Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

May 2012

Project Summary/Statement of Basis for the Planned Issuance of a Construction Permit with Integrated Processing* for an Emission Reduction Project for the Existing Basic Oxygen Process Furnaces at United States Steel Corporation's Granite City Works Granite City, Illinois

* As this application for a construction permit is being processed with "Integrated Processing," it is intended that certain changes, as specifically identified in the construction permit, if one is issued, would be authorized to be made to the Clean Air Act Permit Program (CAAPP) permit for the source by administrative amendment, as provided for by Section 39.5(13)(c)(v) of Illinois' Environmental Protection Act.

Source Identification No.: 119813AAI
Construction Permit Application/Permit No.: 11050006
CAAPP Permit No.: 96030056

Schedule
Public Comment Period Begins: May 31, 2012
Public Hearing: July 18, 2012
Public Comment Period Closes: August 17, 2012

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Attachment B: Summary of Changes to the CAAPP Permit That Are Proposed to Be Authorized by the Construction Permit

Attachment C: Current Section 7.5 of CAAPP Permit 96030056 (Abridged) Marked to Show the Changes That May Be Made to this Section of the CAAPP Permit by Administrative Amendment Pursuant to Integrated Processing to Address the Period before the New Baghouse Control System Begins Operation

Attachment D: Current Section 7.5 of CAAPP Permit 96030056 (Abridged) Marked to Show the Changes That May Be Made to This Section of the CAAPP Permit by Administrative Amendment Pursuant to Integrated Processing to Set Forth an Alternative Version of Section 7.5 That Would Address the Period after the New Baghouse Control System Begins Operation

Attachment E: Memorandum of Understanding

I. Introduction

United States Steel Corporation, Granite City Works (US Steel) has applied for a construction permit for an emission reduction project for the basic oxygen process (BOP) furnaces at its integrated steel mill in Granite City. This project involves installation of a new control system with a fabric filter or "baghouse" for particulate emissions from the charging and tapping of the BOP furnaces. The particulate emissions of the furnaces from refining will continue to be controlled by the existing electrostatic precipitator (ESP). The new baghouse control system would improve overall control of the particulate emissions of the BOP furnaces.

This project will also necessitate revisions to the current Clean Air Act Permit Program (CAAPP) permit for the Granite City Works.[1] This is because the current CAAPP permit contains certain requirements for control of the BOP furnaces with the existing ESP system that will no longer be appropriate when particulate emissions are controlled by the combination of the new control system and the existing ESP system. In particular, the current CAAPP permit contains limits for the minimum air flows to the ESP during charging and tapping that would no longer be relevant when these emissions are controlled with the new baghouse system. In addition, the CAAPP permit includes various requirements for the operation of the ESP control system that would be entirely outdated as these requirements originated in previous permits for the source, including a Construction Permit/PSD Approval issued in 1996.[2] USEPA has also adopted federal rules that establish operational requirements for BOP furnaces.[3] To provide certainty for the requirements that will apply when the new baghouse system for the BOP furnaces is constructed, the CAAPP permit will need to be appropriately revised. As part of its construction permit application, US Steel has requested that appropriate revisions to the CAAPP permit be authorized to address operation of the BOP furnaces with the new baghouse control system. In this regard, a construction permit may authorize certain future changes to a CAAPP permit by administrative amendment when the construction permit application has been processed using "integrated processing." This aspect of US Steel's application for a construction permit application for the planned baghouse control system is discussed in Section VII of this project summary.[4]

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[1] The Clean Air Act Permit Program (CAAPP) is Illinois' version of the operating permit program for certain sources of emissions that is mandated by Title V of the federal Clean Air Act.
US Steel is currently operating its Granite City Works under CAAPP Permit 96030056, revised on May 2, 2011 (originally issued by the Illinois EPA on September 3, 2009) and further revised by administrative amendments on October 5, 2011 and May 3, 2012.

[2] Construction Permit/PSD Approval 95010001, for increases in the production of iron and steel by the Granite City Works, was originally issued on January 25, 1996.

[3] In 2004, the United States Environmental Protection Agency (USEPA) adopted National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF (69 FR 21905, April 22, 2004). Among other things, these rules address proper operation of particulate emission control systems on BOP furnaces.

[4] By a separate application, US Steel has also applied for revisions to Construction Permit 95010001 to remove conditions from that permit that would no longer be appropriate, as they are now outdated and would become wholly obsolete when the new baghouse control system begins operation. The requested changes to this existing construction permit would provide further certainty about the requirements that will apply to the BOP furnaces with the new baghouse control system. The Illinois EPA has also reviewed that application and made a preliminary determination that a revised construction permit should be issued. The

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed US Steel's application for a construction permit for the planned project and made a preliminary determination that the application meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft of the construction permit that it would now propose to issue for the project.[5] Before issuing this construction permit, the Illinois EPA is holding a public comment period and a public hearing to receive comments on the proposed issuance of a construction permit, the terms and conditions of the draft permit, and the revisions to the CAAPP for the source that will be authorized by the construction permit.

II. Project Description

In this emission reduction project, US Steel will construct a new control system to improve the control of particulate emissions from its two existing BOP furnaces. The new control system will have a baghouse and control particulate emissions from charging and tapping of the BOP furnaces. Charging is the step in the steel production cycle in a BOP furnace when scrap metal and molten iron from the blast furnaces are charged to the furnace vessel. Tapping is the step in the cycle when the molten steel that has been made in the furnace is poured into a ladle to await further processing and continuous casting. The particulate emissions of the BOP furnaces from refining will continue to be controlled by the existing electrostatic precipitator (ESP) control system.[6]

The particulate emissions that accompany charging of the BOP furnaces are currently captured with local capture hoods in the area where emissions occur when a furnace vessel is being charged. These hoods are currently ducted to an electrostatic precipitator (ESP). Emissions from tapping of the furnaces are currently captured with the covers on the furnaces, which extend over into the area in which tapping takes place. The covers on the hoods are also ducted to the existing ESP. Flame suppression is also used to reduce the generation of emissions from tapping. The emissions of particulate from charging and tapping of the BOP furnaces that are not captured are released to the interior of the BOP furnace shop, the large building that houses the furnaces. The uncaptured particulate emissions that do not settle out within the furnace shop are emitted to the atmosphere, largely through the open roof monitor at the peak of the roof on the shop. As the new baghouse control system would improve control of charging and tapping emissions of the BOP furnaces, it would improve control of the "secondary emissions" of the furnaces.[7]

As described in US Steel's permit application, the construction of the new baghouse emission control system will involve the following elements:

Illinois EPA has prepared a draft of the revised permit that it would propose to issue and is also holding a public comment period on that action concurrently with the public comment period on the draft of the construction permit for the baghouse system.

[5] This construction permit would replace a previous permit for this project issued in August 2011, which was subsequently appealed to the Illinois Pollution Control Board.

[6] The control of particulate emissions is facilitated as the lance holes on the BOP furnaces are equipped with "steam rings." The injection of steam into the space between the roof of the furnace and the oxygen lance acts to reduce loss of particulate through this space during refining.

[7] Particulate emissions from charging and tapping of BOP furnaces are referred to as "secondary emissions," as distinguished from the emissions from refining, which are referred to as "primary emissions."

- A new multi-compartment, pulse jet baghouse.
- New capture hoods for tapping.
- Upgrades to the existing capture hoods for charging, by changes to existing ductwork.
- Upgrades to the enclosure and hoods on each furnace for refining.
- New ductwork to connect the tapping hoods and the existing charging duct to the baghouse.
- Control dampers and actuators and system automation for ductwork.

The new baghouse will have a total capacity of 900,000 actual cubic feet per minute (acfm). This will provide sufficient capacity to support the air flows needed at the local capture hoods for charging and tapping for more effective capture of particulate emissions. The level of air flow through the existing capture hoods for charging would be increased.[8] Local capture hoods would be installed for tapping. The air flow from both the charging and tapping hoods would be ducted to the new baghouse, which will be more effective in controlling the entrained particulate than the existing ESP. The new system will be designed to have up to 500,000 acfm of air flow capacity available for capture of emissions from charging and 400,000 acfm of capacity will be available for tapping.

During operation of the BOP furnaces, the draft or flow of ventilation air at each local hood will be controlled by dampers in the ductwork that are equipped with mechanical actuators. The position of these dampers will be matched to the operation of the furnaces so that the appropriate local capture hoods are active when a furnace is being charged or tapped. The total air flow through the system will also be matched to the operation of the BOP furnaces, either by dampers located at the inlets to the fan or by adjusting the speed of the fan motor. The baghouse will be preceded by a spark box, which will combine the air flow from the charging and tapping hoods, as well as prevent damage to the filter bags from any very hot material entrained by the capture hoods.

The new baghouse control system for charging and tapping will be separate from the existing ESP control system. When the new system begins operation, the emissions captured by the local capture hoods for charging and tapping will go to the new baghouse and not the ESP. Only the emissions captured by the covers on the BOP furnaces will go to the ESP.[9]

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[8] The existing local capture hoods in front of each furnace will continue to be used for charging, becoming part of the new baghouse control system. However, the draft or air flow that these hoods can handle will be increased. This will be done by replacing the portion of the ductwork located immediately next to these hoods with ducts with a larger cross-sectional area. This is necessary because this portion of the existing ductwork is too small to accommodate the new ventilation volume without causing excessive pressure drop in the ductwork. The existing charging ductwork that travels vertically through the melt shop up to the roof will remain in place. At the roof, the ductwork will be disconnected from the existing duct that leads to the ESP and connected to a new duct leading to the baghouse.

[9] The draft construction permit would also allow the existing ESP system to be used for control of secondary emissions from the BOP furnaces on a temporary basis. This would accommodate a catastrophic failure of the new baghouse, which would take it out of service for an extended period. While the permit would provide for this contingency, it would not affect US Steel's obligation to comply with applicable emission standards during the period that the baghouse was out of service or to fulfill associated operational requirements that would be applicable during such period, when secondary emissions of the furnaces are controlled by the ESP.

For tapping, the baghouse control system will also replace use of flame suppression. In flame suppression, gas burners are used to reduce generation of particulate by depleting the level of oxygen in air that comes in contact with the molten steel. With the local capture hoods for tapping, the continued use of flame suppression would be unsafe, posing a hazard both to personnel and equipment, as well as being of uncertain effectiveness. This is because the high levels of draft provided by the local capture hoods would interfere with the stability and orientation of the flame, as well as posing risk of flame outs.

The installation of the new baghouse system will also act to improve control of the primary emissions from the BOP furnaces from refining. This is because the air flow to the ESP, which would no longer include ventilation air for charging and tapping, would be reduced. The reduced air flow will improve the control efficiency of the ESP due to the increase in residence time of gas inside the ESP.

US Steel has agreed to install this new baghouse control system pursuant to a Memorandum of Understanding between US Steel and the Illinois EPA (Agreement).[10] The purpose of the Agreement is to reduce emissions of particulate matter$_{2.5}$ ($PM_{2.5}$) from the Granite City Works focusing on the BOP furnace shop. While not stated in the Agreement, the expectation of the Illinois EPA when entering into the Agreement was that its control requirements would reduce the particulate emissions of the BOP furnaces that occur through the roof monitor of the BOF shop by at least 50 percent. A copy of the Agreement is included with this project summary for informational purposes only (see Attachment E). [11]

In July 2010, when the Agreement was signed, the reductions in $PM_{2.5}$ emissions provided by the control measures required by the Agreement were expected to be needed for Granite City and the surrounding area to comply with the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$. The reductions in $PM_{2.5}$ emissions that result from the Agreement will still act to generally improve ambient air quality even if compliance with the NAAQS for $PM_{2.5}$ is shown without these reductions.[12]

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[10] United States Steel Corporation Granite City Works and IEPA: Memorandum of Understanding, effective July 1, 2010, when signed by Douglas Scott, Director of the Illinois EPA.

[11] The new baghouse control system would fulfill two obligations under the Agreement. The first obligation is the addition of a control system with a baghouse for tapping emissions. The second obligation is improved control of charging emissions, with captured emissions either being controlled by the new baghouse for tapping or another new baghouse, unless an evaluation by US Steel shows that this is not cost-effective or otherwise not appropriate. US Steel did not find such an improvement to be inappropriate and, consistent with the Agreement, a baghouse will also be used to control charging emissions of the furnaces. The other emission reduction project for the BOP furnaces provided for by the Agreement, which has already been implemented, was the installation and use of steam rings on the furnaces. These steam rings were installed pursuant to Construction Permit 10080022 and their operation is already addressed by the current CAAPP permit.

[12] Ambient air monitoring for $PM_{2.5}$ conducted by the Illinois EPA for Granite City during the last three calendar years (2009, 2010 and 2011) shows attainment of both the annual and 24-hour NAAQS for $PM_{2.5}$. However, Illinois has not yet applied to USEPA for the area to be redesignated to attainment for $PM_{2.5}$.

The Illinois EPA previously issued a construction permit for this new baghouse control system on August 31, 2011. However, US Steel challenged the issued permit, filing a Petition for Review by the Pollution Control Board on October 10, 2011. That permit was challenged on both technical and procedural grounds. In response to this appeal, the Illinois EPA has further considered US Steel's application. The construction permit that the Illinois EPA now plans to issue for this project and the administrative procedures that the Illinois EPA would use to process this permit are intended to appropriately respond to the issues presented by US Steel in its appeal.

III. Applicable Emissions Standards and Emission Limits

Pursuant to 40 CFR 63.7825(a)(1) of the federal National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, the particulate emissions of the new baghouse for the BOP furnaces would be subject to a limit for particulate matter (PM) emissions of 0.01 grains per dry standard cubic foot (gr/dscf).[13] A more stringent limit, 0.005 gr/dscf, is set for this new baghouse by Section 2(c) of the Agreement.[14] Like the limits of this NESHAP, this limit addresses emissions of filterable particulate matter as would be measured by USEPA Methods 5, 5D or 17.

The addition of the baghouse control system would not change other applicable emission standards that currently apply to the BOP furnaces or to the existing ESP under this NESHAP or state rules, as addressed by the current CAAPP permit for the Granite City Works.[15] In particular, the PM emissions of the existing ESP for the BOP furnaces would continue to be subject to a limit of 0.02 gr/dscf, pursuant to the NESHAP, 40 CFR 63.7825(a)(1).[16] However, Section 2(b)(i) of the Agreement, provides for a more stringent limit for the ESP, 0.01 gr/dscf.

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[13] This limit, 0.01 gr/scf, is the limit for PM in Table 2 of 40 CFR 63 Subpart FFFFF for a control device like this baghouse, which will be applied solely to "secondary emissions" from BOP furnaces in an existing furnace shop. As defined by 40 CFR 63.7852, secondary emissions are "particulate matter emissions that are not controlled by a primary emission control system, including emissions that escape from open and closed hoods, lance hole openings, and gaps or tears in ductwork to the primary emission control system." Primary emissions are "particulate matter emissions from the basic oxygen process furnace generated during the steel production cycle which are captured and treated in the furnace's primary emission control system."

[14] This limit is slightly more stringent than the NESHAP limit for a control device for secondary emissions from BOP furnaces at a new furnace shop, 0.0052 grains/dscf.

[15] The BOP furnaces are subject to the following emission standards pursuant to 40 CFR 63.7825(a)(1):

1. ESP – PM emissions are limited to 0.02 gr/dscf, as the ESP is the primary control system for BOP furnaces with an open hood design at an existing BOP furnace shop.
2. Furnace Shop Roof Monitor – The opacity of secondary emissions that exit any opening in the BOP furnace shop is limited to no more than 20 percent, on a 3 minute average.

The existing ESP is also subject to an operating limit, 10 percent opacity, hourly average, pursuant to 40 CFR 63.7790(b)(3).

The particulate emissions of the BOP furnaces and the opacity from the BOF shop are also subject to the following state emission standards: 35 IAC 212.446(a) and (c) and 212.458(b)(23).

[16] This is the PM emission limit in Table 2 of 40 CFR 63 Subpart FFFFF for a control device, like this ESP, which is a primary emission control system for existing BOP furnaces with open hood systems.

IV. Applicability of New Source Review

As already discussed, this project is an emissions reduction project whose purpose and effect will be to reduce the particulate emissions of the existing BOP furnaces. This is inherent in the project as it will entail improvements to the capture and control of secondary emissions with a new baghouse control system. This system will reduce the amount of uncaptured partculate emissions from the furnaces that is currently released to the atmosphere from the roof monitor of the furnace shop. The reduction in secondary emissions will be accompanied by improvements in control of primary emissions, due to improved performance of the existing ESP. Accordingly, this project does not constitute a modification for emissions of particulate.[17] As such, this project is not a major project subject to substantive requirements of New Source Review for emissions of particulate, i.e., the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21, for PM and PM_{10} and Illinois` rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203, for $PM_{2.5}$.

The improvements to control of particulate emissions will not be accompanied by increases in emissions of other pollutants. As particulate emissions would be reduced, emissions of lead, which is a constitutent of the particulate emissions, would also be reduced. Emissions of other regulated pollutants, would not be created as a consequence of the control of particulate emissions since emissions would be controlled by physical mechanisms, i.e., filtration and electrostatic attraction, rather than with combustion or a chemical process. As such, this project is also not a major project subject to substantive requirements of PSD or MSSCAM for emissions of pollutants other than PM, PM_{10} or $PM_{2.5}$.

In its permit application, US Steel provided a quantitative assessment of the change in PM emissions with this project, as summarized below. This assessment was prepared using commonly accepted engineering factors. This assessment confirms that this project would not be a modification, with reductions in the PM emissions from the roof monitor and the ESP that are greater than the PM emissions from the new baghouse. While US Steel qualified its assessment, explaining that it was not submitted as a demonstration of the specific emission rates that would occur in the future, the assessment is considered a reasonable evaluation of this project confirming an overall reduction in particulate emissions.[18]

US Steel's Evaluation of Change in PM Emissions of the BOP Furnaces (tons/year)

Emission Point	Current Emissions	Future Emissions	Change
Electrostatic Precipitator	262.8	235.5	-27.3
Baghouse	----	139.9	139.9
Furnace Shop Roof Monitor	176.7	30.0	-146.7
Totals	439.5	405.4	-34.1

V. Compliance Procedures

The draft construction permit for this emission reduction project would generally rely on the

[17] While the emission reduction will be lower for particulate matter$_{10}$ (PM_{10}) and particulate matter$_{2.5}$ ($PM_{2.5}$) than particulate matter (PM), as PM_{10} and $PM_{2.5}$ make up only a fraction of the PM emissions, emissions of PM_{10} and $PM_{2.5}$ will also be reduced.

[18] The draft construction permit for the new baghouse control system would require that US Steel conduct an assessment of the actual reduction in emissions from this project within 18 months of the date that this system is fully operational to control charging and tapping of both furnaces. (See draft Condition 6(b).)

NESHAP, 40 CFR 63 Subpart FFFFF, as it applies to the BOP furnaces, for the compliance procedures for this new control system. This NESHAP establishes compliance procedures for capture systems and control devices for secondary particulate emissions from BOP furnaces that provide a sound basis for the compliance procedures that US Steel should be required to implement for the new baghouse system pursuant to the construction permit. When the this new control system begins operation, this NESHAP will require that operational limits be set for the minimum operating parameters of the capture systems that are part of this new system. These operating limits must reflect operating levels for the capture systems at which performance testing has shown that the furnace shop complies with a 20 percent opacity standard, which is both the applicable NESHAP and state standard for the BOF shop. Continuous operational monitoring is required for the capture systems to verify compliance with the operational limits that are established.

This NESHAP also requires operational monitoring for baghouses, with either a bag leak detector or an opacity monitor, which will serve to confirm proper operation of the baghouse. Proper operation of the baghouse will ensure compliance with the PM emission standards for the baghouse, which are expressed in gr/scf. In addition, this NESHAP will require that the new baghouse control system be operated and maintained in accordance with a written plan prepared by US Steel, which plan must include certain minimum elements as specified by this NESHAP, 40 CFR 63.7800(b)(4) and 40 CFR 63.7830(b)(4). Given the rigor of the compliance procedures established by this NESHAP, it is appropriate to generally rely on these procedures for the new baghouse control system for secondary emissions.

The compliance procedures required by the draft construction permit would go beyond and supplement the applicable compliance procedures established by this NESHAP in certain respects. This NESHAP would accept monitoring of other operating parameters of the capture system, such as fan motor amperage and position of dampers, without conversion into volumetric flow rate.[19] The draft construction permit would require monitoring of volumetric flow rate, in cfm, for each separately ducted capture hood for secondary emissions from the BOF. These flow rates could either be directly measured or, more likely, calculated from other data that is directly monitored, such as temperatures and pressures in the various ducts and other fixed data, such as the cross-sectional area of the various ducts. Operational monitoring for the capture system with data either measured as or expressed in terms of volumetric flow rate, should simplify review of the operation of the capture systems by the Illinois EPA as the amount of ventilation air applied at each hood is directly stated and available for review.

The draft construction permit would also require US Steel to comply with the monitoring requirements of this NESHAP for the baghouse by use of a bag leak detection system. A bag leak detection system should be more effective than an opacity monitor in verifying proper operation of the new baghouse. This is because a bag leak detection system would be more sensitive to an increase in the particulate loading in the exhaust of the baghouse than an opacity monitor.

[19] For the existing ESP on the BOP furnaces, the current CAAPP permit requires continuous monitoring of the volumetric flow rate at the ESP stack and waste gas suction in the ductwork to the ESP.

VI. Draft Construction Permit

The draft construction permit prepared for the new baghouse control system has two parts. Part 1 of the draft permit would be the "standard" construction permit for the proposed project. It would include the project-specific construction permit conditions that are considered to be appropriate for the project. A discussion of the project-specific conditions in Part 1 of the draft construction permit follows below. The draft permit would also include a number of findings for the permit, which would precede the project-specific conditions. The findings would provide general information on the basis upon which the construction permit would be issued and would be included in the permit given the special circumstances of this project. Part 2 of the draft construction permit would address the specific changes to the current CAAPP permit for the Granite City Works that the construction permit would authorize by future administrative amendment. Part 2 of the draft permit is discussed later in Section VII and Attachment A of this Project Summary.

Operational Requirements (Draft Condition 1)

Condition 1 of the draft construction permit would contain operational requirements for the new baghouse control system and the BOP furnaces when then this system becomes operational. It would require that the new baghouse be designed with sufficient capacity to simultaneously control charging of one furnace and tapping of the other. This will facilitate effective control of particulate emissions since operation of the furnaces will not need to be managed to ensure available capacity for control of secondary emissions.

This condition would also require US Steel to submit its initial revisions to the two operational plans for the BOP furnaces required by the NESHAP[20] to address the baghouse system to the Illinois EPA at least 30 days in advance of initial operation of the furnaces with this system. This will require that US Steel complete these revisions in a timely manner, as well as facilitate review of these revised plans by the Illinois EPA.

This condition would also establish requirements for the future operation of the BOP furnaces and the ESP. It would continue to prohibit simultaneous oxygen blowing in both BOP furnaces unless this mode of operation is specifically authorized by an appropriate construction permit.[21] It would also require the capture systems associated with the ESP continue to be operated in accordance with applicable operational requirements of the NESHAP for capture systems for secondary emissions from BOP furnaces, as is currently required, but would not otherwise be required in the future when the ESP only controls primary emissions of the furnaces. These conditions would maintain the key aspects of the current operation of the ESP control system that will be relevant in the future when secondary emissions of the furnaces are controlled by the new baghouse system.

[20] For the BOP furnaces, US Steel is required to maintain and implement an Operation And Maintenance Plan by 40 CFR 63.7800(b) and a Startup, Shutdown and Malfunction Plan by 40 CFR 63.7810(c).

[21] The further qualification in this condition, which specifically recognizes the ability of a future construction permit to provide for simultaneous oxygen blowing of the furnaces, is not intended to establish any new legal requirements for this manner of operation. It is included simply to make clear that a revision to the current construction permit would not be needed if a construction permit is issued in the future that provides for refining to be performed in both furnaces at the same time.

Finally, after shakedown of the new baghouse, this condition would only allow the existing ESP system to be used to control secondary emissions from the BOP furnaces, as well as primary emissions, on a temporary basis. This would generally require that secondary emissions be controlled by the new baghouse control system while still providing for a catastrophic failure of the new baghouse, which would take it out of service for an extended period. While the permit would provide for this contingency, it would not affect US Steel's obligation to comply with applicable emission standards during the period that the baghouse was out of service or to fulfill associated operational requirements that would be applicable during such period, when secondary emissions of the furnaces are controlled by the ESP.

Emission Limit (Draft Condition 2)

Condition 2 of the draft permit would contain the emission limit for particulate matter emissions for the new baghouse, 0.005 gr/scf. The limit is set at the numerical value and in the terms that were was previously established by the Agreement.

Emission Testing Requirements (Draft Condition 3-1)

Condition 3-1 of the draft permit would contain the emission testing requirements for the BOP furnaces during the initial period of operation with the new baghouse control system. The basic purpose of this emissions testing would be to verify compliance with the limits for PM emissions of the new baghouse set by the Agreement, as would be contained in Condition 2.[22] For this purpose, a series of three, appropriately-spaced emission tests would be required to confirm that the baghouse complies with the applicable numerical emission limit during the first years after the baghouse begins operation. Thereafter, the frequency of emission testing would be that applicable under the NESHAP.

This condition would also require emission testing be conducted for other purposes. As related to the Agreement, emission testing would be required for emissions of particulate as PM_{10} and $PM_{2.5}$. Emission testing for lead would be required to gather data to support attainment planning by the Illinois EPA. Emission testing for lead and other pollutants would also be required to further address compliance with emission limits that apply to the BOP furnaces for pollutants other than particulate.

Additional Testing Requirements (Draft Condition 3-2)

Draft Condition 3-2 would require measurements as needed for a determination of the PM control efficiency of the new baghouse. This is required because knowledge of the actual control efficiency of the baghouse would enable the amount of emissions being captured by the baghouse system to be determined empirically, rather than from an engineering analysis. This data for PM emissions entering the baghouse will provide further insight on the specific role of the baghouse in achieving reductions in particulate emissions, consistent with the stated purpose of the Agreement.

[22] This draft condition would also require emissions testing to verify compliance with the new limit for particulate emissions of the ESP that was set by the Agreement, 0.01 gr/scf.

Monitoring and Instrumentation Requirements (Draft Condition 4)

Draft Condition 4 would address operational monitoring requirements for the control systems for the BOP furnaces with the new baghouse control system. This condition would generally require US Steel to fulfill applicable monitoring requirements of the NESHAP, 40 CFR 63 Subpart FFFFF, for the baghouse control system. The detailed provisions of the monitoring requirements of this NESHAP would not be repeated, as these requirements are applicable to the new baghouse system as a matter of rule. However, this condition would specifically require that monitoring of the baghouse be conducted with a bag leak detection system, rather than an opacity monitor as also allowed for by this NESHAP. This is an appropriate enhancement of the basic monitoring requirements of the NESHAP. The condition would also require that the initial revisions to the site-specific monitoring plan to address the baghouse system, as provided for by this NESHAP, 40 CFR 63.7831(a), be made at least 30 days in advance of the initial operation of the BOP furnaces with the baghouse system. This is a reasonable measure to ensure that monitoring for the baghouse system is conducted in accordance with this NESHAP.

This condition would also require US Steel to collect data for the new capture systems in terms of volumetric flow rate, if US Steel does not otherwise collect this data pursuant to the NESHAP. This requirement would be established to simplify review by the Illinois EPA of monitoring data collected for these capture systems.

Finally, this condition would require US Steel to continue to conduct operational monitoring for the ESP control system in accordance with the NESHAP after the new baghouse control system begins to be used for control of secondary emissions. This requirement would be imposed so that the operational monitoring conducted for the ESP pursuant to the NESHAP would not be affected by the use of the new baghouse control system.

Recordkeeping Requirements (Draft Condition 5)

Draft Condition 5 would address new recordkeeping requirements that would apply with the baghouse control system. The condition would require that US Steel retain a copy of significant design data for the new baghouse control system. These records would verify compliance with the requirement for the design capacity of the baghouse (Condition 1(a)). This requirement would also enable review of the detailed design data for the baghouse system by Illinois EPA personnel.

This condition would also require records be kept as reasonable to review the overall operation of the capture systems on the BOP furnaces. The information which must be recorded include the number of steel production cycles per day, the timing of the charging, refining and tapping steps during each cycle, and the average daily air flow at each hood, the new baghouse and the existing ESP. These records are appropriate as they would facilitate routine review of the operation of the capture systems without having to examine the detailed monitoring data for these systems.

This condition would also require records be kept for periods when secondary emissions of the BOP furnaces are not controlled by the new baghouse control system. These records will serve to identify interruptions in the operation of the new baghouse system, potentially in violation of

operational requirements of the NESHAP.

Reporting Requirements (Draft Condition 6)

Draft Condition 6 would address reporting requirements that would relate to the new baghouse control system. Various reports are required related to the development, startup and shakedown of this system. These reports will facilitate review of these activities by Illinois EPA personnel.

Reports are also required for any extended interruptions in the operation of the BOP furnaces during the construction of the new baghouse control system. These reports will facilitate inspections by Illinois EPA during the period when the baghouse is being constructed. If the purpose of the inspection is to observe operation of the BOP furnaces, the inspection could be rescheduled. If the objective is to inspect the BOP furnaces or the ESP control system while the furnaces are not operating, an inspection could be held while the furnaces are out of service.

Reports are also required if the ESP control system will be used during an extended outage of the baghouse control system. This will let the Illinois EPA investigate the event and verify that the BOP furnaces and the ESP control system are complying with applicable emission control and operational requirements.

This condition would also require US Steel to submit a Project Report containing an evaluation of the emissions of particulate and lead from the BOP furnaces with the baghouse control system. This report is appropriate as an emission reduction project is being addressed.

VII. Planned Revisions to the CAAPP Permit Related to This Project

As already explained, in conjunction with the planned issuance of a construction permit for the new baghouse control system for the BOP furnaces, the Illinois EPA is proposing to authorize certain changes to conditions in the current Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, CAAPP Permit 96030056. This is because this CAAPP permit contains certain requirements for control of the BOP furnaces with the existing ESP that would no longer be feasible, necessary or appropriate when particulate emissions are controlled by the combination of the new baghouse and the existing ESP control systems. In particular, the current CAAPP permit contains limits for the minimum air flows to the ESP during charging and tapping of the BOP furnaces. It also does not allow for charging of hot metal to one furnace and initial part of tapping in the other furnace to occur simultaneously. These requirements would no longer be relevant when charging and tapping emissions are no longer controlled by the ESP but are instead controlled with the new baghouse system. To provide clarity on applicable requirements for the ESP when secondary emissions of the BOP furnaces are controlled by the new baghouse system, it is appropriate that these obsolete conditions be removed from the CAAPP permit.[23]

[23] Certain provisions of the current CAAPP permit that would be considered to be obsolete and would be authorized to be removed or revised from the CAAPP permit were originally established in a construction permit for an increase in iron and steel production by the Granite City Works, Construction Permit/PSD Approval 95010001. The Illinois EPA is also separately processing a revision to that construction permit to remove obsolete conditions from Construction Permit 95010001. In particular, Conditions 11 through 17, 33

To make the various consequences of the affected baghouse control system for the future operation of the existing controls for the BOP furnaces, as set forth in the CAAPP permit, clear and certain at the time that the construction permit is issued for this control system, this construction permit will be subject to integrated processing.[24] In particular, the draft construction permit will be subjected to procedural requirements that are substantially equivalent to those that apply to CAAPP permits. Those procedures include a public comment period, with appropriate notice to the general public, local elected officials, and individuals whose interest in permitting activities for US Steel is known.[25] Because of the nature of this permitting action and public interest in previous permitting actions for US Steel, the comment period will include a public hearing. The processing procedures for this application will also include preparation of a revised draft of the construction permit following consideration of public comments, which revised draft permit would then be submitted to USEPA for its comments, effectively serving as the proposed CAAPP permit that would be required under the CAAPP program. In addition, it is intended that the issued construction permit would set forth compliance requirements that are substantially equivalent to those that apply to CAAPP permits, i.e., it would provide for Periodic Monitoring for the new baghouse control system. It is also intended that for the ESP, the permit would maintain monitoring requirements of the NESHAP that currently apply to the ESP.

To clearly address the future requirements for the BOP furnaces when their particulate emissions are also controlled with the new baghouse control system, the draft construction permit for this project would authorize the addition of a new set of conditions to the CAAPP permit to address this future configuration of the BOP furnaces. Until the new baghouse system begins operation, the BOP furnaces would continue to be subject to the conditions of the current CAAPP permit. These conditions are set forth in Section 7.5 of the current CAAPP permit, which contains unit-specific conditions for the various emission units that are part of the basic oxygen process, including the two BOP furnaces. To clearly address both current requirements and future requirements for the BOP furnaces, the draft construction permit for this project would provide that future requirements for the furnaces with the baghouse control system would be set forth in the CAAPP permit in a completely separate, second version of Section 7.5. This second version of Section 7.5 would address all emissions units that are currently addressed by this section of the permit, including emission units other than the BOP furnaces. The second version of Section 7.5 would become applicable when the new baghouse control system for the BOP furnaces begins operation to control emissions of these furnaces. At such time, this second version of Section 7.5 would supersede the other version of Section 7.5.[26]

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and 39 of Construction Permit 95010001 are proposed to be removed from this construction permit.

[24] Illinois' CAAPP program provides for integrated processing in Section 39.5(13)(c)(v) of the Environmental Protection Act and 35 IAC 270.302(e).

[25] As the Granite City Works is only a few miles from the Illinois–Missouri border, far less than 50 miles from the border, notice of the draft permit will also be provided to the State of Missouri.

[26] The only changes to the provisions of the current or "existing" Section 7.5 in the current CAAPP permit that would be provided for by the draft construction permit would be the addition of a condition and a related informational note to address the effectiveness of current Section 7.5 in the CAAPP permit. The new provisions would explain that the current version of Section 7.5 would be replaced by the new version of Section 7.5 when the new baghouse control system for the BOP furnaces begins operation to control particulate emissions of these furnaces.

In addition to removing operational requirements for the BOP furnaces in the future, to accommodate operation with the new baghouse system, the second version of Section 7.5 in the CAAPP permit would include new requirements that would be appropriate for operation with the baghouse. In particular, the project-specific conditions from the construction permit for the baghouse system that should be added to the CAAPP permit would also be included in the second version of Section 7.5. For example, Condition 2 of the Construction Permit, which contains the PM emission limit for the new baghouse system, 0.005 gr/scf, would be proposed to be added to the CAAPP permit, as new Condition 7.5.6-1 in the second version of Section 7.5.

Finally, some general changes would be proposed to be made in the second version of Section 7.5 so that the CAAPP permit clearly and appropriately addresses the new configuration of the BOP furnaces, with both baghouse and ESP control systems. For example, the narrative description of the BOP furnaces in Condition 7.5.1 of the CAAPP permit would be revised to address the new baghouse control system.

All of the changes to the current CAAPP permit for the Granite City Works that are proposed to be authorized pursuant to this construction permit are set forth in Part 2 of the draft construction permit. These changes are further described in attachments to this project summary. Attachment B provides a detailed narrative discussion of the various changes to the CAAPP permit that are proposed to be authorized comparing the current version of Section 7.5, which addresses the current configuration of the BOP furnaces, and the proposed second version of Section 7.5, which would address the future configuration of the BOP furnaces with a baghouse. Attachments C and D provide "mark ups"[27] of relevant excerpts of the current CAAPP permit that contain the conditions for the BOP furnaces. Attachment C sets out the proposed changes to the current version of Section 7.5 to address transition to the future configuration of the BOP furnaces. Attachment D sets out the proposed second version of Section 7.5, for the future configuration of the BOP furnaces, compared to the current version of Section 7.5, for the current configuration of the furnaces.

To further support the changes that would be authorized to the CAAPP permit by administrative amendment, additional information is included in Attachment A of this Project Summary as would be included in a Statement of Basis for a proposed significant action on a CAAPP permit. A Statement of Basis is a support document that is meant to provide a narrative of the legal and factual basis underlying the planned construction permit and CAAPP permit modifications. As the Statement of Basis is only an informational document, like this project summary, it is not a part of any permit that would be issued and it does not create any binding or enforceable rights or duties independent of such permit.

To provide further clarity on the approach that would be taken to address both current and future requirements for the BOP furnaces in the CAAPP permit, the construction permit would also provide for changes to the Table of Contents in the current CAAPP permit to also address the presence of two sections in the CAAPP permit that are both designated Section 7.5.

[27] In the mark-ups, new conditions and language that would be added are underlined. Conditions and language that would be removed are struck out or interlined. Conditions and language would be carried over and not changed are not marked. Explanatory notes, which would not actually be included in the amended CAAPP permit, are provided within parentheses in italic type.

VIII. Request for Comments

It is the Illinois EPA's preliminary determination that the application for the proposed project meets applicable state and federal air pollution control requirements, subject to the conditions in the draft construction permit. It is also appropriate for the construction permit to be processed by Integrated Processing so that it authorizes certain changes to be made to the current CAAPP permit for the Granite City Works to be made by administrative amendment. The Illinois EPA is therefore proposing to issue a construction permit for the project, as applied for by US Steel.

Comments are requested on this proposed action by the Illinois EPA, the conditions of the draft construction permit for this project, as set forth in Part 1 of this draft permit, and the revisions to the CAAPP Permit that would be authorized by the construction permit, as set forth in Part 2 of the draft permit, and further described in this project summary.

Attachment A:

Additional Information for a Statement of Basis

This attachment provides additional information to accompany the public comment period on the draft construction permit for the new baghouse control system for the Basic Oxygen Process (BOP) furnaces. This attachment includes information that that would not necessarily be included in a project summary for a draft construction permit but would be included in a Statement of Basis when one is prepared for a proposed modification of a Clean Air Act Permit Program (CAAPP) permit. This attachment has been prepared and appended to the project summary for this project because this construction permit application would be subjected to integrated processing. As such, the processing of this application must be subject to procedural and compliance requirements that are substantially equivalent to those for issuance of a modified CAAPP permit. One of the procedural requirements for a modification or revision to a CAAPP permit that would make significant changes to requirements is the preparation of a Statement of Basis to accompany the public comment period on the draft of the modified CAAPP permit.[28]

I. Introduction

The Clean Air Act Permit Program (CAAPP) is Illinois' version of the operating permit program that is mandated by Title V of the federal Clean Air Act for certain sources of emissions. Consistent with Title V of the federal Clean Air Act and federal regulations thereunder adopted by USEPA, the CAAPP generally requires that stationary sources in Illinois that qualify as major sources based on their emissions of regulated air pollutants must apply for and obtain a CAAPP permit for their operations. The CAAPP is established by Section 39.5 of Illinois' Environmental Protection Act (Act) and is administered by the Illinois EPA with oversight provided by the USEPA.

II. General Information

A. Identification of Permit

CAAPP Permit No. 96030056.

This CAAPP permit was originally issued by the Illinois EPA on September 3, 2009. A revised version of this CAAPP permit was issued on May 2, 2011. On October 5, 2011, and May 3, 2012, this CAAPP permit was further revised by administrative amendments.

B. Source

United States Steel Corporation, Granite City Works
Illinois EPA Source Identification Number: 119813AAI

[28] A Statement of Basis is a support document that is meant to provide a narrative of the legal and factual basis underlying a planned action on a CAAPP permit. As the Statement of Basis is only an informational document, it is not actually a part of any permit and it does not create any binding or enforceable rights or duties independent of a permit.

C. Applicant/Permittee

United States Steel Corporation
Granite City Works
20th and State Streets
Granite City, Illinois 62040

Responsible Official
Richard E. Veitch, General Manager

D. Area Classification

The Granite City Works is located in Granite City in Madison County, Illinois. The area in which this source is located is currently designated as nonattainment for the National Ambient Air Quality Standards (NAAQS) for ozone, $PM_{2.5}$ and lead.[29] Madison County is designated as attainment or not classifiable for NAAQS for other pollutants.

E. Major Source Status

The Granite City Works is a major source of emissions based on its actual emissions of various regulated pollutants, including particulate, nitrogen oxides (NO_x), sulfur dioxide (SO_2), volatile organic material (VOM), carbon monoxide (CO), hazardous air pollutants (HAPs) and greenhouse gases (GHG).

III. Background

US Steel's Granite City Works is an integrated steel mill producing flat rolled steel products. In addition to conversion of molten iron from the blast furnaces to steel in the Basic Oxygen Process (BOP) Furnace Shop, the other principal operations at the Granite City Works are: (1) Coke Production (Coke Ovens and Coke Byproduct Plant), (2) Iron Production (Blast Furnaces), (3) Steel Finishing, (4) Boilers, and (5) Handling and Processing of Bulk Materials.[30]

A description of the current operation of the BOP furnaces at the Granite City Works, on which the new baghouse control system would be installed, follows. There are series of steps in the production of a batch or heat of steel in a BOP furnace. The cycle begins with charging the furnace. The furnace vessel is tilted to one side to enable the vessel to be charged. Scrap metal is first dumped into the vessel from a large scrap bucket carried by an overhead travelling crane. Then hot molten iron from the blast furnaces, which has undergone preliminary processing to remove sulfur, is poured into the vessel from a large ladle that is also handled by the overhead

[29] Ambient air monitoring for $PM_{2.5}$ conducted by the Illinois EPA for Granite City during the last three calendar years (2009, 2010 and 2011) shows attainment of both the annual and 24-hour NAAQS for $PM_{2.5}$. However, Illinois has not yet applied to USEPA for redesignation of this area to attainment for $PM_{2.5}$.
[30] Descriptions of the other principle operations at the Granite City Works can be found in the CAAPP permit for the facility.

crane. The particulate emissions that accompany charging are captured by capture hoods located above the area where emissions occur when a furnace vessel is tilted to one side for charging. These hoods are currently ducted to an electrostatic precipitator (ESP). The particulate from charging a furnace that is not captured is released into the interior of the BOP furnace shop, the large building that houses the furnaces. Some of the uncaptured particulate settle out and are deposited within the furnace shop. The remainder is emitted to the atmosphere, primarily through the open roof monitor at the peak of the roof on the furnace shop.

The next step in the operation of a BOP furnace is refining, in which the charge material in the furnace is actually converted into steel. The furnace vessel is returned to its vertical position so that it is under the fixed roof or hood of the furnace. First, oxygen is injected into the molten iron in the furnace vessel, acting to oxidize the carbon dissolved in the molten iron lowering the carbon content of the iron, converting it to steel. This also generates heat to completely melt the scrap metal in the charge. The oxygen is injected with a lance that is introduced into the furnace vessel through a port in the hood. After "oxygen blowing," the molten metal in the furnace is sampled in preparation for tapping, with addition of alloying materials or, if needed, additional oxygen blowing. The particulate emissions from refining are directly controlled with the open hood systems on the furnaces. These hoods are operated under negative pressure, with air drawn in through the space between the tops of the furnace vessels and the hoods, with this air and entrained emissions ducted to the ESP. Capture of emissions is enhanced as the furnaces are surrounded by walls that reach to the level of the tops of the vessels. The openings in the hoods for the oxygen lances are also equipped with steam rings. During oxygen blowing, the steam rings reduce loss of emissions through the space between the oxygen lance and the hood of a furnace. The emissions from refining that escape capture are released to the interior of furnace shop.

The next step in the operation of a BOP furnace, when refining is complete, is tapping the furnace. The furnace vessel is again tilted, now in the direction opposite that for charging. The molten steel is poured through a tap hole on the side of the furnace into a transfer ladle. Alloying materials are placed in the ladle to be dispersed into the steel by the flow of hot metal. More alloying materials may also be added to the metal in the ladle during the initial part of tapping. Associated particulate emissions are currently captured by the hoods on the furnaces, which extend over into the area in which tapping takes place. Particulate emissions from tapping that are not captured and ducted to the ESP are released to the interior of furnace shop. Flame suppression is also currently used to reduce the generation of particulate emissions. In flame suppression, natural gas is burned forming a flame that acts to shield the molten steel from oxygen, as present in the atmosphere, inhibiting formation of iron oxide.

The final step in the production cycle for a BOP furnace is emptying the slag from the furnace, preparing the furnace for the next heat. The furnace vessel is tilted back in the direction for charging and tilted even further, so that the slag flows out of the vessel into a slag pot. The production cycle ends after the slag is emptied from the vessel.

IV. Project Description

In this emission reduction project for the existing BOP furnaces, US Steel will improve the control of particulate emissions from the furnaces. This will be accomplished by constructing a new

control system with a fabric filter or baghouse for particulate emissions generated during the charging and tapping operations of these furnaces. The new baghouse will be a pulse-jet baghouse.[31] The filter bags will be cleaned by directing a pulse of compressed air into the interior of the filter bags to dislodge the accumulated dust from the surface of the bags. The filter bags will be arranged in a number of separate compartments. During cleaning, a compartment will be isolated from the exhaust gas stream. This will also enable maintenance to be performed on one compartment of the baghouse while other compartments continue in service.

The new baghouse control system would improve control of the "secondary particulate emissions" generated by charging and tapping of the BOP furnaces. The air flow through the local capture hoods for charging would be increased. Local capture hoods would be installed for tapping. Both the charging and tapping hoods would be ducted to the new baghouse, which will remove the captured particulate from the ventilation air. The level of particulate removal that will be required for the new baghouse would be more stringent than required of the existing ESP.

The installation of a new baghouse control system for the BOP furnaces would also improve control of the "primary particulate emissions" from refining. This is because the air flow through the ESP would be reduced, improving the control efficiency of the ESP due to increased gas residence time in the ESP.

V. Applicable Administrative Procedures

The Illinois EPA previously issued a construction permit for this emission reduction project, Construction Perit 1105006, issued August 31, 2011. US Steel appealed this construction permit, filing a Petition for Review with the Pollution Control Board on October 10, 2011. US Steel challenged this construction permit on both technical and procedural grounds.

This construction permit application is now being processed using "integrated processing." pursuant to Section 39.5(13)(c)(v) of the Act and 35 IAC 270.302(e).The Illinois EPA is processing this application in a manner that would meet procedural and compliance requirements that are substantially equivalent to those utilized for issuance of CAAPP permits. A public comment period, including a public hearing, is being provided on a draft of the planned

[31]To provide sufficient surface area for effective filtration, the filter material in a baghouse is arranged in a number of separate cylindrical filter bags, with one open end. Inside the baghouse, the filter bags are mounted vertically on a horizontal tube sheet, which separates the particulate-laden exhaust gas on one side of the filter bags from the cleaned gas on the other side. Particulate is removed from the exhaust gas stream as it passes through the porous filter material, accumulating on either the internal or external surface of the bags, depending on the orientation of the bags in the baghouse. Periodically, the layer of dust that accumulates on the surface of the bags is automatically removed. This "cleaning" of the filter bags is necessary to maintain gas flow through the baghouse, which would otherwise be blocked by the continuing buildup of dust on the filter material. It also prevents damage to the filter material that can result from excessive air pressure across the filter bags. Only a portion of the bags in a baghouse are cleaned at a time, so that the control of emissions is not interrupted during cleaning. When bags are cleaned, most of the accumulated dust separates from the surface of the bags and falls down by gravity into a collection hopper. Baghouses are designed with various cleaning techniques, such as physically shaking bags or directing clean air through the bags in the direction opposite normal gas flow.

construction permit for this emission reduction project. After reviewing comments on that draft construction permit, the Illinois EPA will prepare another draft of the permit that will be formally provided to USEPA, effectively serving as the proposed permit required by the CAAPP. Only following these comment periods, and the periods for appeal of the construction permit or to request further review of the construction permit by USEPA have passed, would the integrated processing of the construction permit be complete, so as to authorize future changes to the CAAPP permit for the Granite City Works, as specified by the construction permit, to be made by means of an administrative amendment.

The construction permit would further provide that these future amendments to the CAAPP permit could only become effective when the new baghouse control system begins operation. This is implicit in the permit as the amendments to the CAAPP permit would establish new requirements for the BOPFs that could be met when this new control system begins to operate. The construction permit would not provide for any changes to the operation of the BOPFs and the existing ESP control system before the new control system becomes operational.

VI. Compliance Information

As a general matter, the proposed permit action does not involve an activity that would necessitate the establishment of an associated compliance schedule in the CAAPP permit for the Granite City Works. The planned baghouse control system would be an emission reduction project, improving the control of particulate emissions from the BOP furnaces. The project has not been proposed by US Steel as an action that it would undertake to resolve any concerns about the current compliance status of the BOP furnaces. The project would be undertaken pursuant to a Memorandum of Understanding (the Agreement) between US Steel and the Illinois EPA to further reduce emissions of particulate matter from the BOP Furnace Shop.

VII. Periodic Monitoring for the New Baghouse Control System

The NESHAP standards for integrated iron and steel manufacturing facilities, 40 CFR 63 Subpart FFFFF, establish rigorous compliance procedures for the capture systems and control devices that control particulate emissions from the BOP furnaces. These procedures provide a solid foundation for the required Periodic Monitoring for the new baghouse control system.

As necessary to provide “Periodic Monitoring” for the new baghouse control system, as is required in a CAAPP permit, the compliance procedures that would be established by the draft construction permit would in certain respects supplement the compliance procedures established by the NESHAP. The draft construction permit would require monitoring of volumetric flow rate in each separately ducted capture hood for the BOP furnaces. This will include the primary hoods through which refining emissions are captured, and each leg of the secondary ductwork for tapping and charging emissions on each vessel. The draft construction permit would also require operational monitoring for volumetric flow rate in cubic feet per minute (cfm), with either direct measurement of flow rates or flow rates calculated using indirect means such as derived flow rate calculated from measured temperatures and pressures and duct diameter. Operational monitoring for capture hoods with data expressed in or converted to volumetric flow rate will simplify review of the operation of these hoods by the Illinois EPA as the amount of ventilation air that is present at

different hoods is directly stated.

The draft construction permit would also require that US Steel comply with the monitoring requirement of the NESHAP for the baghouse by use of a bag leak detection system. This type of system is expected to be more effective that an opacity monitor in verifying proper operation and maintenance of the baghouse. This is because a bag leak detection system would be more sensitive to an increase in the particulate loading in the exhaust than an opacity monitor and be able to identify increases in emissions and possible problems with the baghouse earlier than would occur with an opacity monitor.

Attachment B:

Summary of Changes to CAAPP Permit 96030056
That Are Proposed to Be Authorized by the Construction Permit

Table B1: Proposed Additions to the CAAPP Permit from Construction Permit 11050006 in the Second Version of Section 7.5 in the CAAPP Permit		
Planned Condition	**Condition in Const. Permit 11050006**	**Description/Explanation**
7.5.5-4 Operational Requirements	1(a), (c) & (d)	Certain requirements related to the design and operation of the baghouse and the ESP control systems established by the construction permit, including: 1) The design capacity of the BOPF baghouse; 2) Operational requirements for the ESP as it would now control only refining; and 3) The limited circumstances in the future in which the ESP may be used to control charging and tapping. These operational requirements from the construction permit would be relevant to the ongoing operation of the BOPFs with both baghouse and ESP control systems. For clarity, these new requirements, and other requirements carried over into the CAAPP permit, would be included in new conditions in the CAAPP permit, in this case, Condition 7.5.5-4. Condition 1(b) from the construction permit, which requires initial updates to various operational plans required by the NESHAP to be made at least 30 days before the BOPF baghouse begins operation, would not be carried over to the CAAPP permit. This requirement is "time-limited," with the date for completion being before the CAAPP permit may be amended and the operation of the BOPF baghouse would be addressed by the CAAPP permit.
7.5.6-1 Emission Limit	2	Limit from the construction permit for PM emissions of the affected BOPF baghouse. This emission limit, which is the emission limit established by the Agreement, is applicable to the ongoing operation of the BOPF baghouse.
7.5.7-1 Emissions Testing Requirements	3-1	Requirements established by the construction permit for initial emission testing of the BOPF after particulate emissions begin to be controlled with both a baghouse and an ESP control system. These testing requirements from the construction permit would be applicable and have to be satisfied when the BOPFs are operating pursuant to the CAAPP permit.
7.5.7-2 Other Testing Requirements	3-2	Other requirements established by the construction permit for testing as needed to make a determination of the control efficiency of the new baghouse. These testing requirements from the construction permit would be applicable and have to be satisfied when the BOPFs are operating pursuant to the CAAPP permit.
7.5.8-3	4(a)(ii) , (b) &	Certain requirements for operational monitoring for the new BOPF baghouse control system and the existing ESP

Monitoring Requirements	(c)	control system established by the construction permit, including: 1) The requirement that the BOPF baghouse be operated with a bag leak detection system (rather than an opacity monitor); 2) The requirement for operational monitoring for the associated capture systems in terms of volumetric flow rates; and 3) Requirements for continued operational monitoring for the capture systems in the ESP control system in accordance with relevant provisions of the NESHAP. The requirements that would be carried over into the CAAPP permit would be relevant to ongoing operational monitoring for the operation of the BOPFs. Condition 4(a)(i) of the construction permit, which only generally refers to the relevant monitoring requirements of the NESHAP that would apply to the capture systems associated with the BOPF baghouse, would not be carried over. This is because this construction permit condition does not establish any requirements that differ from those under the NESHAP. Condition 4(a)(iii), which addresses the initial update to the monitoring plan required by the NESHAP, is also not carried over. This requirement must be satisfied 30 days before the BOPF baghouse begins operation, which is before the CAAPP permit may be amended and operation of the BOPF baghouse would be addressed by the CAAPP permit.
7.5.9-1 Recordkeeping Requirements	5	Recordkeeping requirements established by the construction permit for the affected baghouse and the BOPFs. The requirements that would be carried over into the CAAPP permit would be relevant to ongoing recordkeeping for the operation of the BOPFs.
7.5.10-1 Reporting Requirements	6	Reporting requirements from the construction permit for notifications and reporting, including requirements for notifications and a one-time Project Report. Reporting requirements that would apply while the BOPF baghouse is under construction would not be carried over.

Table B2: Proposed Changes to the Existing Provisions of CAAPP Permit 96030056, Comparing Current Section 7.5 of the Permit And the Proposed Second Section 7.5 of the Permit		
Condition(s) in the CAAPP Permit	**Nature of Change**	**Description/Explanation**
Note	Add	Informational note at the beginning of the second version of Section 7.5 discussing the timing of its applicability and the transition from the first and second versions of Section 7.5
7.5.1 7.5.2 Description	Revise	The narrative description of the BOPFs in the CAAPP permit and the related listing of emissions units and control equipment would be revised. The revisions would be made so that this descriptive information for the BOPFs in the CAAPP permit is up-to-date and accurate, with charging and tapping controlled by the new baghouse control system and only refining controlled by the existing ESP. Changes would also be made so this information more accurately and clearly describes the operation of the BOPFs and associated control measures.
7.5.5-1 NESHAP Requirements for Operation And Maintenance	Revise	Existing provisions addressing operation and maintenance requirements of the NESHAP would be revised. Changes would be made so that these provisions correctly, appropriately and clearly address the new baghouse control system. Changes would include identifying the BOPF baghouse in the introductory language as another baghouse in the BOP steelmaking operations that is subject to the operation and maintenance requirements of the NESHAP, with accompanying changes to wording. Additional regulatory citations would be added. The provisions of 40 CFR 63.7800(b)(3) for operating parameter limits for capture systems for secondary emissions from BOPFs would also be added.
7.5.5-3(a)(i) Requirements for Staggered Operation	Remove	Operational requirements related to staggering of the oxygen blowing of the BOPFs, the charging of hot metal and alloy addition during tapping would be removed. This change would be made because the new baghouse control system will be designed with sufficient capacity to simultaneously control charging of one furnace and tapping of the other. Accordingly, staggering of these operational steps by the BOPFs will no longer be necessary for the BOPFs to comply with applicable emission standards. More generally, the existing requirements for staggered operation are made obsolete by the operational requirements for the BOPFs that are established under the NESHAP, 40 CFR 63.7790(b)(1), 63.7800, 63.7824 and 63.7830(a)(3). This is because the NESHAP directly requires that the BOPFs be operated in a manner that is consistent with that during a performance test in which compliance with applicable emission standards has been shown. As such, the NESHAP would preclude overlap of different steps in the operation of the two BOPFs if performance testing has not demonstrated the ability to comply when such steps overlapped. As such, only the most basic restriction on overlapping operation of the BOPFs would be maintained, consistent with the construction permit for the baghouse control system, which does not allow simultaneous oxygen blowing of both vessels. This restriction would recognize the current capacity of the control system for oxygen blowing (refining), which is currently considered to be nowhere near adequate for the oxygen blowing

		of both furnace vessels simultaneously. Lastly, the operating parameter limits under the NESHAP more directly address operation of capture systems for secondary emissions from BOPFs than the requirements that would be removed. Moreover, as related to the manner of operation, the NESHAP addresses the operation of the capture hoods for secondary emissions and the air flow entering the control devices, rather than the aggregate flow of gas at the stack of the particulate control device. The NESHAP also provides appropriate flexibility for changes to operating parameter limits, both up or down, as a consequence of additional performance tests, which may address physical or operational changes to the BOPFs or their associated control systems. The installation of the new baghouse control system is such a change under the NESHAP, which will trigger a requirement to conduct further performance testing to establish new operating parameter limits for the new and enhanced capture systems for charging and tapping.
7.5.5-3(a)(ii) Flame Suppression for Tapping	Remove	The requirement for use of flame suppression for alloy addition would be removed. Use of flame suppression would become unnecessary when tapping is controlled with local capture hoods and a baghouse. This new equipment will provide better overall control of emissions. Continued use of flame suppression would also act to reduce the capture efficiency of the new hoods. This is because the volume of a gas expands with temperature. Continued use of flame suppression would increase the temperature of the air in the area in which tapping occurs, acting to reduce the amount of air actually drawn in by the new capture hoods. Continued use of flame suprression would also pose a physical threat to the new capture system due to the higher temperature that would result and increased carryover of sparks into the ductwork.
7.5.5-3(b)(i) and 7.5.6(h) ESP Set Points	Remove	Specific set points for the ESP (i.e., minimum numerical requirements for the exhaust gas flow rate at the stack of the ESP) during different operations and configurations of the BOPF would be removed. When the new baghouse control system begins operating, these requirements would no longer be relevant. The requirements that apply for tapping and charging or overlapping operation would cease to be relevant when tapping and charging are not controlled by the ESP. The requirement for refining when only a single furnace is operating would also cease to be relevant. When the new baghouse control system begins operation, the only gas flow from the ESP will be associated with refining, without leakage from the charging hoods and associated ductwork. More generally, the existing requirements are made obsolete by the operating parameter limits for capture systems for the BOPFs that are established under the NESHAP, 40 CFR 63.7790(b)(1), 63.7800, 63.7824 and 63.7830(a)(3). These operating parameter limits more directly address operation of capture systems on BOPFs than the requirements that would be removed. This is because they address the operation of the capture hoods for secondary emissions and the air flow entering the control devices, rather than the aggregate flow of gas at the stack. The NESHAP also provides appropriate flexibility for changes to operating parameter limits, both up or down, as a consequence of additional performance tests, which may address physical or operational changes to the BOPFs or their associated control systems. The installation of the new baghouse control system is such a change under the NESHAP, which will trigger a requirement to conduct additional performance testing to establish new operating parameter limits for both the new and enhanced capture systems for charging and tapping of the BOPFs.

7.5.5-3(b)(ii) Operation of the ESP to comply with Permit 95010001	Remove	The requirement to generally operate, maintain and repair the ESP to comply with Construction Permit 9501001 would be removed. This change would be made because, in the context of the CAAPP permit, this requirement would misleadingly suggest that the CAAPP permit generally requires compliance with requirements in Construction Permit 95010001. However, the CAAPP permit should actually incorporate the specific requirements from this construction permit that continue to be applicable to the ESP. Moreover, in the event that a decision had been made to address conditions of Construction Permit 95010001 by reference, rather than by incorporating those conditions, the CAAPP permit should have referred to specific conditions of that permit, rather than referring to that permit in its entirety. In addition, general requirements for proper operation of the ESP are now provided for by the NESHAP, as it requires operation of the BOF in accordance with good air control practice (see 40 CFR 63.6(e) (1)(i) and 63.7800(a)) and further requires that US Steel prepare and implementation of a written operation and maintenance plan for the BOF (40 CFR 63.7800(b)).
7.5.6(c) ESP stack emissions	Revise	A parenthetical phrase would be removed from this condition, which contains permit limits for the emissions of the ESP. The phrase indicates that the emissions of the ESP include emissions from charging, refining and tapping of the BOPF. The phrase would be removed because it would no longer be accurate when charging and tapping emissions are controlled by the new baghouse control system.
7.5.6(h)	Remove	See discussion for Condition 7.5.5-3(b)(i)
7.5.7(a)(i) and (i) NESHAP Testing	Revise	Provisions would be added to this condition, which addresses the PM emissions testing required by the NESHAP, 40 CFR 63.7821 for baghouse control systems used on BOPFs. The changes would be made to clarify the frequency of PM testing required for the BOPF by the NESHAP when emissions are controlled by both baghouse and ESP control systems. In particular, testing of the ESP would continue to be required every 30 months (nominally twice during the term of the CAAPP permit) and testing of the baghouse would be required every five years (nominally once during the term of the CAAPP permit).
7.5.8(a)	Revise	Provisions addressing operational monitoring requirements of the NESHAP for capture systems for secondary emissions from BOPFs would be revised. Changes would be made so that these provisions correctly, appropriately and clearly address the capture systems that are part of the new baghouse control system. Changes to wording would be made to clearly and appropriately address these capture systems as subject to these requirements. Headings and additional regulatory citations would be added for clarity.
7.5.8(b) (former 7.5.8(a)(ii)	Revise	Provisions addressing requirements of the NESHAP for bag leak detection systems for baghouses used for BOP processed would be revised. Changes would be made so that these provisions correctly, appropriately and clearly address the requirements that would apply to capture systems that are part of the new baghouse control system for the BOPF.
7.5.8(c) (former 7.5.8(a)(iii)	Revise	Provisions addressing monitoring requirements of the NESHAP for bag leak detection systems for baghouse would be revised. Changes would be made so that these provisions correctly, appropriately and clearly address the requirement that would

		apply to the new baghouse control system.
7.5.8(d) (former 7.5.8(a)(iv)	Revise	Provisions addressing monitoring requirements of the NESHAP for the ESP would be revised. Changes would be made so that these provisions correctly, appropriately and clearly address the requirement that would apply to the ESP.
7.5.8(e) (former 7.5.8(b)	Revise	Provisions addressing requirements of the NESHAP for the installation, operation and maintenance of required bag leak detection systems would be revised. Changes would be made so that these provisions correctly, appropriately and clearly address the requirement that would apply to these bag leak detections systems, including the system for the new BOPF baghouse.
7.5.8(f) (former 7.5.8(b)(ii)	Revise	Provisions addressing requirements of the NESHAP for the installation, operation and maintenance of the required opacity monitor for the ESP would be revised. Changes would be made so that these provisions correctly, appropriately and clearly address the requirement that would apply to the opacity monitoring system for the ESP.
Former 7.5.8(c)	Remove	Provisions addressing inspections of equipment related to the performance of capture systems would be removed. These provisions, which appear twice in the existing permit, would be removed. This is because they are redundant, repeating earlier requirements in Condition 7.5.5-1(b)(i).
Former 7.5.8(d)(i) Monitoring of Static Pressures for the ESP Control System	Remove	Requirements for operational monitoring of waste gas suction (i.e., static pressure) in the common ductwork feeding the ESP for charging, refining and tapping during each steel production cycle would be removed. This change would be made because the ESP would no longer be used to control charging and tapping. In addition, this monitoring requirement is made obsolete by the NESHAP, which now provides a comprehensive approach to operational monitoring for capture system for secondary emissions from BOPFs.
Former 7.5.8(d)(ii) & (iii) Former 7.5.9(b)(vi) & (vii) Monitoring of ESP Stack Flow Rate	Remove	Requirements for operational monitoring of ESP stack gas flow rate would be removed. This change would be made because the underlying requirements for minimum stack gas flow rate would be removed. (See changes to Conditions 7.5.5-3(b)(i) and 7.5.6(h)(i)). In addition, this monitoring requirement is made obsolete by the comprehensive approach to operational monitoring in the NESHAP.
7.5.8(g) (former 7.5.8(f))	Relocate	General requirements for monitoring conducted pursuant to the NESHAP would be relocated to Condition 7.5.8(g), from former Condition 7.5.8(f). This condition would be relocated so that all monitoring requirements pursuant to the NESHAP would be in a single condition, Condition 7.5.8, and other monitoring requirements, which have a different legal basis, would be in other separate conditions. Appropriate headings would be added for these provisions. This change and related changes would be made to improve the clarity of the permit, especially as additional monitoring requirements established by Construction Permit 11050006 would also now be included in the CAAPP permit.
7.5.8-1	Renumber	Existing requirements for opacity observations that are not required under the NESHAP, but are established in the

(former 7.5.8(e) & (f))		CAAPP permit as another component of periodic monitoring, would be renumbered to become part of a new condition, Condition 7.5.8-1.
7.5.8-2 (former 7.5.8(g)	Renumber	Existing requirements for operational monitoring related to the steam rings, which are not required by the NESHAP, but which originated in Construction Permit 10080021 and are carried over into the CAAPP permit as another component of periodic monitoring, would be renumbered to become new Condition 7.5.8-2.
7.5.8(d)(iv) Inspection and Repair of Capture Systems Associated with the ESP	Remove	Requirements for periodic inspections of capture systems associated with the ESP, with timely correction of observed deficiencies, would be removed. The existing requirements are generally made obsolete by the work practices required by the NESHAP. Monthly inspection of the equipment that is important to the performance of the total capture system and repairs of defects or deficiency before the next scheduled inspection are now required by 40 CFR 63.7800(b)(1) and 63.7834. In addition, when the new baghouse control system begins operation, these requirements would no longer address the existing capture systems for charging.
7.5.9(b)(i) thru (iv) Certain Recordkeeping Requirements	Remove	Requirements for keeping certain records related to the BOPF and the existing control system would be removed, including records for: (i) Operating time of the BOPF; (ii) Operating time of the capture systems and certain operating data for these systems; (iii) Operating times of the ESP and certain performance data for the ESP; and (iv) Inspection and maintenance records for the existing capture systems and the ESP. The recordkeeping requirement would be removed because they have been replaced by requirements that more directly address proper operation of the ESP, including recordkeeping requirements of the NESHAP. In particular, records for "operating times" of the BOPF, the ESP capture systems and the ESP itself do not directly address lapses in control of particulate emissions, i.e., periods when a BOPF operates without proper capture and control of emissions. The NESHAP, 40 CFR 63.7834, includes recordkeeping for preventative maintenance is performed and corrective actions that are taken.
7.5.9(b)(vi) & (vii)	Remove	See discussions for Condition 7.5.8(d)(ii) & (iii)
7.5.15	New	Transition provision addressing applicability of the second version Section 7.5

Attachment C:

Current Section 7.5 of CAAPP Permit 96030056 (Abridged)
Marked to Show the Changes That May Be Made to this Section of the CAAPP Permit by Administrative Amendment Pursuant to Integrated Processing to Address the Period before the New Baghouse Control System Begins Operation

(Text that would be added is underlined.)

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.

Attachment D:

Current Section 7.5 of CAAPP Permit 96030056 (abridged)
Marked to Show the Changes That May Be Made to This Section of the CAAPP Permit by Administrative Amendment Pursuant to Integrated Processing to Set Forth an Alternative Version of Section 7.5 That Would Address the Period after the New Baghouse Control System Begins Operation

(Text that would be added is underlined. Text that would be removed is interlined. For certain provisions that would be moved within the section, the text at the new location is underlined and the text at the previous location is interlined.)

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 begin 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

…

Basic Oxygen Process Furnaces (BOPF or BOF):

The steel production cycle or "heat" in a BOPF ~~A fresh BOF charge usually~~ begins with the charging of scrap metal ~~. The scrap is charged~~ 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 ~~the~~ temperature and reduce the amount of molten iron that is needed ~~for *a* heat of steel~~. Flux materials are also added to the vessel. After the BOPF is charged, ~~The BOF is then closed off and~~ an oxygen lance is inserted through the roof of the BOPF to begin the ~~melting and~~ refining phase with the "oxygen blow~~process~~." ~~The oxygen lance openings on each BOF is equipped with steam rings. The steam rings are control measures for emissions of particulate matter from *the* BOF during the "oxygen blow" or refining phase when oxygen is being fed into the furnaces. The steam rings would inject steam in the area between the oxygen lance and the "lance hole" in the lid of the furnaces, acting to suppress the emissions of particulate through this area during the refining phase.~~ In the BOPF, the injected oxygen reacts exothermically with the carbon in the iron generating heat, ~~which~~ melting~~s~~ the scrap and reducing the amount of carbon in the bath, thus converting the iron to steel. When ~~the~~ refining ~~process~~ is complete~~d~~, the BOPF is tapped, by pouring ~~. First,~~ the molten steel from the vessel ~~is poured~~ into a ~~steel~~ transfer ladle. ~~Materials such as aluminum, silica, and manganese are added, as required, depending upon the particular steel~~

~~alloy being produced.~~ After ~~molten steel is~~ tapped~~ed~~ing, the slag is emptied from ~~remaining in~~ the ~~BOPF~~ vessel ~~slag is then dumped~~ 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 ~~*from these operations*~~ are captured by the roofs over the BOPFs and ducted to ~~and controlled with~~ 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.

…

(No changes to other parts of these provisions, which are for informational purposes only and not enforceable)

7.5.2 List of Emission Units and Air Pollution Control Equipment

…

Location	Basic Oxygen Process Descriptions	Date Constructed	Emission Control Equipment
Basic Oxygen Process Furnace Shop (BOPF)	Basic Oxygen Process Furnaces (BOPF or BOF) #1 and #2 with Steam Rings	Prior to 08/1972	Baghouse (Charging and Tapping) and Electrostatic Precipitator (Refining)

…

(No changes to other parts of these provisions, which are for informational purposes only and not enforceable)

7.5.3 Applicable Provisions

(No changes to these provision)

7.5.4 Non-Applicability of Regulations of Concern

(No changes to these provisions)

7.5.5-1 NESHAP Requirements ~~Work Practices Provisions~~ for Operation and

Maintenance ~~Plan~~ (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 ~~the basic oxygen processes~~, 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), t~~T~~he 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 ~~control device~~ subject to ~~an~~ 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~~ii~~. 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.

~~i~~v. Corrective action procedures for the ~~electrostatic precipitator (~~ESP~~)~~ for the BOPF, as it is equipped with a COMS. In the event the ~~an~~ 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

(No changes to these provisions related to compliance with NESHAP standards during malfunctions)

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

(No changes to these provisions related to compliance with state emissions standards and rules during malfunction and breakdown)

7.5.5-3 Work Practices from Permit~~s 72080043, 95010001 and~~ 10080021 (T1)

a. ~~Pursuant to Permit 72080043 [T1]:~~

~~i. Overlapping operations of the BOF vessels is allowed under the following conditions:~~

~~A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.~~

~~B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (a.k.a., doghouse) and the alloy addition at the vessel tapping has been completed for at least 1 minute.~~

~~C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other vessel in order to satisfy Condition (A) above.~~

~~D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel and overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.~~

~~E. Condition (B) and (C) above shall be part of the Standard Operating Procedure (SOP) of the BOF vessels.~~

~~ii. Each BOF vessel shall be equipped with a Fume Suppression System which shall be in use at all times that tapping is occurring during overlapping operations.~~

~~b. Pursuant to Permit 95010001 [T1]:~~

~~i. The BOF capture system shall be operated at the above minimum set points (see Condition 7.5.6(h)) until and unless the Illinois EPA approves a lower minimum set point based on a demonstration that a better level of particulate matter control will occur, except for purposes of emissions testing as related to the set point [T1].~~

~~ii. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of Permit 95010001 [T1].~~

~~iii. The Permittee shall maintain an adequate inventory of spare parts for the BOF ESP at all times. [T1].~~

~~c. Pursuant to Permit 10080021 [T1]:~~

~~i.~~ 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~~ii~~. 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]:

PM	PM_{10}	NO_x	VOM	CO	Lead
510	451	70	12	16,097	1.43

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

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM_{10}	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26

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

Pollutant	(Lbs/Ton)	(Tons/Yr)
PM	0.0987	176.71
PM_{10}	0.06614	118.40
Lead	0.0129 lbs/hr	0.08

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

(No changes to these limits)

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

(No changes to these limits)

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

(No changes to these limits)

~~h. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods [T1]:~~

~~i. Set point requirements while only a single BOF vessel is in operation:~~

~~A. Minimum set point during charging operation: 550,000 cfm;~~

~~B. Minimum set point during refining operation: 650,000 cfm; and~~

~~C. Minimum set point during tapping operation: 200,000 cfm~~

~~(until one minute after completing alloy addition).~~

~~ii. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the minimum set point shall be 700,000 cfm.~~

h~~i~~. 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)~~(i)~~) were originally established in Construction Permit 95010001.

i~~j~~. Emissions of particulate matter from the Ladle metallurgy station and the existing argon stirring station shall not exceed 16.20 TPY [T1].

j~~k~~. 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~~j~~) and (j~~k~~)) 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~~asic Oxygen Furnace~~s (which are equipped with a control device other than a baghouse), the Permittee shall conduct ~~subsequent~~ 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 ~~asic Oxygen Furnace~~ 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_{10}*, lead and other pollutants as follow: BOPFs ~~Furnaces~~ (ESP) – NO_x, VOM and CO; and Hot Metal Desulfurization and Slag Skimming (Baghouses) – VOM.

* As an alternative to measurements for PM_{10} emissions, the measured results for PM, as determined in accordance with the NESHAP, shall be considered PM10, 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.

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
VOM	Method 18 or 25A
NO_x	Method 7E or 19
CO	Method 10 or 10B
Lead	Method 29

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_{10} and $PM_{2.5}$, condensable particulate matter, NO_x, 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_{10} and $PM_{2.5}$, 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.

Filterable PM_{10} and $PM_{2.5}$	Method 201 or 201A
Condensable Particulate	Method 202

iii. During all test runs for emissions of PM and filterable PM_{10} or $PM_{2.5}$ 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))

~~i.~~For each ~~the~~ capture system for secondary emissions from the BOPF ~~Basic Oxygen Furnaces~~ (as it is ~~which are~~ 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 ~~63.7831(e) and~~ ~~the requirements in 40 CFR~~ 63.7830(a)~~(1) through (3)~~ and 63.7831(e).

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

~~ii.~~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., ~~for~~ Baghouse #2, ~~and~~ 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))

~~iii.~~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~~ [40 CFR 63.7830(b)(4)]:~~. Pursuant to 40 CFR 63.7833(c)(3), the Permittee shall also maintain all records needed to document conformance with these requirements.

i~~A~~. 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~~B~~. 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~~C~~. Check the compressed air supply for pulse-jet baghouses each day. [40 CFR 63.7830(b)(4)(iii)]

iv~~D~~. Monitor cleaning cycles to ensure proper operation using an appropriate methodology. [40 CFR 63.7830(b)(4)(iv)]

v~~E~~. Check bag cleaning mechanisms for proper functioning through monthly visual inspections or equivalent means. [40 CFR 63.7830(b)(4)(v)]

vi~~F~~. Make monthly visual checks of bag tension on reverse air and shaker-type baghouses to ensure that bags are not kinked (kneed 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~~G~~. 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~~H~~.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~~v~~. For the ESP for ~~controlling~~ the BOPF ~~furnaces~~ (which is ~~are~~ subject to an opacity operating limit ~~of 10 percent, hourly average,~~ 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 ~~[40 CFR 63.7833(g)]~~:

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 ~~in paragraph~~ 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~~b~~. NESHAP Requirements for Installation, Operation, A~~a~~nd M~~m~~aintenance ~~requirements for~~ of M~~m~~onitors for Baghouses [40 CFR 63.7831(f)]

~~i.~~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~~A~~. 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~~B~~. The system must provide output of relative changes in particulate matter loadings. [40 CFR 63.7831(f)(2)]

iii~~C~~. 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~~D~~. 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~~E~~. 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~~F~~. 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~~G~~. 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)]

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

~~ii~~~~B~~. 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~~C~~. 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~~D~~. 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.

~~c. Pursuant to the operation and maintenance requirements of the O/M plan required by 40 CFR 63.7800(b), the Permittee shall comply with following inspection procedures for the capture systems and controls:~~

~~Monthly inspections of the equipment that is important to the performance of the total capture system. This inspection must 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). Repair of any defect or deficiency in the capture system shall be done before the next scheduled inspection.~~

~~c. Pursuant to the operation and maintenance requirements of the O/M plan required by 40 CFR 63.7800(b), the Permittee shall comply with following inspection procedures for the capture systems and controls:~~

~~Monthly inspections of the equipment that is important to the performance of the total capture system. This inspection must 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). Repair of any defect or deficiency in the capture system shall be done before the next scheduled inspection.~~

~~d. Monitoring of capture and control systems for Basic Oxygen Furnaces (from Permit 95010001):~~

~~i. The Permittee shall operate and maintain the waste gas suction monitor system for the capture system for the Basic Oxygen Furnace that continually measures and records each operation (i.e., for each charge, each refine, each tap) of each steel production cycle the static pressure in the main downcommer duct of the ESP emissions capture and transport system.~~

~~A. The Permittee shall use the waste gas suction monitoring system as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.~~

~~B. The Permittee shall operate and maintain the system to ensure that accurate and useful data is collected.~~

~~C. The Permittee shall continuously record the static pressure in the main down comer duct of the ESP emissions capture and transport system.~~

~~ii. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder or disk storage of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.~~

~~iii. The stack gas flow meter shall be calibrated on at least a quarterly basis.~~

~~iv. A. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.~~

~~B. A log shall be maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).~~

~~C. Any leaks or areas otherwise noted to be in need of repair, shall be repaired expeditiously.~~

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:

ae. Routine Opacity Oobservations for the BOF Shop35 IAC 212.446(c);

i. 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.

iA. 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).

iiB. 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~~C~~. 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~~1~~. The duration of opacity observations for each test shall be one complete steel making cycle.

B~~2~~. 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~~3~~. On a weekly basis (at least once every seven operating days of BOF) except as provided below.

D~~4~~. 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~~f~~. Additional Opacity Observations for the BOF Shop

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

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

iv~~D~~. 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~~E~~. 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~~iii~~. Opacity Observations for the ESP for the BOF

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

~~f. NESHAP Monitoring and Collecting Data [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.~~

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

(No changes to these provisions)

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. Operating time of the BOFs;~~

~~ii. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;~~

~~iii. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;~~

~~iv. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements;~~

i~~v~~. Total production of molten steel at the BOFs (daily, monthly, and annual production in tons).~~;~~

~~vi. The Permittee shall keep a continuous strip chart recorder or disk storage of the stack gas flow rate during ESP use.~~

~~vii. The Permittee shall records for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.~~

ii. Records of all opacity observations.

c. Recordkeeping carried over from Permit 08110016:

(No changes to these provisions of the CAAPP permit)

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

(No changes to these provisions of the CAAPP permit)

e. Production Records

(No changes to these provisions of the CAAPP permit)

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

(No changes to these provisions of the CAAPP permit)

<u>7.5.9-1 Recordkeeping Requirements from Permit 11050006</u>

<u>a. The Permittee shall maintain a file or other records that contain the following information for the affected BOPF baghouse system:</u>

<u>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.</u>

<u>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.</u>

<u>b. After charging and tapping of both BOPFs first begin to be controlled with</u>

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

(No changes to these provisions of the CAAPP permit)

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_{10} and $PM_{2.5}$) 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

(No changes to these provisions of the CAAPP permit)

7.5.12 Compliance Procedures

(No changes to these provisions of the CAAPP permit)

7.5.13 Compliance Schedule and Current Enforcement Status

(No changes to these provisions of the CAAPP permit)

7.5.14 State-Only Conditions

(No changes to these provisions of the CAAPP permit)

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.

Attachment E:

Memorandum of Understanding

(For Informational Purposes Only)

United States Steel Corporation
Granite City Works and
IEPA Memorandum of Understanding

The Memorandum of Understanding (MOU or Agreement) is entered into by and between United States Steel Corporation (U. S. Steel) and the Illinois Environmental Protection Agency (IEPA), and is dated and effective as of the last date of signature in the signature block.

U. S. Steel and IEPA have reached an Agreement that will achieve reductions in emissions of particulate matter from U. S. Steel's Granite City Works, with the specific intent of reducing the emissions of particulate matter$_{2.5}$ (PM2.5). This MOU sets forth the terms of the Agreement between U. S. Steel and IEPA and sets forth the intended regulatory uses for those emission reductions. This agreement does not relieve U.S. Steel from the continuing obligation to comply with requirements of applicable Federal and State regulations, construction or operating permits, and other applicable requirements to control emissions.

1. Enhancements to Compliance Procedures
   a. Within 2 months of the effective date of this agreement, U. S. Steel shall begin installation of an enhanced operational monitoring system for the capture systems for particulate matter emissions from the Basic Oxygen Furnaces (BOF), including installation, operation and maintenance of monitoring devices to verify the performance of each capture system during the various steps in the steelmaking process. This will include establishment of values of operating parameters that reliably indicate and ensure adequate capture of emissions by each existing hood.
   b. Within 3 months of beginning operation of any additional new pollution control equipment at the BOF, as prescribed in this MOU, U. S. Steel shall implement enhanced operational monitoring for such new capture system for particulate matter. Such implementation will include installation, operation and maintenance of appropriate monitoring devices. These devices will verify the performance of the new capture system. Such monitoring devices will be used to establish values of operating parameters that reliably indicate and ensure adequate capture of emissions by each new hood.
   c. Within 2 months of the effective date of this agreement, U. S. Steel shall conduct opacity readings of emissions escaping from any openings in the Basic Oxygen Process Furnace (BOPF) building in accordance with USEPA Method 9 in 40 CFR Part 60, Appendix A. These readings shall be performed for at least five (5) days out of every seven (7). 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 (3) minute rolling averages. U.S. Steel shall maintain appropriate records for all opacity measurements and these records shall be made available upon request from the IEPA.

d. U.S. Steel may, at some later date, submit a formal request to IEPA to streamline the monitoring requirements. This request shall be submitted as an application for a significant modification to the CAAPP permit.

2. Emission Limits
   a. All particulate matter emission limits in this MOU are expressed in terms of particulate as would be measured by USEPA Methods 5, 5D or 17.
   b. As of January 1, 2012, U. S. Steel shall comply with the following requirements for particulate matter emissions:
      i. Particulate matter emissions from the basic oxygen process (BOP) that exit from the electrostatic precipitator stack must not exceed 0.01 gr/dscf.
      ii. Particulate matter emissions from hot metal desulfurization and reladling (BOF Hot Metal Transfer and Desulfurization Baghouse(s)) that exit from the baghouse must not exceed 0.005 gr/dscf.
      iii. Particulate matter emissions from slag skimming (BOF Slag Skimming Baghouse(s)) that exit from the baghouse stack must not exceed 0.005 gr/dscf.
      iv. Particulate matter emissions from ladle metallurgy operations (LMF Baghouse) that exit from the baghouse stack must not exceed 0.005 gr/dscf.
   c. As of March 31, 2013, or such later date established pursuant to paragraph 4(c)(v) below, U. S. Steel will comply with the following requirements for particulate matter emissions from tapping:
      i. Emissions shall be controlled by a new baghouse.
      ii. Emissions that exit from this baghouse stack must not exceed 0.005 gr/dscf.

3. Within 2 months of the effective date of this Agreement U. S. Steel shall submit an application for a federally enforceable permit or permits to incorporate the requirements of Sections 1 and 2 above. The federally enforceable permit or permits shall include the requirements imposed by Sections 1 and 2 and appropriate requirements for emission testing, monitoring, recordkeeping and reporting associated with these requirements.

4. Emission Reduction Projects
   a. Steam Rings for the Oxygen Lances
      i. Within 6 months of the effective date of the Agreement, U. S. Steel will complete basic engineering of steam rings for the oxygen lances in the BOP shop.

ii. U. S. Steel will submit a construction permit application and an installation schedule to IEPA within 30 days of completion of the basic engineering. In consideration of the need to begin operation of the steam rings by October 31, 2011, U. S. Steel shall commence construction of the steam rings within 40-days of issuance of a final construction permit, assuming that no appeal(s) or challenge(s) of the Permit or the requirements therein have been filed with the Pollution Control Board or Federal Court within that 40-day period.

b. U. S. Steel will complete the installation and begin operation of the steam rings no later than October 31, 2011 provided that the required construction permit is obtained in a reasonable time and not appealed.

c. Secondary Emission Control for Tapping

i. Within 9 months of the effective date of the Agreement, U. S. Steel will complete the basic engineering for the installation and operation of a dedicated tapping emission control system that includes a fabric filter control device (baghouse).

ii. The tapping emission control system will be designed for optimal capture to minimize emissions from tapping, which have the potential of escaping to the atmosphere from the BOPF building. The air pollution control device for the captured emissions will be designed to comply with a particulate matter emission rate of 0.005 grains per dry standard cubic feet exhaust, at the stack.

iii. Within 30 days of the completion of the basic engineering for the new control system, U. S. Steel will submit a construction permit application for the new system to the IEPA that contains a schedule for the design engineering, construction and initial start up of the new tapping emission control system.

iv. In consideration of the need to begin operation of the secondary emission controls for tapping by March 31, 2013, IEPA shall act on all required permit(s) within three months of receipt of permit application(s) from U. S. Steel. U. S. Steel shall commence construction of the secondary emission controls for tapping within 40-days of issuance of a final construction permit, assuming that no appeal(s) or challenge(s) of the Permit or the requirements therein have been filed with the Pollution Control Board or Federal Court within that 40-day period.

v. U. S. Steel will begin operation of the new tapping emission control system no later than March 31, 2013 provided that required permits are obtained in a reasonable time and not appealed.

d. Secondary Emission Control for Charging

i. As part of the engineering for the new tapping emission control system, U. S. Steel will also evaluate the current emission control system for charging and potential projects to reduce particulate matter emissions from charging. As part of this evaluation, U. S. Steel will evaluate improvements to the capture efficiency achieved for charging emissions and ducting some or all of the captured charging emissions, which currently are controlled by the electrostatic precipitator, to the new control device for tapping or another new baghouse.

ii. If the evaluation completed in paragraph 4(d)(i) does not support implementing additional projects to reduce particulate emission from charging, U. S. Steel will submit within 9 months of the effective date of the Agreement, an evaluation report that includes a summary of the evaluation, statement on decision criteria for potential projects, and incremental cost per ton of pollutant reduction analysis.

iii. If the evaluation completed in paragraph 4(d)(i) does support implementing additional projects to reduce particulate emissions from charging, U. S. Steel will complete within 9 months of the effective date of the agreement the basic engineering for installation and operation of an upgrade to the existing charging control system. Future submittals will coincide with the tapping hood schedule identified in paragraph 4(c)(iii) – 4(c)(v).

5. Regulatory Uses of Emission Reductions

a. For the Granite City BOP, the particulate emission reductions set forth in the MOU will be incorporated into the Illinois 1997 $PM_{2.5}$ National Ambient Air Quality Standard State Implementation Plan (NAAQS SIP) submitted to U. S. EPA in accordance with 40 CFR §51.1001, et seq., and §§ 110 and 172 of the Clean Air Act

b. IEPA shall use its best efforts to support and represent that the requirements of this MOU satisfy U. S. Steel's obligations towards Illinois EPA's requirement to demonstrate compliance with the 1997 $PM_{2.5}$ NAAQS.

c. IEPA will provide U. S. Steel with an opportunity to review and provide comments on the 1997 $PM_{2.5}$ modeled attainment demonstration.

d. U. S. Steel and IEPA shall mutually support and use best efforts to obtain the appropriate permits and approvals incorporating the terms of this agreement to make the reductions federally enforceable so that they can be incorporated into the Illinois 1997 $PM_{2.5}$ SIP.

e. U. S. Steel's commitments and obligations under this MOU are subject to and conditioned upon: 1) the issuance and sustained validity of a federally enforceable permit or permits containing the particulate matter emission reductions requirements set forth in the MOU; 2) IEPA's approval that the particulate matter emission reductions satisfy U. S. Steel's requirement for the 1997 $PM_{2.5}$ NAAQS SIP; and 3) IEPA not pursuing a regulation pursuant to the 1997 PM2.5 NAAQS containing additional restrictions for the Granite City Works BOP. U. S. Steel and IEPA shall mutually support and use best efforts to obtain the appropriate permits and SIP approvals based on this agreement.

f. In developing rules, regulations, or state implementation plan revisions designed to comply with the $PM_{2.5}$ NAAQS, IEPA, taking into account all emission reduction efforts and other appropriate factors, will use best efforts to seek $PM_{2.5}$ reductions in regards to future NAAQS from other sources before seeking additional emission reductions from the U. S. Steel BOP.

6. Force Majeure

U. S. Steel shall not be liable for any failure or delay in performance under this MOU (other than for delay for submitting a permit application) to the extent said failures or delays are caused by extraordinary circumstances beyond U. S. Steel's reasonable control and occurring without its fault or negligence, provided that, U. S. Steel gives prompt written notice, with full details following the occurrence of the cause relied upon. Dates by which performance obligations are scheduled to be met will be extended for a period of time equal to the time lost due to any delay so caused.

For United States Steel Corporation	For Illinois EPA
MS Williams Michael S. Williams Senior Vice President – North American Flat Roll Operations	Douglas P. Scott Douglas P. Scott Director, Illinois EPA
Date: 6 / 30 / 2010	Date: 7 / 1 / 2010