois EPA of the following events with respect to the design, construction and shakedown of the affected BOPF baghouse system:
    - i. Finalization of the design for the affected BOPF baghouse, within 15 days of the date that this occurs, which notification shall include the following information: total filter area, number of compartments, number of bags and dimensions and the selected filter material with performance specifications.
    - ii. The planned date for initial operation of the BOPF(s) with the affected BOPF baghouse system, at least 5 days in advance. If operation with this system will be phased, i.e., the emissions from charging and tapping of both BOPFs will not initially all be controlled by this system, this notification shall include the planned schedule for phase-in of control of emissions by this system.
    - iii. The date that tapping and charging of both BOPFs are initially controlled with the affected BOPF baghouse system, no later than 30 days after this date.
    - iv. The date that the shakedown of the affected BOPF baghouse system is completed, no later than 30 days after this date.
  - b. The Permittee shall notify the Illinois EPA of periods, if any, during the construction of the affected BOPF baghouse system that would be accompanied by extended interruptions in the operation of the BOPFs (i.e., interruptions whose expected duration would be longer than 72

hours). For this purpose, the Permittee may provide a separate notice in advance of each such period, with the notice submitted at least 5 days in advance, if possible, or otherwise as soon as practical. Alternatively, the Permittee may provide copies of the schedules for the construction of the affected BOPF baghouse system identifying such periods, with a schedule initially submitted within 10 days of the initial development of the schedule and revised schedules submitted within 15 days of substantial revisions to the schedule. These notifications need only be submitted to the Illinois EPA's Regional Office in Collinsville and may be submitted either by facsimile or by electronic mail.

- c. After the shakedown of the affected baghouse system is complete, the Permittee shall notify the Illinois EPA if the ESP will be used for control of emissions from charging and tapping of the BOPFs, with description of the planned use of the ESP and explanation.
- d. Within 18 months of the date that tapping and charging of both BOPFs are initially controlled with the affected BOPF baghouse system, the Permittee shall submit a Project Report to the Illinois EPA that evaluates the emissions of particulate (as PM<sub>10</sub> and PM<sub>2.5</sub>) and lead from the BOPFs with the affected BOPF baghouse system. This one-time report shall include the following:
  - i. An assessment of the actual levels of capture (percent) that are achieved for emissions from charging and tapping, during normal operation of the BOPFs and control systems.
  - ii. An assessment of overall emissions of particulate matter and lead from the BOPFs on a short-term basis (in lbs/hour and lbs/ton of steel), with typical and maximum emission rates, for normal operation.
  - iii. A review of the probable effect of upsets in the operation of the affected BOPF baghouse system on the short-term emissions of the BOPFs, considering upsets that have been experienced.
  - iv. An assessment of the distribution of emissions of particulate and lead from the BOPFs between the ESP, affected BOPF baghouse and roof monitor (uncaptured emissions) on a short-term basis, with the typical distribution of emissions, the distribution of emissions with maximum emissions at the roof monitor, and the distribution of emissions with maximum emissions at the ESP, all for normal operation.
  - vi. An assessment of the actual reductions in annual emissions of particulate matter (tons/year) from the BOPFs that should be achieved with the affected BOPF baghouse system.
  - vii. An assessment of the typical range of opacity from the roof monitor during tapping of a single BOPF, charging of a single BOPF, overlapping tapping and charging of the BOPFs, and periods of operation other than charging and tapping.
  - viii. Appropriate data and analysis to support the above assessments.



PART 2: CHANGES THAT ARE "PRE-AUTHORIZED" TO THE CAAPP PERMIT

Provisions of CAAPP Permit 96030056 (abridged)  
Marked to Show the Changes That May Be Made to the Provisions by  
Administrative Amendment Pursuant to Integrated Processing

These changes may only be made after the Permittee has confirmed its intention to proceed with this emission reduction project as described in the application for this construction permit and as addressed by Part 1 of this permit.

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Note: This permit has two version of Section 7.5, which contains the unit-specific conditions for the Basic Oxygen Processes. The first version reflects the "current version" of Section 7.5, as was also present in the previous CAAPP permit for the source. This version of Section 7.5 only applies until a new baghouse control system that is part of an emission reduction project for the Basic Oxygen Process (BOP) furnaces begins operation to control particulate emissions of these furnaces. The second version of Section 7.5 addresses the future operation of the BOP furnaces with the new baghouse control system and will become applicable when the new baghouse system begins operation to control emissions of these furnaces, superseding the first version of Section 7.5.

Changes to Current Section 7.5 of the CAAPP Permit (abridged)

7.5 Basic Oxygen Processes - Version 1

Note: This is the first version of Section 7.5 in this permit. This version only applies until a new baghouse control system that is part of an emission reduction project for the Basic Oxygen Process (BOP) furnaces begins operation to control particulate emissions of these furnaces. At such time, the second version of Section 7.5 will become applicable, superseding this version of Section 7.5. (See Condition 7.5.15.)

*(No changes to Conditions 7.5.1 through 7.5.14)*

7.5.15 Transition

This version of Section 7.5 only applies until a new baghouse control system that is part of an emission reduction project for the BOP furnaces, which is addressed by Construction Permit 11050006, begins operation to control particulate emissions of these furnaces. At such time, the second version of Section 7.5 will become applicable, superseding this version of Section 7.5.

Changes to Add a New Version of Section 7.5 to the CAAPP Permit

7.5 Basic Oxygen Processes - Version 2

Note: This is the second version of Section 7.5 in this permit. This version of Section 7.5 will become applicable when the new baghouse control system for the BOP furnaces begins operation to control emissions of these furnaces. At such time, this version of Section 7.5 will supersede the first version of Section 7.5. (See Condition 7.5.15.)

7.5.1 Description

Reladling and Desulfurization Stations:

Molten iron from the blast furnaces is transported to the BOF by torpedo cars. The iron is then transferred to the charging ladles at the reladling station. In the desulfurization stations a combination of lime and magnesium is injected into the molten iron to remove the sulfur. The sulfur reacts with the lime and magnesium and forms a layer of slag on the surface of the iron. A collection system with a positive pressure baghouse is used to control emissions of particulate matter from these stations.

Slag Skimming:

After the molten iron is desulfurized, the ladle it is moved to this station where a mechanical arm is used to scrape slag from the surface of the iron. This slag is scraped from the iron ladles and into slag pots. A collection system with a baghouse is used to control emissions from this process.

Basic Oxygen Process Furnaces (BOPF or BOF):

The steel production cycle or "heat" in a BOPF begins with the charging of scrap metal into the BOPF vessel. Molten iron is then charged into the vessel. During periods of reduced molten iron availability, the scrap metal may be preheated with a natural gas fired lance to increase its temperature and reduce the amount of molten iron that is needed. Flux materials are also added to the vessel. After the BOPF is charged, an oxygen lance is inserted through the roof of the BOPF to begin the refining phase with the "oxygen blow." In the BOPF, the injected oxygen reacts exothermically with the carbon in the iron generating heat, melting the scrap and reducing the amount of carbon in the bath, thus converting the iron to steel. When refining is completed, the BOPF is tapped, by pouring -the molten steel from the vessel into a transfer ladle. After tapping, the slag is emptied from the vessel into a slag ladle, preparing the BOPF for the next heat. The steel production cycle is then repeated.

Emissions of particulate from the BOPFs from charging and tapping (also referred to as "secondary emissions") are captured by local hoods and ducted to a baghouse (the affected BOPF baghouse system). Emissions of particulate from refining are

captured by the roofs over the BOPFs and ducted to an electrostatic precipitator (the affected ESP system). The openings in the roofs of the BOPFs for the oxygen lances are also fitted with steam rings. The steam rings inject steam into the area between the oxygen lance and the "lance hole," acting to suppress particulate emissions through this area during oxygen blowing.

Ladle Preheating and Drying:

In this unit, lances combust either natural gas or coke oven gas to produce the heat needed to dry and preheat iron and steel handling ladles. The refractory linings of freshly re-bricked or repaired ladles must be completely dried and preheated before use. The drying process is necessary because any moisture left in the refractory would immediately vaporize and expand when the ladles are filled with molten iron or steel. This sudden expansion could cause the refractory lining to split which would allow the molten iron and steel to come into contact with, and damage the shell of the ladle. Emissions from this unit consist of particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide and organic materials generated by fuel combustion.

Ladle Metallurgy Furnaces (LMF) and Argon Stirring Stations:

At the LMF station and the argon stirring stations, final adjustments are made to the composition of a ladle of steel and the steel is held pending casting. At the LMF station, electricity can also be used to heat a ladle of steel if it has cooled below the range at which steel can be cast.

If the steel does not need to be reheated and at most minor adjustments are needed to its composition, the ladle of steel goes to one of the two argon stirring stations. At these stations, stirring lances are inserted into the steel and argon is pumped into the steel to maintain uniform composition and temperature. A baghouse is also used to control emissions from the operations.

Note: This narrative description is for informational purposes only and is not enforceable.

7.5.2 List of Emission Units and Air Pollution Control Equipment

<u>Location</u>	<u>Basic Oxygen Process Descriptions</u>	<u>Date Constructed</u>	<u>Emission Control Equipment</u>
<u>Basic Oxygen Process Furnace (BOPF) Shop</u>	<u>Hot Metal Transfer Station</u>	<u>Prior to 05/1983</u>	<u>Reladle/Desulfurization Baghouse</u>
	<u>Two Hot Metal Desulfurization Stations</u>		
	<u>Slag Skimming Station</u>	<u>1985</u>	<u>Skimmer Baghouse</u>

<u>Location</u>	<u>Basic Oxygen Process Descriptions</u>	<u>Date Constructed</u>	<u>Emission Control Equipment</u>
<u>Basic Oxygen Process Furnace (BOPF) Shop</u>	<u>Hot Metal Transfer Station</u>	<u>Prior to 05/1983</u>	<u>Reladle/Desulfurization Baghouse</u>
	<u>Two Hot Metal Desulfurization Stations</u>		
	<u>Slag Skimming Station</u>	<u>1985</u>	<u>Skimmer Baghouse</u>
	<u>Basic Oxygen Process Furnaces (BOPF or BOF) #1 and #2 with Steam Rings</u>	<u>Prior to 08/1972</u>	<u>Baghouse (Charging and Tapping) and Electrostatic Precipitator (Refining)</u>
	<u>Ladle Drying/Preheating (coke oven gas and natural gas modes)</u>	<u>Prior to 08/1972</u>	<u>None</u>
	<u>Ladle Metallurgy Furnace (LMF) Station</u>	<u>Prior to 1986</u>	<u>Baghouse #2</u>
	<u>Argon Stirring Stations</u>	<u>Around 1988</u>	

### 7.5.3 Applicable Provisions

a. Pursuant to 35 IAC 212.446, emissions of particulate matter from basic oxygen processes shall be controlled as follows:

i. Charging, Refining and Tapping (BOF Operations). Particulate matter emissions from all basic oxygen furnaces (BOF) shall be collected and ducted to pollution control equipment. Emissions from basic oxygen furnace operations during the entire cycle (operations from the beginning of the charging process through the end of the tapping process) shall not exceed the allowable emission rate specified by 35 IAC 212.322. For purposes of computing the process weight rate, nongaseous material charged to the furnace and process oxygen shall be included. No material shall be included more than once [35 IAC 212.446(a)].

ii. Hot Metal Transfer, Hot Metal Desulfurization and Ladle Lancing.

Particulate matter emissions from hot metal transfers to a mixer or ladle, hot metal desulfurization operations and ladle lancing shall be collected and ducted to pollution control equipment, and emissions from the pollution control equipment shall not exceed 69 mg/dscm (0.03 gr/dscf) [35 IAC 212.446(b)(1)].

iii. For openings in the building housing the BOF, no person shall cause or allow emissions to exceed an opacity of 20 percent, as determined by averaging any

12 consecutive observations taken at 15 second intervals [35 IAC 212.446(c)].

- b. Pursuant to 35 IAC 212.458, no person shall cause or allow emissions of PM<sub>10</sub>, other than that of fugitive particulate matter, into the atmosphere to exceed the following limits during any one hour period:
- i. 32.25 ng/J (0.075 lbs/mmBtu) of heat input from the burning of coke oven gas (at ladle dryers/preheaters) [35 IAC 212.458(b)(9)].
  - ii. 27.24 kg/hr (60 lbs/hr) and 0.1125 kg/Mg (0.225 lbs/T) of total steel in process whichever limit is more stringent for the total of all basic oxygen furnace operations (charging, refining and tapping, as described in 35 IAC 212.446(a)) and measured at the BOF stack [35 IAC 212.458(b)(23)].
  - iii. 22.9 mg/scm (0.01 gr/scf) from any process emissions unit, except as otherwise provided in 35 IAC 212.458 or in 212.443 and 212.446 [35 IAC 212.458(b)(7)].
- c. Pursuant to 35 IAC 212.123(a), no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 IAC 212.122, except as allowed by 35 IAC 212.123(b) and 212.124.
- d. The Basic Oxygen Processes are subject to 40 CFR Part 63, Subpart FFFFF, Integrated Iron and Steel Manufacturing Facilities. Applicable provisions of this NESHAP are addressed below and in other conditions of this section of the permit.
- e. Pursuant to 40 CFR 63.7790(a) and Table 1 to 40 CFR Part 63 Subpart FFFFF, the emissions from the Basic Oxygen Processes shall not exceed the following limits applicable to operation at existing basic oxygen process furnace (BOPF) identified in paragraphs 9 through 12 of Table 1 to Subpart FFFFF:
- i. The Permittee must not cause to be discharged to the atmosphere any gases that exit from a primary emission control system for a BOPF with an open hood system at an existing BOPF shop that contain, on a flow-weighted basis, particulate matter in excess of 0.02 gr/dscf during the steel production cycle.
  - ii. For each hot metal transfer, slag skimming, and hot metal desulfurization operation, the Permittee must not cause to be discharged to the atmosphere any gases that exit from a control device that contain particulate matter in excess of 0.01 gr/dscf.

- iii. For each ladle metallurgy furnace operation, the Permittee must not cause to be discharged to the atmosphere any gases that exit from a control device that contain particulate matter in excess of 0.01 gr/dscf.
- iv. For each roof monitor on the BOPF Shop, the Permittee must not cause to be discharged to the atmosphere any secondary emissions that exit any opening in the BOPF shop or any other building housing the BOF or basic oxygen process that exhibit opacity greater than 20 percent (3-minute average).
- f. Pursuant to 40 CFR 63.7790(b)(3), for the electrostatic precipitator applied to control emissions from a BOF, the Permittee must maintain the hourly average opacity of emissions exiting the control device at or below 10 percent.
- g. The basic oxygen furnaces are subject to 35 IAC 214.301, which provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2000 ppm.

#### 7.5.4 Non-Applicability of Regulations of Concern

- a. Pursuant to 35 IAC 212.324(a)(3) and 212.316(f), the emission limitations of 35 IAC 212.324 and 212.316 are not applicable to the basic oxygen processes because these operations are subject to specific emission standards and limitations contained in 35 IAC Part 212 Subpart R, as addressed in Condition 7.5.3(a).
- b. Except where noted, 35 IAC 212.321 and 35 IAC 212.322 shall not apply to the steel manufacturing processes subject to 35 IAC 212.442 through 35 IAC 212.452 [35 IAC 212.441].
- c. This permit is issued based on the affected basic oxygen processes not being subject to the applicable requirements of 35 IAC 219.301 because these processes do not emit photochemically reactive organic material as defined in 35 IAC 211.4690.
- d. The basic oxygen processes are not subject to 35 IAC 216.121 because they are not fuel combustion emission units as defined in 35 IAC 211.2470.

#### 7.5.5-1 NESHAP Requirements for Operation and Maintenance (40 CFR 63.7800 and 63.7833)

- a. Pursuant to 40 CFR 63.7800(a), as required by 40 CFR 63.6(e)(1)(i), the Permittee must always operate and maintain each individual BOPF and each BOPF shop ancillary operation, including air pollution control and monitoring equipment, in a manner consistent with good air pollution

control practices for minimizing emissions at least to the levels required by 40 CFR 63 Subpart FFFFF.

b. Pursuant to 40 CFR 63.7800(b), tThe Permittee shall prepare and operate at all times according to a written operation and maintenance plan for each capture system for secondary emissions from the BOPF and the ESP for the BOPF (which are subject to operating limits pursuant to ~~in~~ 40 CFR 63.7790(b)) and the BOPF baghouse and other baghouses for BOF shop ancillary operations (which are required to have bag leak detection systems). Each plan shall address the following elements:

i. Monthly inspections of the equipment that is important to the performance of the total capture system (e.g., pressure sensors, dampers, and damper switches). This inspection shall include observations of the physical appearance of the equipment (e.g., presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in the ductwork, and fan erosion). The operation and maintenance plan also must include requirements to repair any defect or deficiency in the capture system before the next scheduled inspection. [40 CFR 63.7800(b)(1)]

ii. Preventative maintenance for each control device, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance. [40 CFR 63.7800(b)(2)]

iii. Operating limits for each capture system applied to secondary emissions from the BOPF, which operating limits must be established according to the following requirements: [40 CFR 63.7800(b)(3)]

A. Select operating limit parameters appropriate for the capture system design that are representative and reliable indicators of the performance of the capture system. At a minimum, the Permittee must use appropriate operating limit parameters that indicate the level of the ventilation draft and the damper position settings for the capture system when operating to collect emissions, including revised settings for seasonal variations. Appropriate operating limit parameters for ventilation draft include, but are not limited to, volumetric flow rate through each separately ducted hood, total volumetric flow rate at the inlet to the control device to which the capture system is vented, fan motor amperage, or static pressure.

B. For each operating limit parameter selected above, designate the value or setting for the parameter at which the capture system operates during the process operation. As more than one process may operate simultaneously, designate the value or setting for the parameter at which the capture system operates during each possible configuration that the BOPF may operate.

C. Include documentation in the plan to support the selection of the operating limits established for the capture system. This documentation must include a description of the capture system design, a description of the capture system operating during production, a description of each selected operating limit parameter, a rationale for why you chose the parameter, a description of the method used to monitor the parameter according to the requirements of 40 CFR 63.7830(a), and the data used to set the value or setting for the parameter for each process configuration.

iv. Corrective action procedures for baghouses equipped with bag leak detection systems. In the event a bag leak detection system alarm is triggered, the Permittee shall initiate corrective action to determine the cause of the alarm within 1 hour of the alarm, initiate corrective action to correct the cause of the problem within 24 hours of the alarm, and complete the corrective action as soon as practicable. Corrective actions may include, but are not limited to the following: [40 CFR 63.7800(b)(4)]

A. Inspecting the baghouse for air leaks, torn or broken bags or filter media, or any other condition that may cause an increase in emissions.

B. Sealing off defective bags or filter media.

C. Replacing defective bags or filter media or otherwise repairing the control device.

D. Sealing off a defective baghouse compartment.

E. Cleaning the bag leak detection system probe, or otherwise repair the bag leak detection system.

F. Shutting down the process producing the particulate emissions.

v. Corrective action procedures for the ESP for the BOPFs, as it is equipped with a COMS. In the event the ESP exceeds the opacity operating limit in 40 CFR 63.7790(b)(3), the Permittee shall take corrective actions consistent with the site-specific monitoring plan in accordance with 40 CFR 63.7831(a)(8). [40 CFR 63.7800(b)(6)]

7.5.5-2 Work Practices Provisions for Startup, Shutdown and Malfunction Plans and associated procedures

a. NESHAP Provisions

- i. Pursuant to 40 CFR 63.7810, the Permittee must be in compliance with the emission limitations and operation and maintenance requirements in 40 CFR 63 Subpart FFFFFF at all times, except during periods of startup, shutdown and malfunction as defined in 40 CFR 63.2
- ii. Pursuant to 40 CFR 63.7810(c), the Permittee shall develop a written startup, shutdown, and malfunction plan for BOF according to the provisions of 40 CFR 63.6(e)(3).
- iii. Pursuant to 40 CFR 63.7835:
  - A. Consistent with 40 CFR 63.6(e) and 63.7(e)(1), deviations from NESHAP requirements that occur during a period of startup, shutdown, or malfunction are not violations if the Permittee demonstrates to the Illinois EPA that the Permittee was operating in accordance with 40 CFR 63.6(e)(1).
  - B. The Illinois EPA will determine whether deviations that occur during a period of startup, shutdown, or malfunction are violations, according to the provisions in 40 CFR 63.6(e).
- iv. The Permittee shall fulfill the applicable reporting requirements identified in Condition 5.10.5(b) and 40 CFR 63.7841(b)(4) and (c).
- v. The Permittee shall keep records in accordance with 40 CFR 63.7842(a)(2) related to startup, shutdown and malfunction.

b. Provisions of State Emission Standards, pursuant to 35 IAC 201.149 and Part 201 Subpart I

i. Subject to the following terms and conditions, the Permittee is authorized to continue to operate in violation of the applicable standards as specified below in the event of a malfunction or breakdown.

A. For the basic oxygen furnace, the applicable state standards in Condition 7.5.3(a)(iii), (b)(ii) and (c)), and

B. For the LMF, the applicable state standards in Conditions 7.5.3(b)(iii) and (c).

Note: This authorization is provided because the Permittee applied for such authorization in its CAAPP application, generally explaining why such continued operation would be required to prevent injury to personnel or severe damage to equipment, and describing the measures that will be taken to minimize emissions from any malfunctions and breakdowns.

ii. This authorization only allows such continued operation as necessary to prevent injury to personnel or severe damage to equipment and does not extend to continued operation solely for the economic benefit of the Permittee.

iv. Upon occurrence of excess emissions due to malfunction or breakdown, the Permittee shall, as soon as practicable, repair the units and/or re-establish applicable control practices.

v. The Permittee shall fulfill the applicable recordkeeping requirements of Condition 7.5.9(g) and reporting requirements of Condition 5.10.5-2.

vi. Following notification to the Illinois EPA (see Condition 5.10.5-2(a)(i)) of a malfunction or breakdown with excess emissions, the Permittee shall comply with all reasonable directives of the Illinois EPA with respect to such incident.

vii. This authorization does not relieve the Permittee from the continuing obligation to minimize excess emissions during malfunction or breakdown. As provided by 35 IAC 201.265, an authorization in a permit for continued operation with excess emissions during malfunction and breakdown does not shield the Permittee from enforcement for any such violation and only constitutes a prima facie defense to such an enforcement action provided that the Permittee has fully complied with all terms and conditions connected with such authorization.

7.5.5-3 Work Practices from Permit 10080021 (T1)

- a. Beginning October 31, 2012, during the refining phase of operation, the steam rings on the BOFs shall be operated in accordance with written procedures developed by the Permittee that set forth the timing and rate of steam injection as related to furnace operation and reflect good air pollution control practice to minimize emissions of particulate matter.
- b. Prior to October 31, 2012, during the refining phase of operation, the steam rings on the BOFs shall be operated in accordance with good air pollution control practice to minimize emissions of particulate matter.

7.5.5-4 Operational Requirements from Permit 11050006 [T1]

- a. The design capacity of the affected BOPF baghouse shall be at least 900,000 acfm, so as to be able to simultaneously control tapping of one BOPF and charging of the other BOPF and the simultaneous tapping of both BOPFs.
- b. When the new baghouse control system begins to operate:
  - i. The Permittee shall not conduct oxygen blowing simultaneously in both BOPFs unless this mode of operation is authorized by an appropriate construction permit.
  - ii. The Permittee shall continue to operate the capture systems that are part of the ESP control system in accordance with applicable operational requirements of the NESHAP for capture systems for secondary emissions from BOPFs (e.g. 40 CFR 63.7800(b)(1) and (3)), even though the ESP control system only controls primary emissions from the BOPFs.
- c. After the shakedown of the affected baghouse system is complete and in no case later than six months after initial operation of the BOPFs with the affected baghouse system, the existing ESP shall only be used for control of emissions from charging and tapping of the BOPFs during an extended outage of the affected BOPF baghouse.

7.5.6 Production and Emission Limitations from Permits 95010001 and 83050042

- a. Total combined production of liquid steel from the affected BOFs shall not exceed 11,000 net tons per day, averaged over any calendar month [T1].
- b. BOF Shop Emissions (tons/yr total) shall not exceed the following limits [T1]:

<u>PM</u>	<u>PM<sub>10</sub></u>	<u>NO<sub>x</sub></u>	<u>VOM</u>	<u>CO</u>	<u>Lead</u>
<u>510</u>	<u>451</u>	<u>70</u>	<u>12</u>	<u>16,097</u>	<u>1.43</u>

c. BOF ESP Stack (charge, refine, tap) emissions shall not exceed the following limits [T1]:

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Yr)</u>
<u>PM</u>	<u>0.16</u>	<u>262.80</u>
<u>PM<sub>10</sub></u>	<u>0.16</u>	<u>262.80</u>
<u>NO<sub>x</sub></u>	<u>0.0389</u>	<u>69.63</u>
<u>VOM</u>	<u>0.0060</u>	<u>10.74</u>
<u>CO</u>	<u>8.993</u>	<u>16,097.47</u>
<u>Lead</u>	<u>0.1934 lbs/hr</u>	<u>1.26</u>

d. BOF Roof Monitor emissions shall not exceed the following limits [T1]:

<u>Pollutant</u>	<u>(Lbs/Ton)</u>	<u>(Tons/Yr)</u>
<u>PM</u>	<u>0.0987</u>	<u>176.71</u>
<u>PM<sub>10</sub></u>	<u>0.06614</u>	<u>118.40</u>
<u>Lead</u>	<u>0.0129 lbs/hr</u>	<u>0.08</u>

e. Hot Metal Desulfurization and Hot Metal Transfer emissions shall not exceed the following limits [T1]:

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Yr)</u>
<u>PM</u>	<u>0.03721</u>	<u>58.88</u>
<u>PM<sub>10</sub></u>	<u>0.03721</u>	<u>58.88</u>
<u>VOM</u>	<u>0.0010</u>	<u>1.58</u>
<u>Lead</u>	<u>0.0133 lbs/hr</u>	<u>0.09</u>

f. Hot metal charging and ladle slag skimming emissions shall not exceed the following limits [T1]:

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Yr)</u>
<u>PM</u>	<u>0.0050</u>	<u>7.94</u>
<u>PM<sub>10</sub></u>	<u>0.0050</u>	<u>7.94</u>

g. Emissions from Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy Baghouse #2) shall not exceed the following limits (see Section 7.1):

<u>Pollutant</u>	<u>Emission Factor (Lbs/Ton)</u>	<u>Maximum Emissions (Tons/Yr)</u>
<u>PM</u>	<u>0.00715</u>	<u>12.80</u>
<u>PM<sub>10</sub></u>	<u>0.00715</u>	<u>12.80</u>

h. Compliance with the annual limits in Conditions 7.5.6(b) through (g) shall be determined on a calendar year basis [T1].

Note: These provisions (Conditions 7.5.6(a) through (h) were originally established in Construction Permit 95010001.

- i. Emissions of particulate matter from the Ladle metallurgy station and the existing argon stirring station shall not exceed 16.20 TPY [T1].
- j. The maximum process weight for 1) argon stirring, 2) ladle reheat, 3) alloy addition, 4) ladle slag skimming, and 5) hot metal desulfurization shall not exceed 356.7 t/hr for 8,760 hours per year [T1].

Note: These provisions (Conditions 7.5.6(i) and (j)) were originally established in Permit 83050042.

#### 7.5.6-1 Emission Limit from Permit 11050006

- a. Following completion of the shakedown period for the affected BOPF baghouse system, the emissions of particulate matter (PM) from the affected BOPF baghouse, as would be measured by USEPA Method 5, 5D or 17, shall not exceed 0.005 grains per dry standard cubic foot (gr/dcsf).

#### 7.5.7 Testing Requirements

- a. Testing requirements in 40 CFR Part 63 Subpart FFFFF:

- i. For the BOPF, pursuant to testing provisions of this NESHAP, as provided below, testing of particulate matter emissions of the ESP shall be conducted at least every 30 months and testing of the affected BOPF baghouse shall be conducted at least every five years.
  - A. Pursuant to 40 CFR 63.7821(b), for the BOPF (which are equipped with a control device other than a baghouse), the Permittee shall conduct performance tests for the ESP no less frequently than twice (at mid-term and renewal) during each term of the title V operating permit (i.e., this CAAPP permit).
  - B. Pursuant to 40 CFR 63.7821(c), for the BOPF (as they are equipped with a baghouse), the Permittee shall conduct performance tests for the baghouse no less frequently than once every 60 months.
- ii. Pursuant to 40 CFR 63.7821(c), for each BOPF Process equipped with a baghouse, other than the BOPF, the Permittee shall conduct subsequent performance tests no less frequently than once during each term of the Title V operating permit (every 60 months).

iii. The Permittee shall use the following test methods for compliance demonstration with the emission limits for particulate matter [40 CFR 63.7822(b)]:

A. The Permittee shall determine the concentration of particulate matter according to the following test methods in Appendix A to 40 CFR Part 60.

1. Method 1 to select sampling port locations and the number of traverse points. Sampling ports must be located at the outlet of the control device and prior to any releases to the atmosphere.
2. Method 2, 2F, or 2G to determine the volumetric flow rate of the stack gas.
3. Method 3, 3A, or 3B to determine the dry molecular weight of the stack gas.
4. Method 4 to determine the moisture content of the stack gas.
5. Method 5, 5D, or 17, as applicable, to determine the concentration of particulate matter (front half filterable catch only).

B. The Permittee shall collect a minimum sample volume of 60 dry standard cubic feet (dscf) of gas during each particulate matter test run. Three valid test runs are needed to comprise a performance test.

iv. Pursuant to 40 CFR 63.7822(g), for the BOPF ESP (which is a primary emission control system applied to emissions from a BOPF with an open hood system), the Permittee shall complete the following requirements:

A. Sample only during the steel production cycle. The Permittee shall conduct sampling under conditions that are representative of normal operation. The Permittee shall record the start and end time of each steel production cycle and each period of abnormal operation; and

B. Sample for an integral number of steel production cycles. The steel production cycle begins when the scrap is charged to the BOF and ends 3 minutes after the slag is emptied from the vessel into the slag pot.

v. Pursuant to 40 CFR 63.7822(h), for a control device applied to emissions from BOPF shop ancillary operations (hot metal transfer, slag skimming, hot metal desulfurization, or ladle metallurgy), the Permittee shall sample only when the operation(s) is being conducted.

vi. The Permittee shall conduct each visible emissions performance test such that the opacity observations overlap with the performance test for particulate matter [40 CFR 63.7823(b)].

vii. The following test methods shall be used for opacity observations pursuant to 40 CFR 63.7823(d):

Using a certified observer, the Permittee shall determine the opacity of emissions according to Method 9 in Appendix A to Part 60 as specified below:

A. Instead of procedures in section 2.4 of Method 9 in Appendix A to 40 CFR Part 60, the Permittee shall record observations to the nearest 5 percent at 15-second intervals for at least three steel production cycles.

B. Instead of procedures in section 2.5 of Method 9 in Appendix A to 40 CFR Part 60, the Permittee shall determine the 3-minute block average opacity from the average of 12 consecutive observations recorded at 15-second intervals.

b. Pursuant to Sections 39.5(7)(d) and (p) of the Act, in conjunction with the testing of emissions required for an emission unit in the BOPF shop by the NESHAP (Condition 7.5.7(a), which requires testing at the midterm and renewal of this CAAPP permit), the Permittee shall also have testing conducted to measure emissions of other pollutants as follows.

i. Testing shall be conducted for PM/PM<sub>10</sub>\*, lead and other pollutants as follow: BOPFs-Furnaces (ESP) - NO<sub>x</sub>, VOM and CO; and Hot Metal Desulfurization and Slag Skimming (Baghouses) - VOM.

\* As an alternative to measurements for PM<sub>10</sub> emissions, the measured results for PM, as determined in accordance with the NESHAP, shall be considered PM<sub>10</sub>, as provided for by 35 IAC 212.108.

ii. The relevant test method specified by the NESHAP or the following USEPA test methods shall be used for this testing, unless another USEPA test method is approved by the Illinois EPA during the review of a

Test Plan submitted by the Permittee prior to testing.

<u>Location of Sample Points</u>	<u>Method 1</u>
<u>Gas Flow and Velocity</u>	<u>Method 2</u>
<u>Flue Gas Weight</u>	<u>Method 3</u>
<u>Moisture</u>	<u>Method 4</u>
<u>VOM</u>	<u>Method 18 or 25A</u>
<u>NO<sub>x</sub></u>	<u>Method 7E or 19</u>
<u>CO</u>	<u>Method 10 or 10B</u>
<u>Lead</u>	<u>Method 29</u>

iii. For this emission testing, test notifications and reporting shall be done by the Permittee in accordance with Condition 8.6.2 and 8.6.3 of this permit.

c. As provided by 35 IAC 212.446(c), observations to determine compliance with the opacity standard in 35 IAC 212.446(c) (see Condition 7.5.3(a)(iii)) shall be performed in accordance with 40 CFR Part 60, Appendix A, Method 9, incorporated by reference in 35 IAC 212.113, except that compliance shall be determined by averaging any 12 consecutive observations taken at 15 second intervals.

7.5.7-1 Emission Testing Requirements from Permit 11050006

a. The Permittee shall have emissions testing conducted for the affected BOPF baghouse and the existing ESP by a qualified testing service as follows:

i. A performance test for emissions of PM (filterable particulate matter) shall be promptly conducted, in accordance with 40 CFR 63.7824(c), following initial operation of the BOPFs with the affected BOPF baghouse system to establish new operating limits for the capture systems for the BOPFs pursuant to the NESHAP and this permit. For this purpose, performance testing shall be conducted for operation of the BOPFs with the affected BOPF baghouse and ESP systems.

ii. A further test for PM emissions and tests for emissions of filterable PM<sub>10</sub> and PM<sub>2.5</sub>, condensable particulate matter, NO<sub>x</sub>, CO, VOM and lead shall be conducted within one year of initial operation of both BOPFs with charging and tapping controlled by the affected BOPF baghouse system. The measurements for emissions of PM and other pollutants required by these tests and the tests required by Condition 7.5.7(a)(iii) may be combined with other measurements required for the BOPFs if measurements are conducted within the time periods specified by these conditions. In conjunction with this emission testing, the Permittee shall conduct or have conducted measurements as necessary to evaluate the actual operation and capture efficiency achieved by

the hoods for charging and tapping as compared to their design. These tests and measurements shall be the basis of the Project Report required by Condition 7.5.10-1(c) for the affected BOPF baghouse system.

iii. A follow-up test for emissions of PM, filterable PM<sub>10</sub> and PM<sub>2.5</sub>, condensable particulate matter and lead shall be conducted between 24 and 36 months of the completion of the emission testing required by Condition 7.5.7-1(a)(ii).

b. i. Testing for PM emissions shall be conducted using applicable methods and procedures specified by the NESHAP.

ii. Applicable USEPA test methods and procedures shall be used for testing of emissions of pollutants other than PM, including the following methods for measurement of the emissions of different pollutants, unless other methods are approved by the Illinois EPA as part of the approval of a test plan. Refer to 40 CFR 60, Appendix A, and 40 CFR 51, Appendix M, for USEPA test methods.

<u>Filterable PM<sub>10</sub> and PM<sub>2.5</sub></u>	<u>Method 201 or 201A</u>
<u>Condensable Particulate</u>	<u>Method 202</u>

iii. During all test runs for emissions of PM and filterable PM<sub>10</sub> or PM<sub>2.5</sub> required by Condition 7.5.7-1(a), observations of the opacity of the exhaust from the roof monitor of the BOPF shop shall also be conducted in accordance with applicable methods and procedures of the NESHAP and information recorded on the timing of charging, refining, tapping and deslagging of each BOPF, so opacity data may be correlated with the operation of the BOPFs.

c. The Permittee shall submit a written plan to the Illinois EPA for review and comment for this testing. This plan shall be submitted at least 60 days prior to the actual date of testing and include the following information at a minimum:

i. A description of the planned emission test.

ii. The person(s) who will be performing sampling and analysis and their experience with similar tests.

iii. The specific operating conditions under which testing will be performed, including a discussion of why these conditions will appropriately address operation of the BOPFs and associated control systems and the levels of operating parameters of the control systems at or within which compliance is intended to be shown.

- iv. The specific determination of emissions intended to be made, including sampling and monitoring locations.
  - v. The test methods that will be used, with the specific analysis method.
  - vi. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification.
  - vii. A statement that the testing will be performed by a qualified independent testing service.
- d.
- i. Prior to carrying out each set of emission tests, the Permittee shall notify the Illinois EPA a minimum of 30 days prior to the scheduled date of these tests with the exact date and time that testing would begin, to enable the Illinois EPA to witness these tests.
  - ii. If the scheduled date for testing is changed, the Permittee shall inform the Illinois EPA within 5 working days of the new date and time for testing.
  - iii. Notwithstanding the above, the Illinois EPA may, at its discretion, accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- e. The Permittee shall submit three copies of the Final Report(s) for emissions tests to the Illinois EPA no later than 60 days after completion of sampling. The Final Report shall include at a minimum:
- i. General information, i.e., date of test, names of testing personnel, and names of Illinois EPA observers.
  - ii. A summary of the measured emissions in pounds per hour, lbs/ton steel and, for PM, in gr/dscf.
  - iii. Detailed data for operating parameters of the control system during testing, including data recorded by the operational monitoring systems and, as applicable, proposed operating parameter limits based on the emission testing.
  - iv. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.
  - v. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.

vi. A comparison of measured data to applicable emission standards and limits and a statement whether compliance was demonstrated.

vii. The data for opacity of the exhaust through the roof monitor of the BOPF shop during testing and the timing of charging, refining, tapping and deslagging of the BOPFs, as determined and recorded pursuant to Condition 7.5.7-1(b)(iii), accompanied by copies of the certification(s) pursuant to USEPA Method 9 of the individual(s) who made the observations of opacity.

f. The Permittee shall retain copies of the reports for these emission tests for at least five years beyond the date that an emission test report is superseded by subsequent testing for all pollutants.

#### 7.5.7-2 Other Testing Requirements from Permit 11050006

- a. In conjunction with the emission testing required by Condition 7.5.7-1(a)(ii) or (iii), the Permittee shall conduct or have conducted measurements as necessary for a determination of the PM control efficiency of the affected BOPF baghouse during normal operation of the BOPFs, including associated control systems, which efficiency may be determined either "directly" (e.g., by measurements of the PM loading at the inlet of the affected BOPF baghouse for comparison to the measured PM emission rate) or "indirectly" (e.g., by recordkeeping for the amount of material collected by this baghouse over a week or month, to determine an average collection rate per hour or per steel production cycle, for comparison to the measured emission rate).
- b. These measurements and the determination of the PM control efficiency of the affected BOPF baghouse, in percent, shall be included in the relevant report for emission testing pursuant to Condition 7.5.7-1(e).

#### 7.5.8 NESHAP Monitoring and Inspection Requirements

- a. NESHAP Monitoring for Capture Systems (40 CFR 63.7830(a))

For each capture system for secondary emissions from the BOPF (as it is subject to an operating limit pursuant to ~~in~~ 40 CFR 63.7790(b)(1) established in Permittee's capture system operation and maintenance plan), the Permittee shall install, operate, and maintain a continuous parameter monitoring system (CPMS) according to the requirements in 40 CFR 63.7830(a) and 63.7831(e).

- b. NESHAP Monitoring for Baghouses (40 CFR 63.7830(b)(1) and 63.7833(c))

The Permittee shall operate and maintain a bag leak detection system on each baghouse for the BOPF and a BOPF shop ancillary operation (i.e., Baghouse #2, the slag skimmer baghouse and the BOPF baghouse) according to 40 CFR 63.7831(f) and 63.7833(c)(1) and (4) and monitor the relative change in particulate matter loadings according to the requirements in 40 CFR 63.7832.

c. NESHAP Inspections for Baghouses (40 CFR 63.7830(b)(4) and 63.7833(c)(2))

The Permittee shall conduct inspections of each baghouse for the BOPF or a BOPF shop ancillary operation at the specified frequencies according to the following requirements+. Pursuant to 40 CFR 63.7833(c)(3), the Permittee shall also maintain all records needed to document conformance with these requirements.

- i. Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in the operation and maintenance manual. [40 CFR 63.7830(b)(4)(i)]
- ii. Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms. [40 CFR 63.7830(b)(4)(ii)]
- iii. Check the compressed air supply for pulse-jet baghouses each day. [40 CFR 63.7830(b)(4)(iii)]
- iv. Monitor cleaning cycles to ensure proper operation using an appropriate methodology. [40 CFR 63.7830(b)(4)(iv)]
- v. Check bag cleaning mechanisms for proper functioning through monthly visual inspections or equivalent means. [40 CFR 63.7830(b)(4)(v)]
- vi. Make monthly visual checks of bag tension on reverse air and shaker-type baghouses to ensure that bags are not kinked (knead or bent) or laying on their sides. The Permittee does not have to make this check for shaker-type baghouses using self-tensioning (spring-loaded) devices. [40 CFR 63.7830(b)(4)(vi)]
- vii. Confirm the physical integrity of the baghouse through quarterly visual inspections of the baghouse interior for air leaks. [40 CFR 63.7830(b)(4)(vii)]
- viii. Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors, or equivalent means. [40 CFR 63.7830(b)(4)(viii)]

d. NESHAP Monitoring for the ESP (40 CFR 63.7830(d) and 63.7833(g) )

i. For the ESP for BOPF (which is ~~are~~ subject to an opacity operating limit pursuant to 40 CFR 63.7790(b)(3)), the Permittee shall operate and maintain a continuous opacity monitoring system (COMS) according to the requirements in 40 CFR 63.7831(h) and monitor the hourly average opacity of emissions exiting the stack according to the requirements in 40 CFR 63.7832.- [40 CFR 63.7830(d)]-

ii. If the hourly average opacity for the ESP for the BOPF exceeds the operating limit, the Permittee shall follow the following procedures:

A. The Permittee shall initiate corrective action to determine the cause of the exceedance within 1 hour. During any period of corrective action, the Permittee must continue to monitor and record all required operating parameters for equipment that remains in operation. Within 24 hours of the exceedance, the Permittee shall measure and record the hourly average operating parameter value for the emission unit on which corrective action was taken. If the hourly average parameter value meets the applicable operating limit, then the corrective action was successful and the emission unit is in compliance with the applicable operating limit. [40 CFR 63.7833(g)(1)]

B. If the required initial corrective action was not successful, the Permittee shall complete additional corrective action within the next 24 hours (48 hours from the time of the exceedance). During any period of corrective action, the Permittee shall continue to monitor and record all required operating parameters for equipment that remains in operation. After this second 24-hour period, the Permittee shall again measure and record the hourly average operating parameter value for the emission unit on which corrective action was taken. If the hourly average parameter value meets the applicable operating limit, then the corrective action was successful and the emission unit is in compliance with the applicable operating limit. [40 CFR 63.7833(g)(2)]

C. For purposes of 40 CFR 63.7833(g)(1) and (2), in the case of an exceedance of the hourly

average opacity operating limit for an ESP, measurements of the hourly average opacity based on visible emission observations in accordance with Method 9 may be taken to evaluate the effectiveness of corrective action. [40 CFR 63.7833(g)(3)]

D. If the second attempt at corrective action required by 40 CFR 63.7833(g)(2) was not successful, the Permittee shall report the exceedance as a deviation in the next semiannual compliance report according to 40 CFR 63.7841(b). [40 CFR 63.7833(g)(4)]

e. NESHAP Requirements for Installation, Operation, And Maintenance of Monitors for Baghouses [40 CFR 63.7831(f)]

For the BOPF baghouse and the baghouses for BOPF shop ancillary operations (i.e., the slag skimmer baghouse and Baghouse #2), which are all subject to 40 CFR 63.7830(b)(1)), the Permittee shall install, operate and maintain the bag leak detection system according to the following requirements of 40 CFR 63.7831(f) and monitor the relative change on particulate matter loading according to the requirements in 40 CFR 63.7832:

- i. The system must be certified by the manufacturer to be capable of detecting emissions of particulate matter at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less. [40 CFR 63.7831(f)(1)]
- ii. The system must provide output of relative changes in particulate matter loadings. [40 CFR 63.7831(f)(2)]
- iii. The system must be equipped with an alarm that will sound when an increase in relative particulate loadings is detected over a preset level. The alarm must be located such that it can be heard by the appropriate plant personnel. [40 CFR 63.7831(f)(3)]
- iv. Each system that works based on the triboelectric effect must be installed, operated, and maintained in a manner consistent with the guidance document, "Fabric Filter Bag Leak Detection Guidance," EPA-454/R-98-015, September 1997. The Permittee may install, operate, and maintain other types of bag leak detection systems in a manner consistent with the manufacturer's written specifications and recommendations. [40 CFR 63.7831(f)(4)]
- v. To make the initial adjustment of the system, the Permittee shall establish the baseline output by adjusting the sensitivity (range) and the averaging

period of the device. Then, the Permittee shall establish the alarm set points and the alarm delay time. [40 CFR 63.7831(f)(5)]

vi. Following the initial adjustment, the Permittee may not adjust the sensitivity or range, averaging period, alarm set points, or alarm delay time, except as detailed in the Permittee's operation and maintenance plan. The Permittee may not increase the sensitivity by more than 100 percent or decrease the sensitivity by more than 50 percent over a 365-day period unless a responsible official certifies, in writing, that the baghouse has been inspected and found to be in good operating condition. [40 CFR 63.7831(f)(6)]

vii. Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors. [40 CFR 63.7831(f)(7)]

f. NESHAP Requirements for Installation, Operation And Maintenance of the COMS for the ESP [40 CFR 63.7831(h)]

For the ESP (which is subject to the opacity limit in 40 CFR 63.7790(b)(3)), the Permittee shall install, operate, and maintain a COMS according to the following requirements in 40 CFR 63.7831 (h)(1) through (4):

i. The Permittee shall install, operate, and maintain each COMS according to Performance Specification 1 in 40 CFR Part 60, Appendix B.

ii. The Permittee shall conduct a performance evaluation of each COMS according to 40 CFR 63.8 and Performance Specification 1 in Appendix B to 40 CFR Part 60.

iii. Each COMS must complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

iv. COMS data must be reduced to 6-minute averages as specified in 40 CFR 63.8(g)(2) and to hourly averages where required by 40 CFR 63 Subpart FFFFF.

g. General Requirements for Monitoring [40 CFR 63.7832]:

i. For purposes of the NESHAP, 40 CFR 63 Subpart FFFFF, except for monitoring malfunctions, out-of-control periods as specified in 40 CFR 63.8(c)(7), associated repairs, and required quality assurance or control activities (including as applicable, calibration

checks and required zero and span adjustments), the Permittee shall monitor continuously (or collect data at all required intervals) at all times a subject control/capture system is operating.

ii. The Permittee may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels or to fulfill a minimum data availability requirement, if applicable. The Permittee shall use all the data collected during all other periods in assessing compliance.

iii. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

#### 7.5.8-1 Additional Requirements for Opacity Observations

The following opacity observations shall be performed pursuant to Section 39.5(7)(a) and (p) of the Act:

##### a. Routine Opacity Observations for the BOF Shop

The Permittee shall have the opacity of the exhaust of the building housing the BOF determined by a qualified observer in accordance with USEPA Method 9 while the affected BOF(s) is operating, as further specified below.

i. Observations of opacity shall be conducted on the following frequency unless absence of adequate daylight or weather conditions preclude scheduled observation, in which case, the next observations shall be conducted on the next operating day of the BOF during which observations of opacity can reasonably be conducted in accordance with USEPA Method 9, except that reading shall be taken as a 3-minute average (12 consecutive observations taken 15 seconds intervals).

ii. If a baghouse is not installed for control of tapping emissions from the BOF, these readings shall be performed for at least five days out of every seven. A day is defined as any day when a BOF is in operation for a minimum of four hours during conditions that are acceptable for Method 9 readings. A minimum of 60 consecutive minutes of opacity readings must be obtained and must encompass at least one steel production cycle. A production cycle is defined as the beginning of scrap charging to the completion of deslagging of the steelmaking vessel.

Results of these readings shall be reduced to three minute rolling averages.

iii. Beginning 30 days after initial startup of a baghouse for control of tapping emissions from the BOFs, the Permittee shall have the opacity of the exhaust of the building housing the BOF determined by a qualified observer in accordance with USEPA Method 9 while the affected BOF(s) are operating, as further specified below.

A. The duration of opacity observations for each test shall be one complete steel making cycle.

B. Observations of opacity shall be conducted on the following frequency unless absence of adequate daylight or weather conditions preclude scheduled observation, in which case, the next observations shall be conducted on the next operating day of the BOF during which observations of opacity can reasonably be conducted in accordance with USEPA Method 9.

C. On a weekly basis (at least once every seven operating days of BOF) except as provided below.

D. On a daily basis (at least 5 days out of seven operating days of BOF) if any of the five previous 3-minute average observations measured opacity of 18 percent or more, continuing on a daily basis until the maximum opacities measured in five consecutive daily observations are all less than 18 percent, at which time observations on a weekly basis shall resume.

b. Additional Opacity Observations for the BOF Shop

Upon written request by the Illinois EPA, additional opacity observations shall be conducted within 5 operating days for the BOF from the date of the request by the Illinois EPA or on the date agreed upon by the Illinois EPA, whichever is later. For such observations conducted pursuant to a request from the Illinois EPA:

i. The Permittee shall notify the Illinois EPA at least 24 hours in advance of the date and time of these observations, in order to enable the Illinois EPA to witness the observations. This notification shall include the name and employer of the qualified observer(s).

ii. The Permittee shall promptly notify the Illinois EPA of any changes in the time or date for observations.

iii. The duration of these observations shall cover a complete heat or cycle of the affected BOF.

iv. The Permittee shall provide a copy of the current certification for the opacity observer and observer's readings to the Illinois EPA at the time of the observations, if the Illinois EPA personnel are present.

v. The Permittee shall keep records for all opacity measurements for the BOF made in accordance with USEPA Method 9 for the affected operations that the Permittee conducts or that are conducted at its behest by individuals who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements, a description of the measurements that were made, the operating condition of the affected operations, the observed opacity, and copies of the raw data sheets for the measurements.

c. Opacity Observations for the ESP for the BOF

i. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

ii. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

7.5.8-2. Operational Monitoring for Steam Rings from Construction Permit 10080021

The Permittee shall install, maintain and operate a continuous monitoring system on each steam ring for the steam valve position (open or closed) and the rate at which steam is being injected.

7.5.8-3 Monitoring Requirements from Permit 11050006

a. The Permittee shall fulfill applicable monitoring requirements of the NESHAP, 40 CFR 63 Subpart FFFFF, for the affected BOPF baghouse system by operating a bag leak detection system on the affected BOPF baghouse, as specified by 40 CFR 63.7830(b)(1), and 63.7833(c)(1) and (4), with timely initiation of appropriate corrective action(s) in the event that the bag leak detection system alarm is triggered and fulfillment of associated

recordkeeping and reporting requirements. (See also Condition 7.5.8(b)(i).)

- b. The Permittee shall monitor the following operating parameters for the affected BOPF baghouse system if not otherwise monitored pursuant to the NESHAP. For this purpose, the Permittee may either directly monitor these parameters or indirectly derive and automatically record data for these parameters from other operating parameters that are continuously monitored.
  - i. The actual volumetric flow rate, in cubic feet per minute (acfm), through each separately ducted hood.
  - ii. The actual volumetric flow rate (acfm) at the inlet to the baghouse.
- c. When the new baghouse control system begins to operate and the ESP is only controlling primary emissions, the Permittee shall continue to conduct operational monitoring for the capture systems associated with the ESP in accordance with applicable requirements of the NESHAP (e.g., 40 CFR 63.7830(a) and 63.7831(e)), even though the ESP only controls primary emissions of the BOPFs.

#### 7.5.9 Recordkeeping Requirements

The Permittee shall maintain records of the following items pursuant to Sections 39.5(7)(a) and (e) of the Act:

- a. 40 CFR 63 Subpart FFFFF (40 CFR 63.7842 and 63.7843)
  - i. The Permittee shall keep the following records specified in 40 CFR 63.7842 (a)(1) through (a)(3):
    - A. A copy of each notification and report that the Permittee submitted to comply with 40 CFR 63 Subpart FFFFF, including all documentation supporting any initial notification or notification of compliance status that the Permittee submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv).
    - B. The records in 40 CFR 63.6(e)(3)(iii) through (v) related to startup, shutdown, and malfunction.
    - C. Records of performance tests, performance evaluations, and opacity observations as required in 40 CFR 63.10(b)(2)(viii).
  - ii. For each COMS, the Permittee shall keep the following records specified in 40 CFR 63.7842 (b)(1) through (4):

- A. Records described in 40 CFR 63.10(b)(2)(vi) through (xi).
  - B. Monitoring data for a performance evaluation as required in 40 CFR 63.6(h)(7)(i) and (ii).
  - C. Previous (that is, superseded) versions of the performance evaluation plan as required in 40 CFR 63.8(d)(3).
  - D. Records of the date and time that each deviation started and stopped, and whether the deviation occurred during a period of startup, shutdown, or malfunction or during another period.
- iii. The Permittee shall keep the records specified in 40 CFR 63.6(h)(6) for visual observations.
- iv. The Permittee shall keep the records required in 40 CFR 63.7833 and 63.7834 to show continuous compliance with each emission limitation and operation and maintenance requirement that applies to the Permittee.
- v. The Permittee shall keep the records in a form suitable and readily available for expeditious review, according to 40 CFR 63.10(b)(1).
- vi. As specified in 40 CFR 63.10(b)(1), the Permittee shall keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.
- vii. The Permittee shall keep each record on site for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to 40 CFR 63.10(b)(1). The Permittee may keep the records offsite for the remaining 3 years.
- viii. The Permittee shall maintain a current copy of the operation and maintenance plan required in 40 CFR 63.7800(b) onsite and available for inspection upon request.
- ix. A. The Permittee shall maintain a copy of the site-specific monitoring plan for each CPMS required by 40 CFR 63.7830, pursuant to 40 CFR 63.7831(a).
- B. If the Permittee operates under manufacturer's specifications or manufacturer's instructions,

such manufacturer's documentation shall be kept at the source as part of the required records.

b. Recordkeeping from Permits 72080043 and 95010001:

- i. Total production of molten steel at the BOFs (daily, monthly, and annual production in tons).
- ii. Records of all opacity observations.

c. Recordkeeping carried over from Permit 08110016:

The operating and maintenance records that the Permittee maintains for the ESP shall include the following information for the induced draft fans on the ESP, in addition to other required information:

- i. The periods of time when the BOFs operated with less than three properly functioning fans, with description and explanation.
- ii. The periods of time when the BOFs are operating and a spare fan is not available, with the identity of the fan(s) that were not available and explanation, e.g., spare fan not available due to regularly scheduled maintenance or spare fan not available due to unplanned breakdown of the main bearings.

d. Recordkeeping for the steam rings on the BOF furnaces from Construction Permit 10080021:

- i. A. The Permittee shall maintain a record of the steam valve position (open or closed) and the rate at which steam is being injected, as determined by the continuous monitoring systems required by Condition 7.5.8(g).
- B. In addition to keeping records of the data measured by these monitoring systems, the Permittee shall keep records of the operation, calibration and maintenance of these systems.
- ii. The Permittee shall maintain an operating log or other records for the BOF and steam rings that contain information generally documenting the steam rings are being operated in accordance with Condition 7.5.5-3(c), including information for the timing of the refining phase of each heat of a BOF furnace.
- iii. The Permittee shall maintain detailed records of the following information for each heat in a BOF furnace in which the steam ring was not operated during the refining phase:
  - A. Identification of the heat and the duration of the incident, i.e., start time and time normal

operation was achieved or the refining phase was completed.

B. Description of the incident, impact on effectiveness of the steam ring, probable cause, and corrective actions.

C. Verification that the established procedures were followed or a description and explanation why procedures were not followed.

Note: These records may be kept with other logs or records that the Permittee keeps for the BOF furnaces and their instrumentation and need not be kept as a separate record.

e. Production Records

The Permittee shall keep annual records (tons/year) of steel processed at the slag skimming station, the argon stirring station and ladle metallurgy furnace station.

f. Emissions Records

The Permittee shall keep the following records related to the emissions of the affected basic oxygen processes to verify compliance with the applicable limits in Condition 7.5.6(b) through (g):

i. A file containing the emission factors used by the Permittee to determine emissions of different pollutants from such processes, with supporting documentation. These records shall be reviewed and updated by the Permittee as necessary to assure that the emission factors that it uses to determine emissions of the affected processes do not understate actual emissions, including review when emission testing is conducted for an affected process. These records shall be prepared and copies sent to the Illinois EPA in accordance with Condition 5.9.6(c), except that copies of the initial records shall be submitted to the Illinois EPA by no later than August 3, 2012.

ii. Records for any periods of operation of an affected processes that are not otherwise addressed in the required records during which the established emission factor in Condition 7.5.9(f)(i) would understate actual emissions of the process, with description of the period of operation and an estimate of the additional emissions during such period that would not be accounted for by the established factor, with supporting explanation and calculations.

- iii. Records for the annual emissions of such processes for comparison to the limits in Conditions 7.5.6(c) through (g), with supporting calculations.
- iv. Records for combined annual emissions of such affected processes, based on the summation of the above data, for comparison to the limits in Condition 7.5.6(b).
- g. In the operational logs or other records for the operation of the affected basic oxygen processes, the Permittee shall keep records identifying process upsets that result in the generation of additional opacity or PM emissions, such as loss of the slag cover on the molten metal in a vessel or a spill of molten metal. For these upsets, these records shall include the time of the upset, a description of the upset, and a discussion of the consequences for PM emissions from the affected basic oxygen processes.
- h. Records for Malfunctions or Breakdowns

Pursuant to 35 IAC 201.263, the Permittee shall maintain records of continued operation of the affected Basic Oxygen Furnace and Ladle Metallurgy Furnace as addressed by Condition 7.5.5-2(b), during malfunctions or breakdowns, which at a minimum, shall include the following records. The preparation of these records shall be completed within 45 days of an incident, unless the Permittee conducts a root cause analysis for the incident, in which case the preparation of these records, other than the root cause analysis, shall be completed within 120 days of the incident.

- i. Date, time and duration of the incident.
- ii. A detailed description of the incident, including:
  - A. A chronology of significant events during and leading up to the incident.
  - B. Relevant operating data for the unit, including information such as operator log entries and directives provided by management during the incident.
  - C. The measures taken to reduce the quantity of emissions and the duration of the incident including the resources utilized to address the incident.
  - D. The magnitude of emissions during the incident.
- iii. An explanation why continued operation of an affected basic oxygen furnace was necessary to prevent personnel injury or prevent equipment damage.

- iv. A discussion of the cause(s) or probable cause(s) of the incident including the following,
  - A. Whether the incident was sudden, unavoidable, or preventable, including:
    - 1. Why the equipment design did not prevent the incident;
    - 2. Why better maintenance could not have avoided the incident;
    - 3. Why better operating practices could not have avoided the incident; and
    - 4. Why there was no advance indication for the incident.
  - B. Whether the incident stemmed from any activity or event that could have been foreseen, avoided or planned for.
  - C. Whether the incident was or is part of a recurring pattern indicative of inadequate design, operation or maintenance.
- v. A description of any steps taken or to be taken to prevent similar future incidents or reduce their frequency and severity.
- vi. As an alternative to keeping the records required by Condition 7.5.9(g)(iv), the Permittee may perform a root cause analysis. For this purpose, a root cause analysis is an analysis whose purpose is to determine, correct and eliminate the primary causes of the incident and the excess emissions resulting there from. If the Permittee performs a root cause analysis method that would define the problem, define all causal relationships, provide a causal path to the root cause, delineate the evidence, and provide solutions to prevent a recurrence. Such an analysis shall be completed within one year of the incident.

7.5.9-1 Recordkeeping Requirements from Permit 11050006

- a. The Permittee shall maintain a file or other records that contain the following information for the affected BOPF baghouse system:
  - i. Design data for the capture hoods for charging and tapping, including the analysis for the levels of capture achieved by the hoods for emissions of particulate, i.e., percentages of total emissions from charging and tapping that are collected and directed to the affected BOPF baghouse.

- ii. The manufacturer's specifications for the capacity (acfm and scfm) and particulate emissions (gr/dscf) of the affected BOPF baghouse and the manufacturer's recommended operating and maintenance procedures for this baghouse.
- b. After charging and tapping of both BOPFs first begin to be controlled with the affected BOPF baghouse system, the Permittee shall keep records of the following information for the BOPFs. The preparation of these records by the Permittee may be automated or these records may be prepared manually or by a combination of manual and automated methods. These records may be combined with other records that are kept by the Permittee for the BOPFs.
  - i. Records for the BOPFs for the total number of steel production cycles per day (24-hours).
  - ii. Records for the following information, as calculated from data monitored pursuant to Condition 7.5.8-1(b):
    - A. The average flow rate through each separately ducted hood for each BOPF for each steel production cycle (acfm).
    - B. The average flow rate at the inlet to the affected BOPF baghouse per steel production cycle (acfm/cycle), daily (24-hour) average.
    - C. The average flow rate at the inlet to the affected ESP per steel production cycle (acfm/cycle), daily (24-hour) average.
- c. After tapping and charging of both BOPFs first begin to be controlled with the affected BOPF baghouse system, the Permittee shall keep records for periods when charging or tapping of a BOPF is not controlled by this system, including a description of the event, the probable cause(s) of the event, the remedial action(s) taken and any measure(s) taken to prevent similar events in the future.

#### 7.5.10 Reporting Requirements

- a. 40 CFR Part 63, Subpart FFFFF (40 CFR 63.7841)
  - i. Compliance report due dates. Unless the Administrator has approved a different schedule, the Permittee shall submit a semiannual compliance report to the permitting authority according to the following requirements:
    - A. Semi-annual compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

B. Each compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date comes first after the end of the semiannual reporting period.

ii. Compliance report contents. Each compliance report shall include the following information:

A. Company name and address.

B. Statement by a responsible official, with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

C. Date of report and beginning and ending dates of the reporting period.

D. If the Permittee had a startup, shutdown, or malfunction during the reporting period and the Permittee took actions consistent with the source's startup, shutdown, and malfunction plan, the compliance report must include the information in 40 CFR 63.10(d)(5)(i).

E. If there were no deviations from the continuous compliance requirements in 40 CFR 63.7833 and 63.7834 that apply to the Permittee, a statement that there were no deviations from the emission limitations or operation and maintenance requirements during the reporting period.

F. If there were no periods during which a continuous monitoring system (including a CPMS, COMS, or continuous emission monitoring system (CEMS)) was out-of-control as specified in 40 CFR 63.8(c)(7), a statement that there were no periods during which the CPMS was out-of-control during the reporting period.

G. For each deviation from an emission limitation in 40 CFR 63.7790 that occurs at each Basic Oxygen Process where the Permittee is not using a continuous monitoring system (including a CPMS, COMS, or CEMS) to comply with an emission limitation in 40 CFR Subpart FFFFF, the compliance report must contain the information described in Condition 7.5.10(a)(ii)(A) through (F) and the following information (this includes periods of startup, shutdown, and malfunction):

1. The total operating time of each Basic Oxygen Process during the reporting period.
2. Information on the number, duration, and cause of deviations (including unknown cause, if applicable) as applicable and the corrective action taken.

H. For each deviation from an emission limitation occurring at each Basic Oxygen Furnace Process where the Permittee is using a continuous monitoring system (including a CPMS or COMS) to comply with the emission limitation in 40 CFR 63 Subpart FFFFF, the Permittee shall include the following information (this includes periods of startup, shutdown, and malfunction):

1. The date and time that each malfunction started and stopped.
2. The date and time that each continuous monitoring was inoperative, except for zero (low-level) and high-level checks.
3. The date, time, and duration that each continuous monitoring system was out-of-control as specified in 40 CFR 63.8(c)(7), including the information in 40 CFR 63.8(c)(8).
4. The date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown, or malfunction or during another period.
5. A summary of the total duration of the deviation during the reporting period and the total duration as a percent of the total source operating time during that reporting period.
6. A breakdown of the total duration of the deviations during the reporting period including those that are due to startup, shutdown, control equipment problems, process problems, other known causes, and other unknown causes.
7. A summary of the total duration of continuous monitoring system downtime during the reporting period and the total duration of continuous monitoring system

downtime as a percent of the total source operating time during the reporting period.

8. A brief description of the Basic Oxygen Processes.
9. A brief description of the continuous monitoring system.
10. The date of the latest continuous monitoring system certification or audit.
11. A description of any changes in continuous monitoring systems, processes, or controls since the last reporting period.

iii. Immediate startup, shutdown, and malfunction report. If the Permittee had a startup, shutdown, or malfunction during the semiannual reporting period that was not consistent with the source's startup, shutdown, and malfunction plan, the Permittee shall submit an immediate startup, shutdown, and malfunction report according to the requirements in 40 CFR 63.10(d)(5)(ii).

b. Monthly Opacity Exceedance Report.

Monthly opacity exceedance reports for the BOF ESP shall be sent to the Illinois EPA Regional Office. These reports shall contain all opacity measurements which exceed 30 percent, averaged over a six minute period. These "excess opacity" reports shall provide, for each such incident, the percent opacity measured as well as the date and span of such incident. These reports shall state the reasons for the excess opacity. The reports shall also specify the dates of those periods during which the continuous monitoring system was not in operation [Section 39.5(7)(f)(ii) of the Act].

c. Reporting Requirements from Permit 08110016:

After the initial year of operation (12 calendar months) of the BOF with an ESP with four fans, the Permittee shall submit a report to the Illinois EPA that evaluates the impacts of the addition of a fourth fan to the ESP on the particulate matter emissions of the BOF. This report shall, at a minimum, include the following information and address impacts on both stack emissions of particulate matter (i.e., emissions from the ESP stack) and uncaptured emissions of particulate matter (e.g., emissions from the roof monitor of the BOPF Shop). This report shall be submitted by the end of the third month following the initial year of operation with an ESP with four fans.

- i. A description of typical operating scenarios in which the availability of a spare fan resulted in a decrease in short-term emissions, with an assessment of the changes in the hourly emission rates, with supporting documentation and calculations.
  - ii. A description of typical operating scenarios, if any, in which the availability of a spare fan resulted in an increase in short-term emissions, with an assessment of the changes in the hourly emission rates, with supporting documentation and calculations.
  - iii. An assessment of the overall effect of the addition of a fourth fan on actual annual emissions of the BOF, with supporting operating data and calculations.
- d. i. Pursuant to Section 39.5(7)(f)(ii) of the Act, the Permittee shall promptly notify the Illinois EPA, Air Compliance Section, within 30 days of deviations by the Basic Oxygen Furnace Processes from applicable requirements, unless a NESHAP standard specifies a different timeframe, as follows:
- A. Requirements in Condition 7.5.3.
  - B. Requirements in Condition 7.5.5-1.
  - C. Requirements in Condition 7.5.5-3.
  - D. Requirements in Condition 7.5.6(a) through (k).
- ii. All such deviations shall be summarized and reported as part of the semiannual monitoring report required by Condition 8.6.1.
- iii. The Permittee shall notify the Illinois EPA, Air Compliance Section, of all other deviations as part of the semiannual monitoring reports required by Condition 8.6.1.
- iv. All required deviation reports described in Condition 7.5.10(d) above shall contain the following information:
- A. Date, time and duration of the deviation;
  - B. Description of the deviation;
  - C. Probable cause of the deviation; and
  - D. Any corrective action or preventative measures taken.
- e. Reporting on malfunction and breakdown shall be performed in accordance with Condition 5.10.5-2

f. Reporting Requirements from Permit 10080021:

i. Within six months of initial startup of the steam rings on the affected BOFs, the Permittee shall submit to the Illinois EPA: 1) A Project Report; and 2) A draft of the Permittee's written operating procedures for the steam rings, as required by Condition 7.5.5-3(c), for review and comment by the Illinois EPA. This Project Report shall include the following:

A. An assessment, with supporting documentation, of the effect of the steam rings on the opacity and, as feasible, particulate loading of the exhaust from the roof monitor of the BOPF Shop during refining, correlated with the rate of steam injection and other operating parameters of the BOF's and their control system; and

B. An identification of circumstances, if any, in which the steam rings must be operated to maintain compliance with applicable emission standards.

ii. The Permittee shall submit reports to the Illinois EPA on a semi-annual basis that include the following information for the operation of the steam rings on the affected BOFs:

A. Total number of heats during the reporting period.

B. Number of heats during the reporting period without steam rings operating properly, by type of incident, e.g., breakdown of the steam ring interrupting operation, malfunction of the steam ring with insufficient steam flow, or breakdown of support system.

g. Reporting on the Federal SSM authorization shall be performed in accordance with Condition 5.10.5-3.

7.5.10-1 Reporting Requirements from Permit 11050006

a. The Permittee shall notify the Illinois EPA of the following events with respect to the shakedown of the affected BOPF baghouse system:

i. The planned date for initial operation of the BOPF(s) with this system, at least 5 days in advance. If operation with this system will be phased, i.e., the emissions from charging and tapping of both BOPFs will not initially all be controlled by this system, this notification shall include the planned schedule for phase-in of control of emissions by this system.

ii. The date that tapping and charging of both BOPFs are initially controlled with this system, no later than 30 days after this date.

iii. The date that the shakedown of this system is completed, no later than 30 days after this date.

b. After the shakedown of the affected baghouse system is complete, the Permittee shall notify the Illinois EPA if the ESP will be used for control of emissions from charging and tapping of the BOPFs, with description of the planned use of the ESP and explanation.

c. Within 18 months of the date that tapping and charging of both BOPFs are initially controlled with the affected BOPF baghouse system, the Permittee shall submit a Project Report to the Illinois EPA that evaluates the emissions of particulate (as PM<sub>10</sub> and PM<sub>2.5</sub>) and lead from the BOPFs with this system. This one-time report shall include the following:

i. An assessment of the actual levels of capture (percent) that are achieved for emissions from charging and tapping, during normal operation of the BOPFs and control systems.

ii. An assessment of the actual level of overall control (percent) for emissions from charging and tapping, for normal operation of the BOPFs and the affected BOPF baghouse system.

iii. An assessment of overall emissions of particulate and lead from the BOPFs on a short-term basis (in lbs/hour and lbs/ton of steel), with typical and maximum emission rates, for normal operation.

iv. A review of the probable effect of upsets in the operation of the affected BOPF baghouse system on the short-term emissions of the BOPFs, considering upsets that have been experienced.

v. An assessment of the distribution of emissions of particulate and lead from the BOPFs between the ESP, baghouse and roof monitor (uncaptured emissions) on a short-term basis, with the typical distribution of emissions, the distribution of emissions with maximum emissions at the roof monitor, and the distribution of emissions with maximum emissions at the ESP, all for normal operation.

vi. An assessment of the actual reductions in annual emissions of particulate (tons/year) from the BOPFs that should be achieved with the affected BOPF baghouse system.

vii. An assessment of the typical range of opacity from the roof monitor during tapping of a single BOPF,

charging of a single BOPF, overlapping tapping and charging of the BOPFs, and periods of operation other than charging and tapping.

viii. Appropriate data and analysis to support the above assessments.

7.5.11 Operational Flexibility/Anticipated Operating Scenarios

The Basic Oxygen Furnaces shall only be operated as top oxygen injected vessels, except that, for purposes of checkout and emission testing only, the furnaces may be operated as peripheral and bottom oxygen injected furnaces for a maximum of 120 days. Any further operation of the furnaces as other than top oxygen injected vessels shall be pursuant to a permit granted for such additional operation. [Permit 72080043]

7.5.12 Compliance Procedures

- a. Compliance with the applicable standards of Condition 7.5.3 is addressed by the work practices, testing, monitoring, recordkeeping and reporting requirements in Section 7.5 of this permit.
- b. Compliance with the production/emission limits of Conditions 7.5.6 and 5.6.2 is addressed by the work practices, testing monitoring, recordkeeping and reporting requirements in Sections 7.5 and 5 of this permit.

7.5.13 Compliance Schedule and Current Enforcement Status

- a. The Permittee shall comply with the following schedule of compliance applicable to BOF shop emissions and established in accordance with modified Consent Order 05-CH-750 (December 23, 2009):

<u>Commitment</u>	<u>Timing</u>
<u>Certify compliance</u>	<u>March 31, 2011</u>

- b. Submittal of Progress Reports

Quarterly Progress Reports shall be submitted beginning with September 2011 and ending upon the achievement of compliance. Each quarterly report shall be submitted no later than 5 days after the end of the corresponding calendar month. The Progress Report shall contain at least the following:

- i. The required date for achieving commitments, and actual dates when such commitments were achieved.
- ii. Any commitments accepted by the Permittee or otherwise established for the affected BOF as part of the resolution of the above referenced Consent Order, with the associated timing for each commitment.

- iii. A discussion of progress in complying with commitments that are subject to future deadlines.
- iv. If any commitment was not met, an explanation of why the required timeframe or commitment was not met, and any preventive or corrective measures adopted to achieve required commitment.
- c. After completion of all required commitments and certification of compliance, as identified in Condition 7.5.13(a) no further Quarterly Progress Reports are required to be submitted.

#### 7.5.14 State-Only Conditions

State-only conditions are not being established.

#### 7.5.15 Transition

This version of Section 7.5 (Version 2) will become applicable when the new baghouse control system, which is part of the emission reduction project for the BOP furnaces addressed by Construction Permit 11050006, begins operation to control particulate emissions of these furnaces. At such time, this version of Section 7.5 will supersede the first version of Section 7.5.