Exhibits to Luminant's Petition for Partial Reconsideration and Stay

EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

Docket No. EPA-HQ-OAR-2009-0491

August 5, 2011

EXHIBIT LIST

Exhibit	Description
1	Texas SO_2 and NOx Emissions Data
2	Map: Granite City, Madison Co. Illinois to Mt. Pleasant, Titus Co., Texas
3	CSAPR PM2.5 Contributions for Texas on St. Louis (Illinois Slide)
4	Assessment of Local-Scale Emissions Inventory Development by State and Local Agencies
5	Memorandum of Understanding: U.S. Steel Corp., Granite City Works, and IEPA
6	Statement of Basis for a Planned Revision of the CAAPP Permit for U.S. Steel Corp.
7	State by State Contributions and Mandated Reductions (Slide)
8	MSHA Mine Yearly Production Information: Antelope Coal Mine and North Antelope Rochelle Mine
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Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

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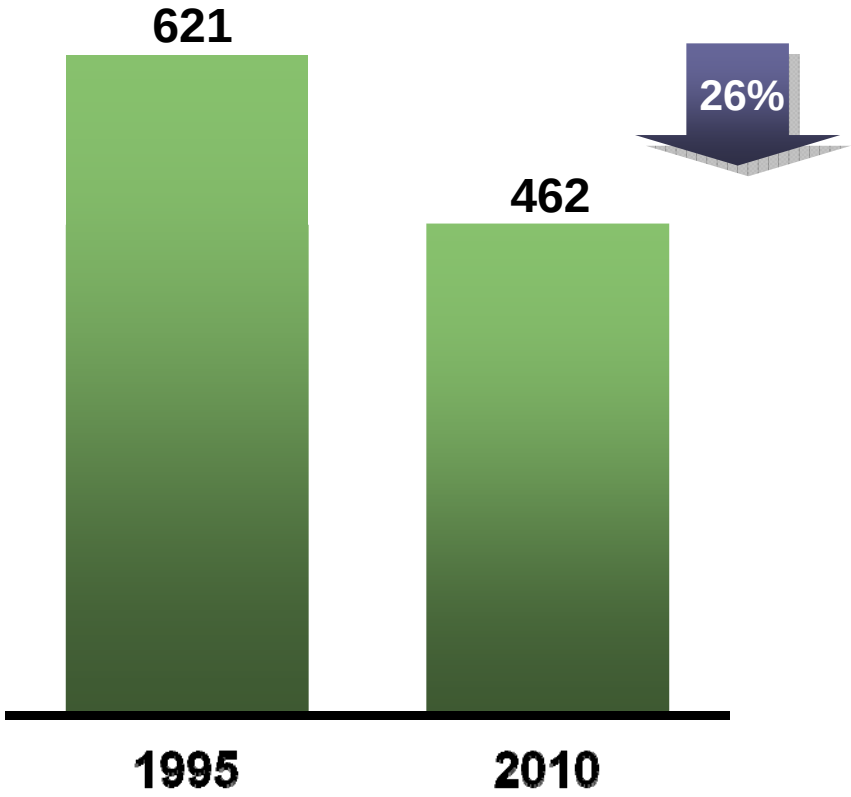
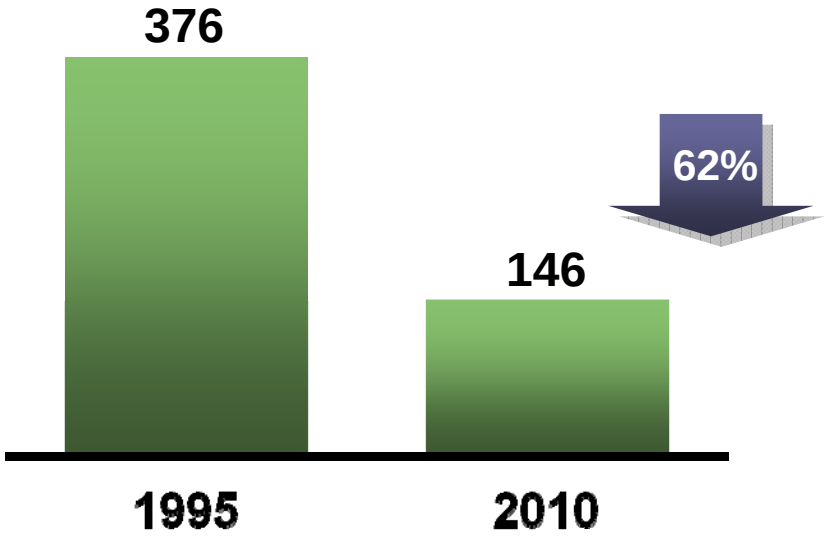
Exhibit 1

Texas Power Sector SO_2 And NOx Emissions Since 1995

Texas SO_2 emissions
1995-2010; Thousand tons



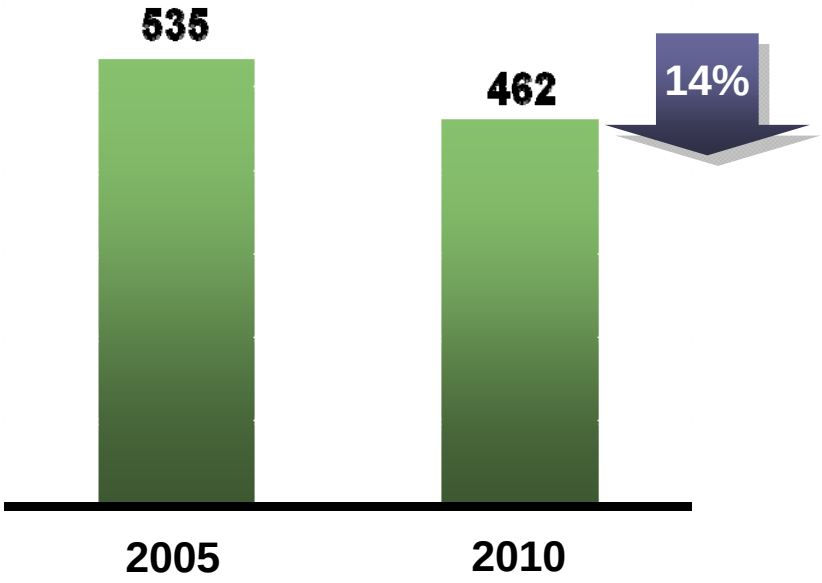
Texas NOx emissions
1995-2010; Thousand tons



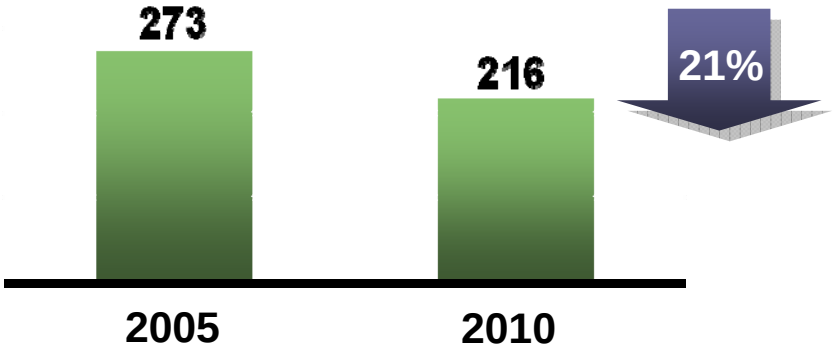
Source: EPA's Clean Air Markets Division (Data and Maps) Acid Rain Program Affected Units Only, EIA

Reductions in Texas/Luminant SO_2 Emissions Since 2005

Texas Power Sector
SO_2 Emissions
000 tons



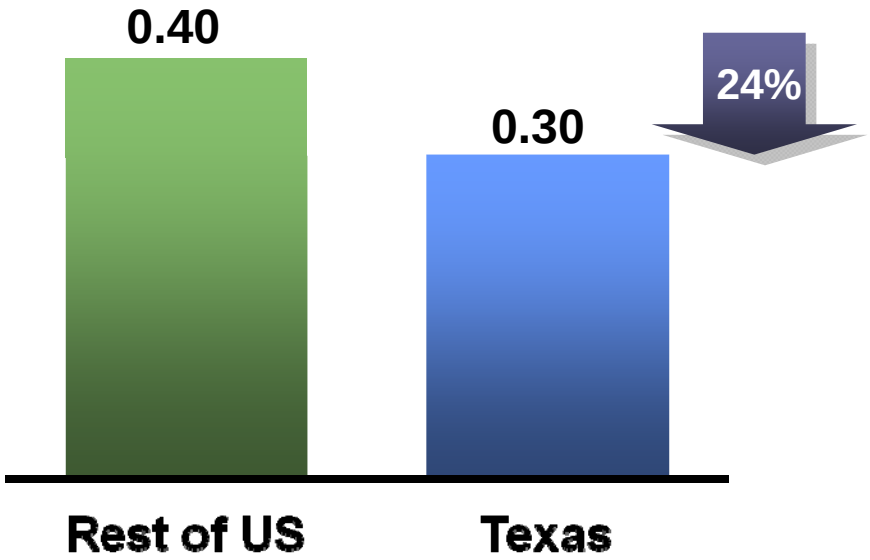
Luminant SO_2 Emissions
000 tons



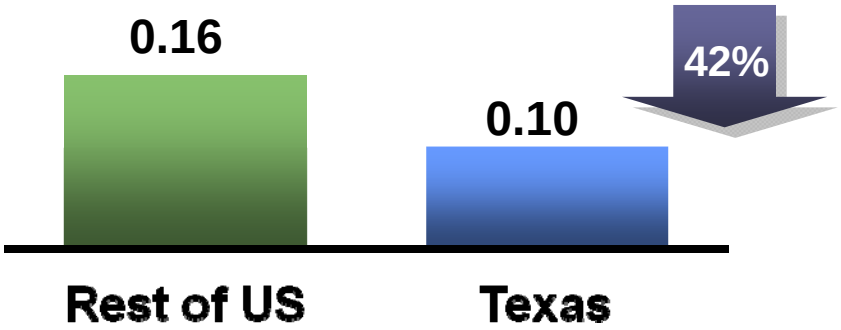
Source: EPA Clean Air Markets Division, Data and Maps Database Website

Texas' Power Sector Emissions Rates Compared With US Averages

SO_2 emissions 2010; lbs/MMBtu



NO_x emissions 2010; lbs/MMBtu



Source: EPA's Clean Air Markets Division (Data and Maps) Acid Rain Program Affected Units Only

Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

Docket No. EPA-HQ-OAR-2009-0491

Exhibit 2

Granite City, Madison Co., Illinois to Mt. Pleasant, Titus Co., Texas = 470 miles

Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

Docket No. EPA-HQ-OAR-2009-0491

Exhibit 3

CSAPR PM2.5 Contributions for Texas on St. Louis (Illinois side)

2012 base case contributions of annual PM2.5 sulfate+nitrate (μg/m^3) from each source state to each monitoring site

		Receptor Monitoring Site ID	State	County	2012 Base Case Annual PM2.5 Average Design Values	2012 Base Case Annual PM2.5 Maximum Design Values	TX
		171191007	Illinois	Madison	**15.46**	**15.73**	**0.184**
		171192009	Illinois	Madison	13.16	13.77	0.169
		171193007	Illinois	Madison	13.45	13.58	0.167
		171630010	Illinois	Saint Clair	14.40	14.54	0.184
		171634001	Illinois	Saint Clair	13.23	13.41	0.176

2012 base case contributions of 24-hour PM2.5 sulfate+nitrate (μg/m^3) from each source state to each monitoring site

		Receptor Monitoring Site ID	State	County	2012 Base Case 24-Hour PM2.5 Average Design Values	2012 Base Case 24-Hour PM2.5 Maximum Design Values	TX
		171190023	Illinois	Madison	35.10	35.80	0.292
		171191007	Illinois	Madison	**36.59**	**36.83**	**0.376**
		171192009	Illinois	Madison	33.39	34.31	0.120
		171193007	Illinois	Madison	32.09	32.73	0.229
		171630010	Illinois	St Clair	31.73	32.34	0.073
		171634001	Illinois	St Clair	30.18	31.23	0.094

Source: CSAPR_Ozone and PM2.5_Contributions.xls

The data provided in this excel file are part of docket item: EPA-HQ-OAR-2009-0491-4228

Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

Docket No. EPA-HQ-OAR-2009-0491

Exhibit 4

Sonoma Technology, Inc.
Air Quality Research and Innovative Solutions

Assessment of Local-Scale Emissions Inventory Development by State and Local Agencies

Draft Final Report Prepared for

U.S. Environmental Protection Agency
Research Triangle Park, NC

October 2010

This PDF document contains blank pages to accommodate two-sided printing.

Assessment of Local-Scale Emissions Inventory Development by State and Local Agencies

Final Report
STI-910120-3972-FR

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October 4, 2010

Cover graphic illustrates the location of agencies that participated in this project's focus group. See Section 2 for more information.

Acknowledgments

The authors would like to thank Lee Tooly, the EPA work assignment manager for this project, who designed the study and provided technical direction throughout. The authors would also like to thank the staff from state and local agencies who participated in the project's focus group, and whose experience and insights were indispensible to the project's success.

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1. Introduction

1.1 Background

In the air quality modeling community, photochemical grid models are generally run for horizontal grid resolutions of 36 km and 12 km; however, increasing attention is given to resolving pollutant concentrations at finer spatial scales in response to a variety of air quality management issues.

For example, the Regulatory Impact Analysis (RIA) for the recent fine particulate matter ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS) suggests that modeling at a 12-km resolution may not adequately capture local source impacts on ambient $PM_{2.5}$ concentrations at Federal Reference Method (FRM) monitoring sites, or the benefits achievable through controlling such local sources (U.S. Environmental Protection Agency, 2006). Similarly, EPA guidance on the use of models for NAAQS attainment demonstrations includes a discussion on the use of dispersion models for "local area analysis" in areas with large spatial gradients of primary $PM_{2.5}$ (U.S. Environmental Protection Agency, 2007). As a result, many state and local agencies are now conducting local area analyses and performing fine-scale air quality modeling for State Implementation Plan (SIP) attainment demonstrations. Such efforts require the development of local-scale emissions inventories that are more representative of individual facilities and other local sources than information contained in the NEI, EPA's AP-42 emission factor compendium and other inventory "building blocks."

In addition to $PM_{2.5}$ attainment issues, fine-scale concentration gradients are of concern for air toxics evaluations, which exhibit areas of high concentration near emissions sources such as roadways (Cook et al., 2008). These "hot spots" generally occur on scales that cannot be resolved with air quality modeling performed at a 12-km grid resolution. Because both air toxics and criteria pollutants, such as $PM_{2.5}$, present a need for local-scale evaluations, there is an increasing need to provide multi-pollutant and multi-scale air quality information. As a result, EPA's Office of Air Quality Planning and Standards (OAQPS) recently conducted a pilot study in Detroit, Michigan, to develop and undertake multi-pollutant, risk-based analyses. The purpose of this study was to evaluate the distribution of emissions among source types, to identify possible sources for "co-control" across multiple pollutants, and to determine how the atmosphere responds to reductions in key pollutants. The project approach featured hybrid air quality modeling that combined regional modeling at a 12-km grid resolution with urban-scale dispersion modeling at a 1-km resolution. This hybrid approach was designed to account for the contribution of local sources to $PM_{2.5}$ and air toxics concentrations in the Detroit area (Tooly and Wesson, 2009).

1.2 Project Objectives

The purpose of this project was to build capacity in EPA's Emissions Inventory and Analysis Group (EIAG) and the state, local, regional, and tribal (SLRT) inventory community for local-scale emissions inventory evaluation and improvement techniques. To accomplish this goal, EPA solicited input from SLRT agencies regarding their approaches to develop more

locally representative emissions inventories and the results of fine-scale modeling efforts that use such inventories. To facilitate the sharing of information on local-scale inventories, EPA staff formed a focus group from state and local agencies that are developing local-scale inventories for fine-scale modeling. The objectives of the project were to:

- Determine the types of inventory data analyses that can assist SLRT agencies with local-scale inventory development.
- Prioritize beneficial analyses and recommend how they might be systematically applied to the EPA's NEI and distributed as data and/or results.
- Assess availability of local-scale emissions data and the relationship of these data to data in the EPA's Emission Inventory System (EIS) and the NEI data collection process.

Sonoma Technology, Inc. (STI) provided support to EPA by helping facilitate teleconferences, reviewing technical documentation provided by state and local agencies, and documenting project findings.

2. Technical Approach

At the outset of this project, EPA staff identified SLRT agencies that are developing local-scale inventories for fine-scale modeling and recruited representatives from these agencies to participate in the local-scale emissions inventory focus group. During this process, two types of focus group participants were recruited: (1) core participants who would present information on local-scale analyses performed by their agencies; and (2) peer reviewers who would participate in group meetings and review group work products. **Table 2-1** provides a list of all group participants and summarizes the types of local-scale analyses conducted by core participants' agencies. **Figure 2-1** shows the geographic distribution of participating agencies.

The focus group met via teleconference on a biweekly basis from May 19 through August 24, 2010 (a summary of each focus group meeting is provided in **Appendix A**). Core participants presented and discussed information related to several charge questions:

1. What type of air quality problems were addressed with the fine-scale modeling conducted by state and local agencies?
2. What analysis techniques were used to evaluate emission biases, identify key sources in their area, and prioritize emissions inventory improvement work?
3. For which source categories were emissions estimates improved, and what methods were used?
4. What changes to emissions estimates and modeling results occurred because of local-scale emissions inventory development efforts?
5. Would any NEI-related analyses be helpful to their efforts? (If so, at what step in the process would such analyses be beneficial?)

In addition, SLRT agencies provided EPA and STI with technical support documents related to their local-scale inventory development and fine-scale modeling efforts. These documents were reviewed to gain additional insights into issues identified by the charge questions listed above. At the conclusion of the project, EPA and STI summarized the information gathered from SLRT agencies, highlighted patterns in approaches taken and results achieved, and developed recommendations for local-scale inventory development practices and potential NEI analyses that could assist the local-scale inventory development process.

Table 2-1. List of local-scale emissions inventory focus group participants.

Agency	Staff Members	Purpose of Local-Scale Analyses
Core Participants		
Allegheny County (PA) Health Department	Jayme Graham Jason Maranche	Evaluation of local emissions contributing to monitored $PM_{2.5}$ concentrations.
Alabama Department of Environmental Management	Leigh Bacon Lisa Cole Tim Martin	SIP attainment demonstrations for ozone and $PM_{2.5}$.
Cleveland Division of Air Quality	David Hearne	Multi-pollutant study assessing the impacts of local and regional sources on $PM_{2.5}$ and air toxics concentrations in Cleveland.
Georgia Department of Natural Resources	Jim Boylan Byeong Kim	$PM_{2.5}$ attainment demonstration for Atlanta.
Illinois Environmental Protection Agency	Jeff Sprague Buzz Asselmeier	Development of a multi-pollutant air quality management plan for St. Louis. $PM_{2.5}$ attainment demonstration for Granite City, IL.
Wyoming Department of Environmental Quality	Brian Bohlmann Ken Rairigh	Evaluation of wintertime high ozone episodes associated with oil and gas production sources.
Peer Reviewers and Other Participants		
Indiana Department of Environmental Management	Scott DeLoney Jeff Stoakes	
Pennsylvania Department of Environmental Protection	Sherry Bogart	
Maricopa County (AZ) Air Quality Department	Bob Downing	
Maricopa Association of Governments	Matt Poppen	
Missouri Department of Natural Resources	Jeff Bennett Stacey Allen	
Pinal County (AZ) Air Quality Control Division	Kate Edwards	
Puget Sound (WA) Clean Air Agency	Kathy Himes Strange	
EPA Region 3	Alice Chow	
EPA Region 7	Steven Brown	
EPA Region 8	Mark Komp	

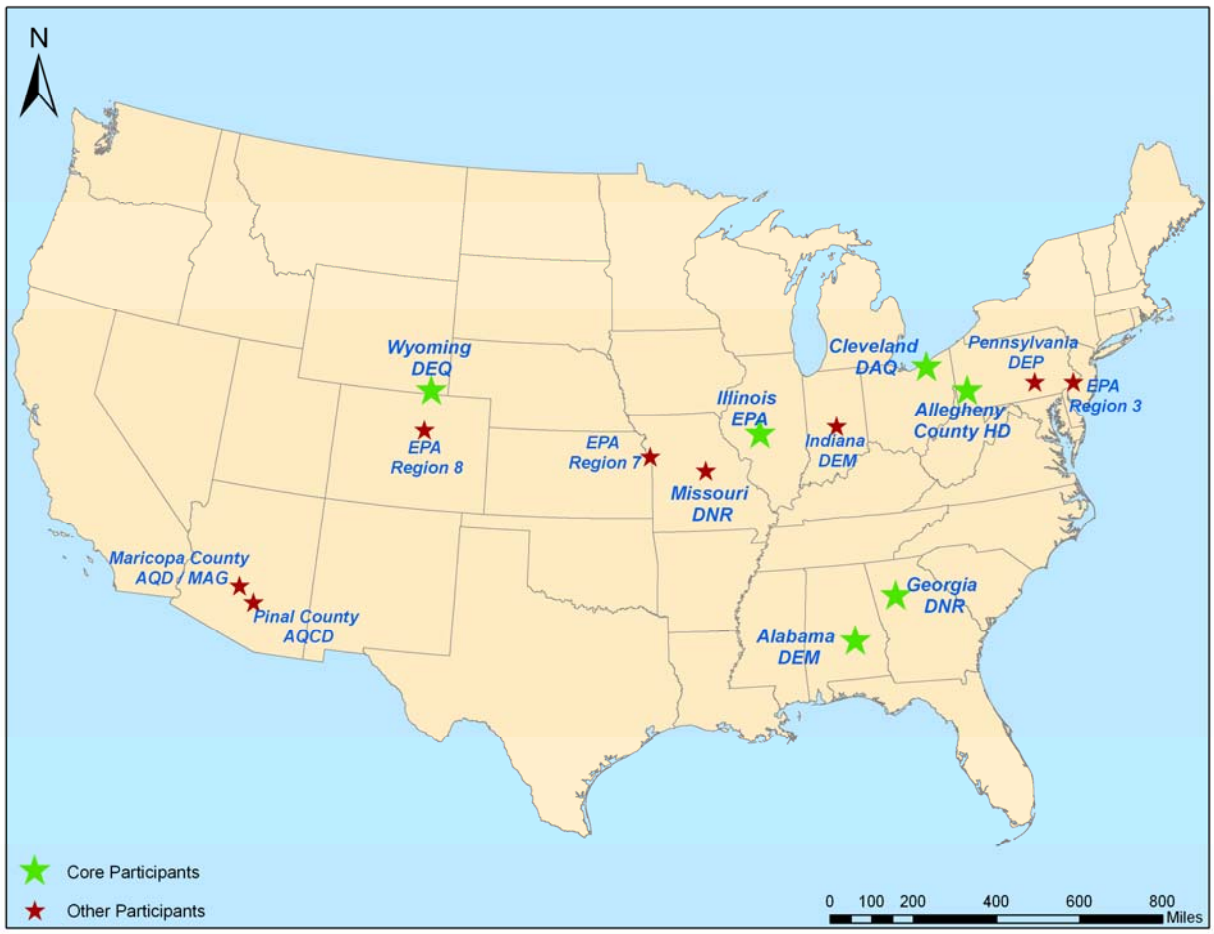

Figure 2-1. Geographic distribution of agencies participating in the local-scale emissions inventory focus group.

3. Results and Discussion

The sub-sections that follow present and discuss results from the focus group meetings, with project findings organized by the five charge questions listed in Section 2. Presentations made by individual agencies during focus group meetings are provided in **Appendix B.**

3.1 Air Quality Problems Addressed

The Clean Air Act requires that states submit SIPs to demonstrate how EPA-designated "non-attainment" areas (NAAs) for $PM_{2.5}$, ozone, or other pollutants will attain the violated standard(s). Almost exclusively, state and local agencies that participated in the focus group conducted local-scale emissions inventory development and fine-scale modeling as part of SIP attainment demonstrations or related investigations of local source contributions to pollutant concentrations.

3.1.1 $PM_{2.5}$ Attainment Issues

In particular, state and local agencies focused their efforts on local area analyses conducted to address local source primary $PM_{2.5}$ contributions to "excess" $PM_{2.5}$ concentrations at individual monitoring sites. For example, the Allegheny County Health Department (HD) conducted a local area analysis in the Liberty-Clairton NAA, an area covering only 12 square miles in southeastern Allegheny County (see **Figure 3-1**). The Liberty-Clairton NAA and its environs are home to several large industrial facilities, including the largest coke plant in the country (Graham and Maranche, 2010a). Moreover, the NAA lies in complex river valley terrain, where nighttime temperature inversions trap local primary $PM_{2.5}$ emissions. Allegheny County HD's local area analysis focused on the Liberty monitor, which tracks other area monitors during daylight hours but exhibits significantly higher $PM_{2.5}$ concentrations during nighttime hours (Graham and Maranche, 2010b).

Figure 3-1. Map of the Liberty-Clairton non-attainment area (Graham and Maranche, 2010b).

Similarly, Illinois EPA conducted a local area analysis in Granite City, Illinois, which is part of the St. Louis $PM_{2.5}$ NAA, as annual average NAAQS exceedances at the Granite City monitoring site could not be resolved with photochemical grid modeling alone. Illinois EPA's local area analysis focused on iron and steel manufacturing in the area around the Granite City site and featured fine-scale dispersion modeling with American Meteorological Society/EPA Regulatory Model Improvement Committee (AERMIC) Dispersion Model (AERMOD) for local sources (Sprague, 2010a).

Fine-scale $PM_{2.5}$ modeling in the Atlanta area conducted by the Environmental Protection Division (EPD) of the Georgia Department of Natural Resources (DNR) was also driven by $PM_{2.5}$ exceedances at a single monitor: the Fire Station #8 (FS#8) monitor in Fulton County. The FS#8 monitor exhibits higher annual average $PM_{2.5}$ measurements than other monitors in the Atlanta NAA and is located near three large rail yards and Marietta Blvd., a roadway with high volumes of truck traffic. EPD's attainment demonstration for Atlanta featured updated emissions inventories for the rail yards and other local sources, as well as AERMOD dispersion modeling for the immediate vicinity of the FS#8 site (Boylan, 2010).

3.1.2 Ozone Attainment Issues

While local sources of primary $PM_{2.5}$ were the primary focus of local-scale emissions inventory development and fine-scale modeling by state and local agencies, ozone non-attainment issues also played a role in some cases. For example, the Wyoming Department of Environmental Quality (DEQ) has recommended that the Upper Green River Basin (UGRB) in Sublette County be designated as non-attainment for the 2008 8-hr ozone NAAQS of 75 ppb (see **Figure 3-2**). Monitoring data for 2006-2008 indicated that the entire state of Wyoming is in compliance with this standard except for the Boulder monitor in the UGRB. Ozone exceedances at the Boulder monitor are driven by the rapid growth of oil and gas production activities in the UGRB, as well as the distinct meteorological conditions in this area (e.g., persistent wintertime inversion events with low mixing heights). As a result, Wyoming DEQ has been working to develop detailed, well-specific emissions inventories for the UGRB and other oil and gas production fields in the state, and to incorporate these updated emissions data in ozone modeling efforts (Bohlmann and Rairigh, 2010).

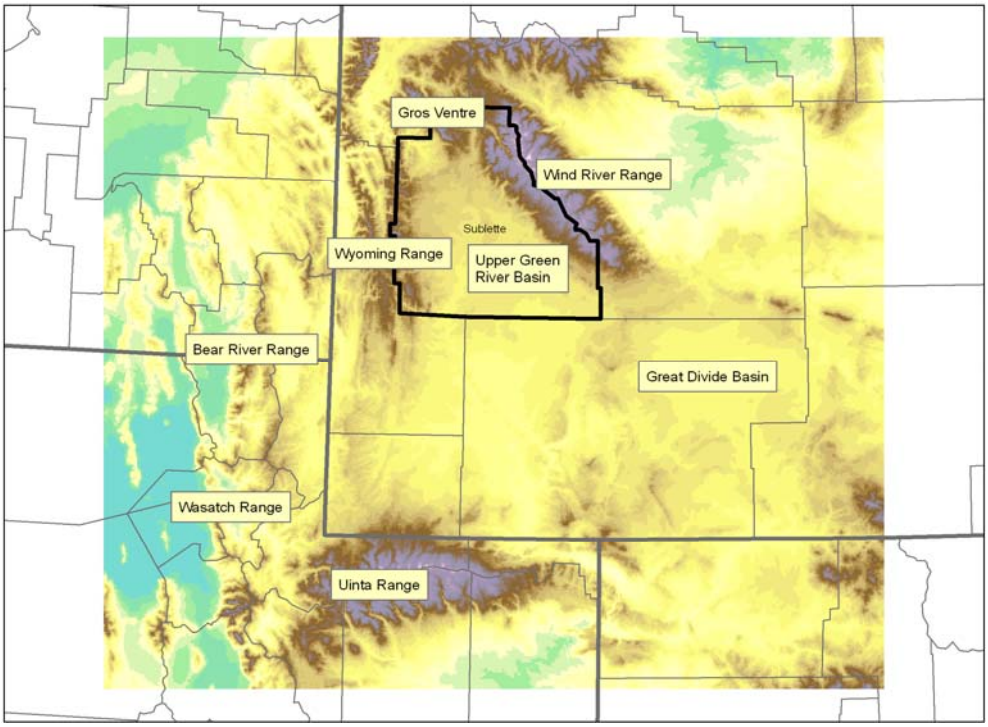

Figure 3-2. Map of Wyoming's Upper Green River Basin (Bohlmann and Rairigh, 2010).

The state of Alabama is also faced with potential new ozone NAAs as a result of revised ozone standards. The Alabama Department of Environmental Management (DEM) has previously conducted fine-scale $PM_{2.5}$ modeling with AERMOD for non-attainment monitors in the Birmingham area, and Alabama DEM anticipates that fine-scale modeling for ozone will be needed in the future for several areas of the state, including Mobile and Huntsville (Bacon and Cole, 2010).

3.1.3 Multi-Pollutant Issues

Multi-pollutant interrelationships exist because release, control, and chemical reactions of pollutants in the atmosphere are often interdependent, and EPA has recently undertaken analyses of multi-pollutant, risk-based (MPRB) control strategies to evaluate the impact of such strategies on concentrations of ozone, $PM_{2.5}$, and air toxics in urban areas. The Detroit area was selected by EPA as a "proof-of-concept" project for MPRB analyses and EPA has recently undertaken a multi-pollutant study in Cleveland. As part of this project, STI worked with EPA and the Cleveland Division of Air Quality (DAQ) to develop improved emissions inventories for local industrial facilities and other sources in Cleveland. These inventories will be used as inputs for modeling $PM_{2.5}$ and air toxics concentrations with the Community Multiscale Air Quality (CMAQ) model (Reid et al., 2010).

Similarly, Illinois EPA and the Missouri Department of Natural Resources are preparing to implement a multi-pollutant air quality management plan (AQMP) for St. Louis, work that involves emissions inventory improvements and fine-scale modeling for ozone, $PM_{2.5}$, and selected air toxics for a core area of St. Louis and selected outlying metropolitan areas. It is anticipated that this work will integrate NAAQS attainment with environmental justice concerns, energy issues, and climate change mitigation (Sprague, 2010b). In addition, Illinois EPA is considering emissions inventory development and fine-scale SO_2 modeling for oilfield production sources around Bridgeport and Petrolia, Illinois (Sprague, 2010c).

3.2 Analysis Techniques

Among the state and local agencies that participated in the focus group, a variety of analysis techniques were used to evaluate emission biases, identify key sources in areas of interest, and prioritize emissions inventory improvement work. Techniques that were widely used by the participating agencies include receptor modeling with positive matrix factorization (PMF), inter-monitor comparisons, and meteorological analyses.

3.2.1 Inter-Monitor Comparisons

To identify monitoring sites in the St. Louis NAA with significant impacts from local sources, daily average "base concentration" data were developed for eight compliance monitoring stations in the St. Louis area and compared these base values to monitor-specific daily average $PM_{2.5}$ concentrations (data analysis by Dr. Jay R. Turner, Washington University in St. Louis). The base concentrations were based on the fifth lowest measurement value at a given time-step among all monitoring stations over multiple years of data. When plotted against monitor-specific data, it was clear that monitoring sites in Granite City (and, to a lesser extent, East St. Louis), showed $PM_{2.5}$ impacts above the base concentrations (see **Figure 3-3**). An

additional analysis involved comparisons of speciated $PM_{2.5}$ data from the Gateway Medical Center site in Granite City and the Blair site in downtown St. Louis. For most species, measurements from the two sites showed good agreement; however, significantly higher iron measurements were routinely observed at the Gateway Medical Center site (Turner, 2010; as reported in Sprague, 2010a).

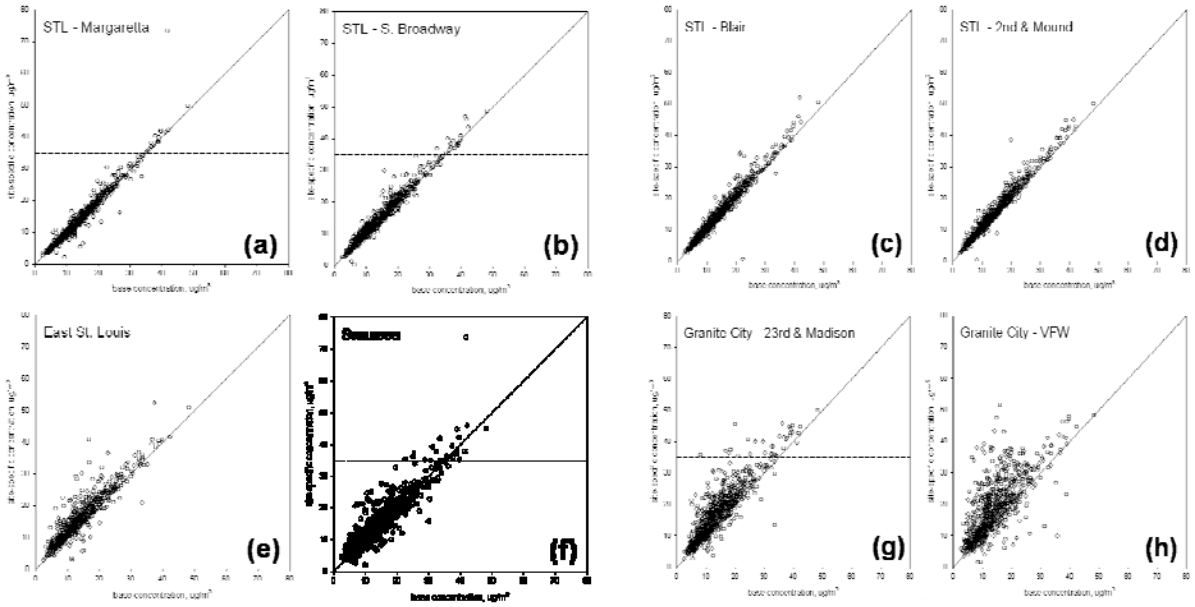

Figure 3-3. Daily-average $PM_{2.5}$ concentrations vs. area-wide base $PM_{2.5}$ concentrations at eight compliance monitoring sites in the St. Louis area (Turner, 2010; as reported in Sprague, 2010a).

Allegheny County HD operates two $PM_{2.5}$ speciation monitors as part of EPA's Speciation Trends Network (STN): the Lawrenceville site, an urban residential site downwind of downtown Pittsburgh, and the Liberty site in the heavily industrialized Liberty-Clairton NAA. Allegheny County HD compared measurements from these two sites for an 18-month period in 2003 through 2005 and found that, while levels of sulfates and nitrates are similar for the two sites, the Liberty site is dominated by organic and elemental carbon year-round. By calculating differences in measurements for major species, Allegheny County HD estimated that elemental and organic carbon account for about 74% of the localized excess mass at the Liberty site (Maranche, 2005). When combined with results from other analyses, this finding helped to identify local source impacts at the Liberty site.

Also, during the development of a SIP for the Atlanta $PM_{2.5}$ NAA, Georgia EPD compared ambient monitoring data from FRM monitors and a speciation monitor in the Atlanta NAA as part of an evaluation of long-term trends in $PM_{2.5}$ levels. This analysis showed that, over time, the FS#8 site consistently recorded $PM_{2.5}$ levels substantially higher than were recorded at other Atlanta sites (see **Figure 3-4**). Trends in different $PM_{2.5}$ species were also compared to speciation data from other NAAs in Georgia to help identify key contributors to $PM_{2.5}$ levels in the Atlanta area (Georgia Department of Natural Resources, 2010).

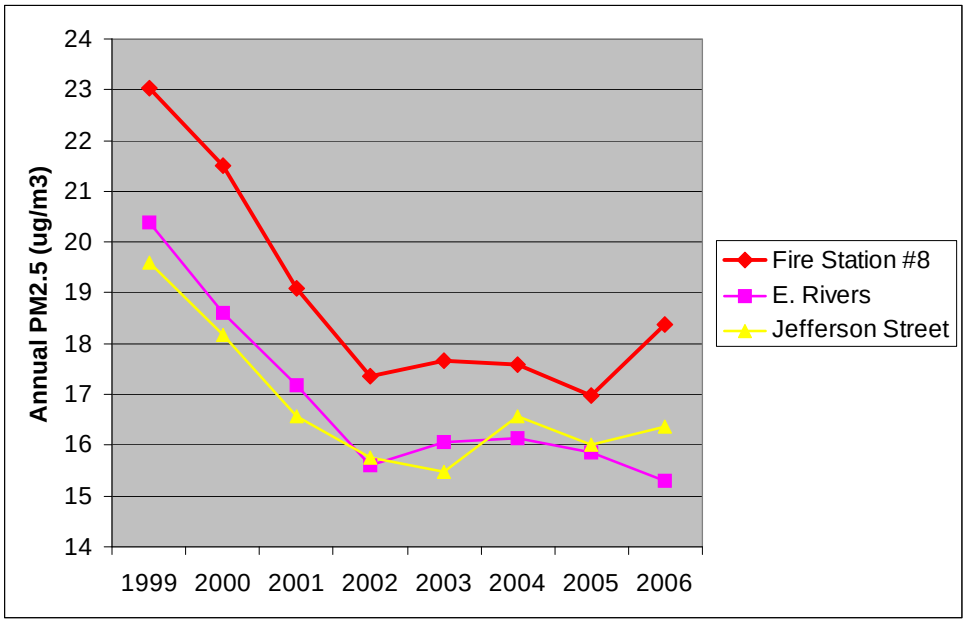

Figure 3-4. Trends in $PM_{2.5}$ concentrations at Atlanta-area monitoring sites (Boylan, 2010).

3.2.2 Wind Direction Analyses

Ambient measurement data can be combined with wind direction data to determine which wind directions are prevalent when high pollutant concentrations are observed at a monitoring site. Such analyses can provide insights into local sources that may be impacting a monitoring site.

For example, Georgia EPD plotted $PM_{2.5}$ concentrations against wind direction data at three monitoring sites in the Atlanta NAA, including the FS#8 site. Results showed that $PM_{2.5}$ levels at all three sites were highest when winds were from the south, which was expected, as all three sites lie north of downtown Atlanta. However, $PM_{2.5}$ peaks were observed on days of southwesterly winds at the FS#8 site, but not at the other two sites. This finding may indicate impacts on the FS#8 site from a large rail yard southwest of the site (Georgia Department of Natural Resources, 2010).

A somewhat more refined approach to wind direction analysis at the Granite City monitoring site evaluated separate local and regional components of total $PM_{2.5}$ mass. $PM_{2.5}$ measurements from the Granite City site were compared to measurements at a second site in downtown St. Louis to identify time periods when the Granite City site showed "excess" $PM_{2.5}$ concentrations above levels that would be attributable to regional transport and urban sources (e.g., motor vehicles). Measurements from these time periods were combined with surface meteorological data to identify source regions contributing to the excess $PM_{2.5}$. This analysis showed that excess $PM_{2.5}$ was observed at the Granite City site when winds were from the

south and southwest, indicating impacts from a large steel mill in the vicinity (see **Figure 3-5**) (Sprague, 2010a)[1].

Figure 3-5. Results of an analysis of excess $PM_{2.5}$ concentrations at the Granite City monitoring site (Sprague, 2010a)[2].

These types of wind direction analyses and "pollution rose" plots were also used by EPA and Cleveland DAQ as part of the Cleveland multi-pollutant study (U.S. Environmental Protection Agency, 2009), as well as Allegheny County HD and Alabama DEM for local-scale analyses in their regions.

3.2.3 Receptor Modeling

Receptor modeling is the process of applying multivariate statistical methods to help identify and quantify air pollutants and their corresponding emissions sources. PMF is a multivariate factor analysis tool that is used to identify a group of sources that best characterize ambient data at a monitoring site and the amount of mass contributed by each source to measured pollutant concentrations (Norris et al., 2008). A number of state and local agencies that participated in the focus group used PMF to assess local source impacts at monitors with pollutant concentrations that exceeded the NAAQS and prioritize local sources to be addressed during emissions inventory development activities.

[1] Morris R.E. and Turner J.R. (2007) Presentation to Illinois EPA by ENVIRON International Corporation and Washington University in St. Louis, December 4.

[2] Morris R.E. and Turner J.R. (2007) Presentation to Illinois EPA by ENVIRON International Corporation and Washington University in St. Louis, December 4.

For example, Georgia EPD used PMF to investigate the contribution of local sources to the $PM_{2.5}$ increment at the FS#8 site, which recorded $PM_{2.5}$ levels substantially higher than at any other Atlanta NAA site. Since speciated data were not available from the FS#8 site, X-ray fluorescence (XRF) was used to analyze selected $PM_{2.5}$ filter data from 2002 through 2004 to quantify ambient trace metal concentrations. Running PMF with metals data only, EPD found that the steel- and zinc-rich factors showed the highest contribution to the local $PM_{2.5}$ increment at FS#8. EPD estimated the source of the metals associated with steel to be activity at an adjacent rail yard and attributed the zinc-rich factor to local diesel sources, such as truck traffic on Marietta Blvd. or idling locomotives at the rail yard. Rail yards and roadways were subsequently prioritized during the development of a local-scale emissions inventory (Georgia Department of Natural Resources, 2010).

Similarly, Allegheny County HD used PMF to characterize the $PM_{2.5}$ increment at the Liberty monitor in Allegheny County's Liberty-Clairton NAA (**Figure 3-6**). The Liberty monitor measures 54 different species of $PM_{2.5}$ in addition to the total mass concentration; PMF modeling of the speciated data resulted in the identification of 12 source factors. Apart from secondary ammonium sulfate, the factor with the highest contribution to $PM_{2.5}$ mass at the Liberty monitor was the "carbon-rich" factor, which contains high percentages of elemental and organic carbon. The Allegheny County HD estimated that the majority of this factor was contributed by a constant industrial source, most likely a large coke plant that was subsequently prioritized for improved emissions estimation (Maranche, 2006).

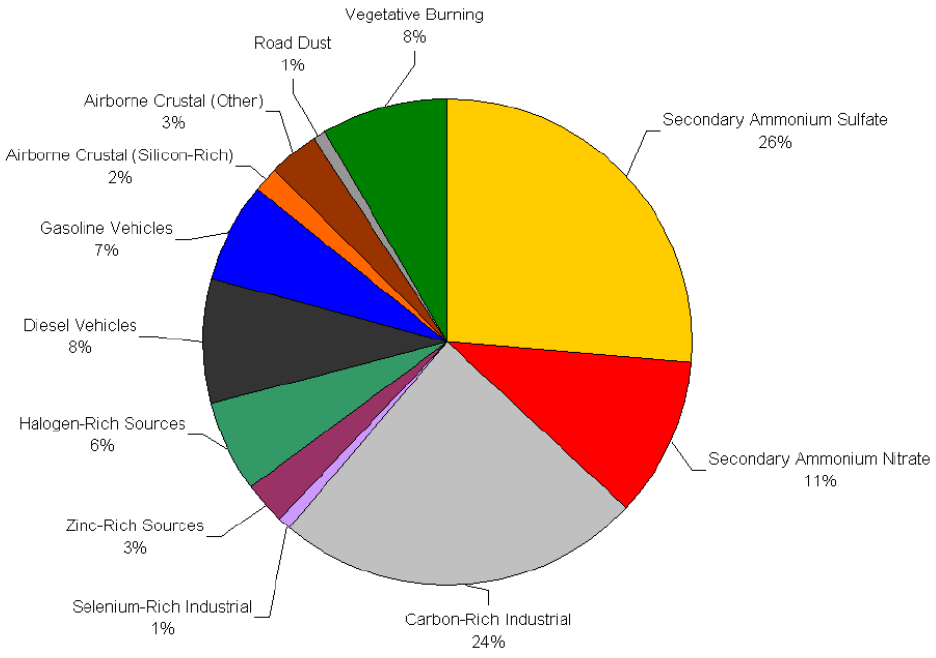

Figure 3-6. PMF results for Allegheny County's Liberty monitor (Graham and Maranche, 2010b).

PMF modeling was also used to investigate local source contributions to measured $PM_{2.5}$ concentrations in Birmingham by Alabama DEM (Bacon and Cole, 2010) and in East St. Louis and Granite City, Illinois (Sprague, 2010a)[3].

3.2.4 Other Analyses

In addition to the analyses described above, state and local agencies that participated in the focus group used other techniques to identify key sources in areas of interest and prioritize emissions inventory improvement work. For example, Alabama DEM calculated facility-specific emissions-to-distance ratios to evaluate the probability that emissions from individual facilities would contribute to monitored $PM_{2.5}$ concentrations in the Birmingham area. Emission rates (Q) and distance from a monitor (D) were combined to calculate the Q/D for each facility, and the Q/D values were used to rank all facilities evaluated (Bacon and Cole, 2010). Alabama also used fence-line sampling at key industrial facilities to evaluate the potential contributions of these facilities to $PM_{2.5}$ species concentrations at non-attainment monitors (Blanchard et al., 2006).

Also, when Georgia EPD was selecting industrial facilities for a local area analysis around the FS#8 monitoring site, EPD ranked all sources according to annual PM emissions and established an emissions threshold of 5 tons per year for inclusion in the analysis (Boylan, 2010). Similarly, prior to the development of a local-scale emissions inventory for the Cleveland Multiple Air Pollutant Study (CMAPS), Cleveland DAQ used permit data to identify the top ten industrial sources of $PM_{2.5}$, NO_x, SO_2, and CO in Cleveland; a list of 21 unique facilities was prioritized for subsequent data collection efforts (Reid et al., 2010).

3.3 Emissions Inventory Improvement Methods

Local-scale emissions inventory development efforts undertaken by state and local agencies in support of attainment demonstrations and other analyses focused primarily on large industrial sources such as steel mills. However, areawide sources (e.g., oil and gas production wells), non-road mobile sources (e.g., locomotives at rail yards), and on-road mobile sources were also addressed. The following subsections provide information on the methods used to improve emissions estimates for these various source sectors.

3.3.1 Industrial Facilities

Methods used to improve emissions estimates for industrial facilities included facility surveys, stack testing, and evaluation of stack parameters and other modeling inputs. For CMAPS, after a list of key Cleveland facilities was identified from permit data (as described above), representatives from each facility were invited to Cleveland DAQ's offices to meet with staff from EPA, Cleveland DAQ, and STI. At this meeting, facility representatives were provided with background information on the study, preliminary findings from air quality monitoring efforts, and a description of the types of data that would be required to develop an updated stationary

[3] Morris R.E. and Turner J.R. (2007) Presentation to Illinois EPA by ENVIRON International Corporation and Washington University in St. Louis, December 4.

source inventory for Cleveland for the 2009-2010 CMAPS study period. Subsequently, STI contacted each of the 21 prioritized facilities by telephone and/or email to collect information on emissions and operations during the CMAPS study period, particularly the months of August 2009 and February 2010, when intensive air quality monitoring was being conducted. Specific data requested from each facility included:

- Monthly emissions or operations data (e.g., production, throughput, or fuel combustion) for 2009 and the first quarter of 2010
- Daily operations data for August 2009 and February 2010
- Typical operating schedules, as well as any unusual conditions during August 2009 and February 2010 (e.g., shut-downs, emissions "upsets," etc.)

These data were successfully collected from 17 of the 21 facilities and used to replace 2005 NEI data (where current emissions were provided) or to scale 2005 NEI emissions to 2009-2010 levels (where production or fuel consumption data were provided). In addition, operating schedules and production data were used to generate facility-specific temporal profiles and daily emissions files that were used to prepare CMAQ-ready emissions inputs (Reid et al., 2010).

The Allegheny County HD's local-scale inventory also focused primarily on industrial sources and relied on updated stack test emissions for facilities near the Liberty-Clairton NAA. The most important revisions were made to emissions for a large coke plant, where recent (2007) source testing resulted in a large increase in the emission factor for quench tower condensable $PM_{2.5}$ emissions (from 0.00031 lb/ton to 0.56 lb/ton of coal charged). For filterable $PM_{2.5}$ emissions from quench towers, the implementation of baffle washing led to an emission factor decrease from 0.31 lb/ton to 0.0785 lb/ton. Local sources in a 150 km x 150 km domain were modeled with California Puff model (CALPUFF) and CALPUFF outputs were combined with regional CMAQ results (Graham and Maranche, 2010b).

Similarly, the local-scale inventory Illinois EPA used for the $PM_{2.5}$ local area analysis for Granite City, Illinois, featured improved emissions estimates for iron and steel manufacturing operations. Methods used to update the point source inventory included communications with company staff, stack test results, and internal communications with permit analysts and field operations staff. Local sources were modeled with the AERMOD dispersion model (Sprague, 2010a). This same approach was taken by Alabama DEM for the Birmingham $PM_{2.5}$ attainment demonstration, where facility emission rates, stack parameters, and location coordinates were reviewed and updated prior to inclusion in fine-scale modeling with AERMOD. Some smaller facilities were included in the AERMOD inventories because of their proximity to monitoring sites, though these facilities were not part of previous Prevention of Significant Deterioration (PSD) modeling inventories (Bacon and Cole, 2010). Georgia EPD also included nine local facilities in the AERMOD modeling performed as part of the local area analysis in Atlanta, including smaller facilities that had not been treated as individual point sources before (Georgia Department of Natural Resources, 2010).

3.3.2 Areawide Sources

Stationary sources that are too small and numerous to treat individually are typically aggregated in emissions inventories as “areawide” or “non-point” sources. However, for local-scale analyses, it may be necessary to gather the detailed information required to model such sources on an individual basis.

Typically, oil and gas wells are treated in an emissions inventory as an area-wide source, with emissions estimated using “top-down” methods such as applying per-well emission rates to the number of wells drilled in a given geographic area (Russell and Pollack, 2005). However, because of the rapid expansion of oil and gas production activities in Wyoming’s UGRB and the contribution of these sources to elevated wintertime ozone concentrations, Wyoming DEQ has instituted an extensive minor-source permitting program that covers all the oil and gas production wells in the state. In 2009, Wyoming DEQ began collecting “bottom-up” emissions data for all permitted wells, including speciated hydrocarbon emissions for some source types. These well-specific inventories cover 14 emissions sources, including drill rigs, stationary engines, process burners, tanks, dehydration units, pneumatic pumps, and non-road mobile sources (see **Figure 3-7**). In addition, Wyoming DEQ is in the process of developing gas field-specific emission equations for flashing emissions from condensate storage tanks and uncontrolled emissions from glycol dehydration units (Bohlmann and Rairigh, 2010). Combined with well-specific location coordinates, these emissions data allow wells to be treated as individual point sources in air quality modeling applications.

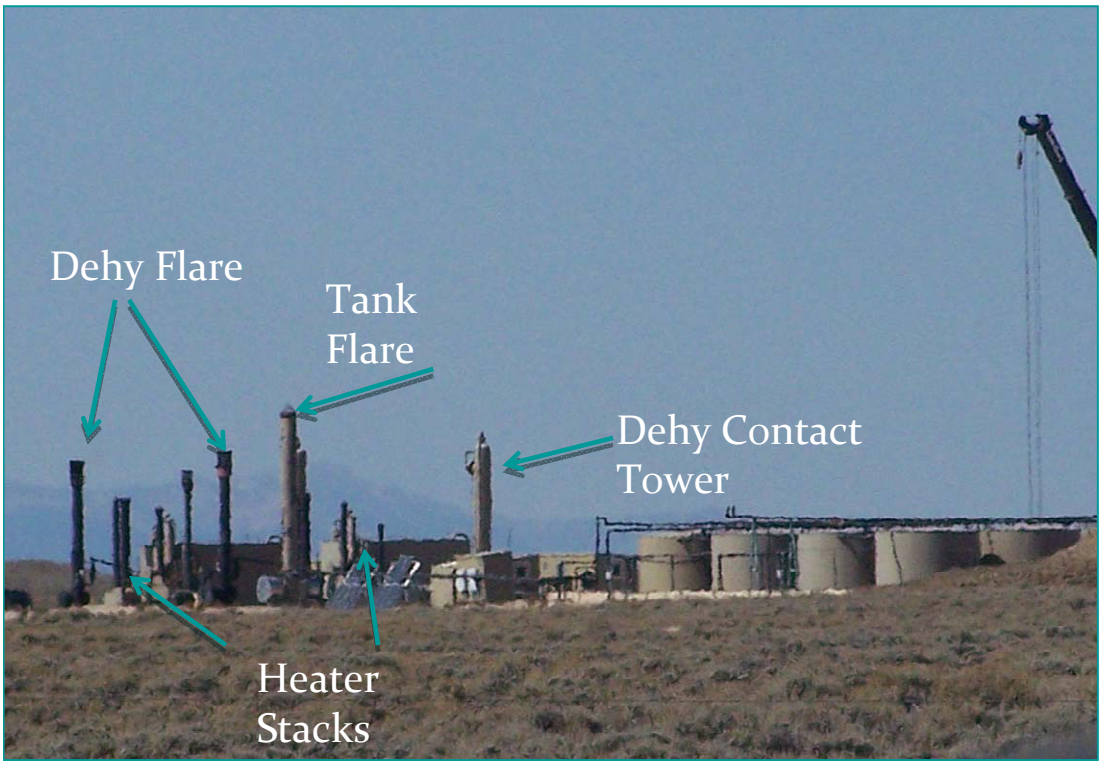

Figure 3-7. Emissions sources at a multiple-well gas processing facility in Wyoming (Bohlmann and Rairigh, 2010).

3.3.3 Non-Road Mobile Sources

The local area analysis conducted by Georgia EPD in support of the Atlanta $PM_{2.5}$ SIP was focused on the FS#8 monitor in Fulton County, which is near three large rail yards—Inman, Tilford, and Howells (see **Figure 3-8**). Georgia EPD estimated base year (2002) and future year (2012) $PM_{2.5}$ emissions from switching and line haul locomotives operating at these rail yards and treated these emissions as volume sources in AERMOD (Boylan, 2010).

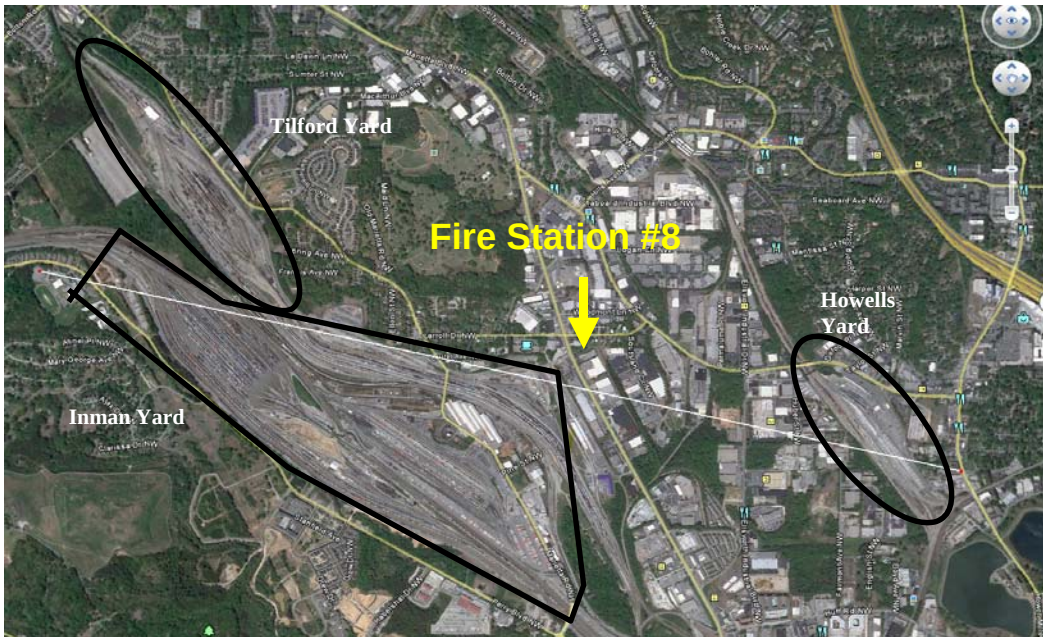

Figure 3-8. Proximity of Atlanta's FS#8 monitor to area rail yards (Boylan, 2010).

The three rail yards have a total of 25 switchers. Base year emissions for these locomotives were based on an EPA national average fuel consumption estimate of 82,490 gallons per year per switcher. Future year emissions estimates accounted for the replacement of all 25 switchers with ultra-low emission Genset locomotives. Line haul locomotive emissions were based on the system-wide fuel combustion index (FCI) for the Norfolk Southern Railway, which operates the Inman rail yard, and CSX Transportation, which operates the Tilford and Howells yards. FCI data were combined with the number of track miles in the modeling area and fuel-based emission factors to estimate line haul emissions in the modeling area. The Inman and Tilford yards were each treated as two volume sources in AERMOD, while the Howells yard was treated as a single volume source. Source release heights and initial vertical coordinates were calculated from a typical locomotive height of 12 feet and the initial lateral coordinate was estimated from the rail yard sizes (width and length) (Georgia Department of Natural Resources, 2010).

Non-road mobile sources were also considered during the development of a local-scale emissions inventory for the CMAPS study. Commercial marine vessel emissions for the Port of Cleveland from the 2005 NEI were updated according to 2009 vessel call data obtained from

the local port authority. Differences in the number of vessel calls between 2005 and 2009 were used to adjust 2005 NEI emissions for marine vessels, and monthly vessel call data for 2009 were used to allocate marine vessel emissions to specific months (Reid et al., 2010).

3.3.4 On-Road Mobile Sources

In addition to three rail yards, Atlanta's FS#8 monitor is in the vicinity of Marietta Blvd. and other heavily-traveled roadways. Georgia EPD estimated $PM_{2.5}$ emissions from on-road mobile sources for segments of Marietta Blvd., Bolton Road, and Marietta Road by using link-based vehicle miles traveled (VMT) data for these roadways. Individual roadway segments were treated as volume sources in AERMOD with release heights and initial vertical coordinates calculated from a typical truck height of 12 feet. Initial lateral coordinates were estimated from the roadway size (width and length) (Georgia Department of Natural Resources, 2010).

For the CMAPS study, on-road mobile source emissions in the Cleveland metropolitan area were estimated using EPA's MOVES model and VMT data derived from travel demand model outputs provided by the Northeast Ohio Areawide Coordinating Agency (NOACA). On-road emissions were allocated to the CMAPS modeling domain using NOACA's link-level travel demand model outputs (Reid et al., 2010).

3.4 Initial Outcomes of Local-Scale Analyses

Initial outcomes of the local-scale analyses conducted by state and local agencies included emissions estimates for sources that not had been treated as individual point sources before, updated emissions estimates for key facilities and other sources, and dispersion modeling results that captured fine-scale gradients in pollutant concentrations. Examples of results for individual analyses are provided below.

3.4.1 Allegheny County Local Area Analysis

Allegheny County HD revised its 2002 base year inventory and 2012 future year inventory for local sources near the Liberty-Clairton NAA. The most important inventory revisions related to a large coke plant in the area, where updates resulted in a base-year increase of over 1,700 tons per year for primary $PM_{2.5}$ emissions (see **Table 3-1**). Allegheny County HD revisions to the 2012 inventory captured the effects of proposed modifications, including the shutdown of two battery lines and changes in battery configurations, to the Clairton coke plant. These updates resulted in a future-year decrease of 450 tons of primary $PM_{2.5}$ emissions. As a result, modeled $PM_{2.5}$ concentrations at the Liberty-Clairton monitor decreased by 2 $\mu g/m^3$ on an annual basis and 8 $\mu g/m^3$ on a 24-hour basis (Graham and Maranche, 2010a).

Table 3-1. Detailed 2002 emissions inventory changes for the Clairton coke plant.

Source	Update	Change in Primary $PM_{2.5}$ from the NEI (tons/year)
Quench towers	Adjusted emissions based on 2007 stack test	1,728.0
Soaking	Batteries treated as lightly smoking flares (not previously estimated)	8.2
Underfiring	Increased particle size fraction for $PM_{2.5}$ based on data provided by the facility	100.2
Traveling hot car	Updated methodology that treated hot car emissions as combustion emissions	(52.3)
Pushing fugitives	Changed capture efficiencies for baghouse dust collection	(27.0)
Material handling	Reduced particle size fraction for $PM_{2.5}$	(3.4)
Coal and coke pile erosion	Reduced particle size fraction for $PM_{2.5}$	(5.7)
Paved and unpaved road dust	Reduced particle size fraction for $PM_{2.5}$	(3.8)
Total		**1,744**

3.4.2 Atlanta, Georgia, Local Area Analysis

When Georgia EPD conducted air quality modeling using CMAQ alone, the model predicted future year (2012) design values below the 15.0 $\mu g/m^3$ annual standard for all monitoring locations except the FS#8 site, which had a predicted design value of 15.4 $\mu g/m^3$. However, the 12-km CMAQ modeling could not accurately capture the impact of local sources on $PM_{2.5}$ measurements at FS#8, which necessitated the local area analysis undertaken by Georgia EPD.

This local area analysis focused on emissions from rail yards, on-road mobile sources, and industrial sources. **Table 3-2** provides a summary of $PM_{2.5}$ emissions estimates for these sources for the 2002 base year and the 2012 future year. **Table 3-3** provides a summary of modeled source impacts on $PM_{2.5}$ concentrations at the FS#8 monitor. Based on the modeled impact of these local sources, the predicted 2012 design value for the FS#8 monitor was adjusted from 15.4 to 14.5 $\mu g/m^3$ (Georgia Department of Natural Resources, 2010).

Table 3-2. 2002 and 2012 $PM_{2.5}$ emissions for local sources in Atlanta.

Source	2002 $PM_{2.5}$ (tons)	2012 $PM_{2.5}$ (tons)	Reduction Ratio
Inman rail yard	22.0	7.6	0.35
Tilford rail yard	14.0	4.4	0.31
Howells rail yard	0.8	0.1	0.13
On-road mobile sources	3.9	1.7	0.44
Industrial sources	399.0	399.0	N/A

Table 3-3. 2002 and 2012 source contributions to $PM_{2.5}$ concentrations at the FS#8 monitor.

Source	2002 $PM_{2.5}$ Contribution at FS#8 ($\mu g/m^3$)	2012 $PM_{2.5}$ Contribution at FS#8 ($\mu g/m^3$)	Reduction ($\mu g/m^3$)
Rail yards	1.9	0.6	1.3
On-road mobile sources	0.4	0.2	0.2
Industrial sources	1.3	1.3	0.0
Total	**3.6**	**2.1**	**1.5**

3.4.3 Cleveland Multiple Air Pollutant Study

The 2009-2010 local-scale emissions inventory developed as CMAQ model inputs for CMAPS focused on local industrial sources and mobile sources and differed significantly from the 2005 NEI. For example, **Figure 3-9** shows a comparison of average monthly emissions for key Cleveland-area facilities, from the 2005 NEI, with updated emissions estimates developed for August 2009 and February 2010. For all facilities combined, August 2009 emissions were 39% to 90% lower than average monthly emissions in 2005, largely because a large steel plant and a local power plant were not active during that month. Total February 2010 emissions from all facilities combined were comparable to 2005 levels (±30%) because the steel and power plants were back in operation during that month.

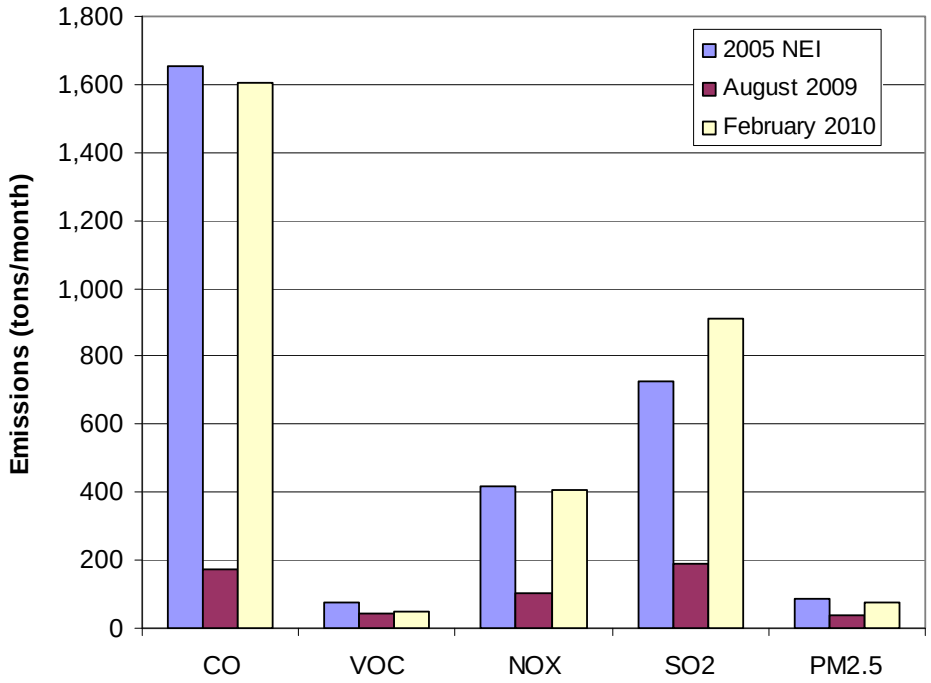

Figure 3-9. Comparison of 2005 and 2009-2010 point source emissions for key facilities in Cleveland.

Collection of local-scale emissions and activity data in Cleveland and surrounding Cuyahoga County also resulted in day-specific emissions inventories that captured temporal variability in emissions from industrial sources and commercial marine vessels at the Port of Cleveland. **Figures 3-10 and 3-11** show daily variations in Cuyahoga County SO_2 emissions for August 2009 and February 2010, the two months when intensive air quality monitoring was conducted. Note that daily SO_2 emissions average about 16 tons in August 2009 and about 43 tons in February 2010. These differences are due to the temporary shutdowns at the local steel plant and power plant.

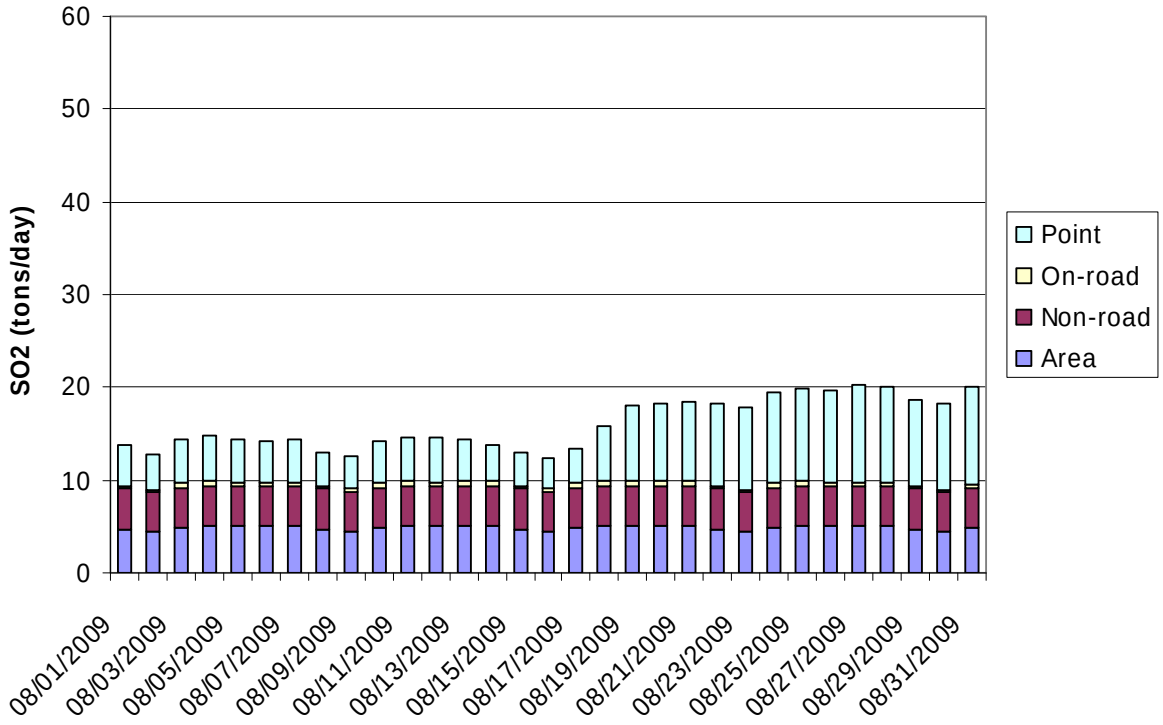

Figure 3-10. Daily SO_2 emissions for Cuyahoga County for August 2009.

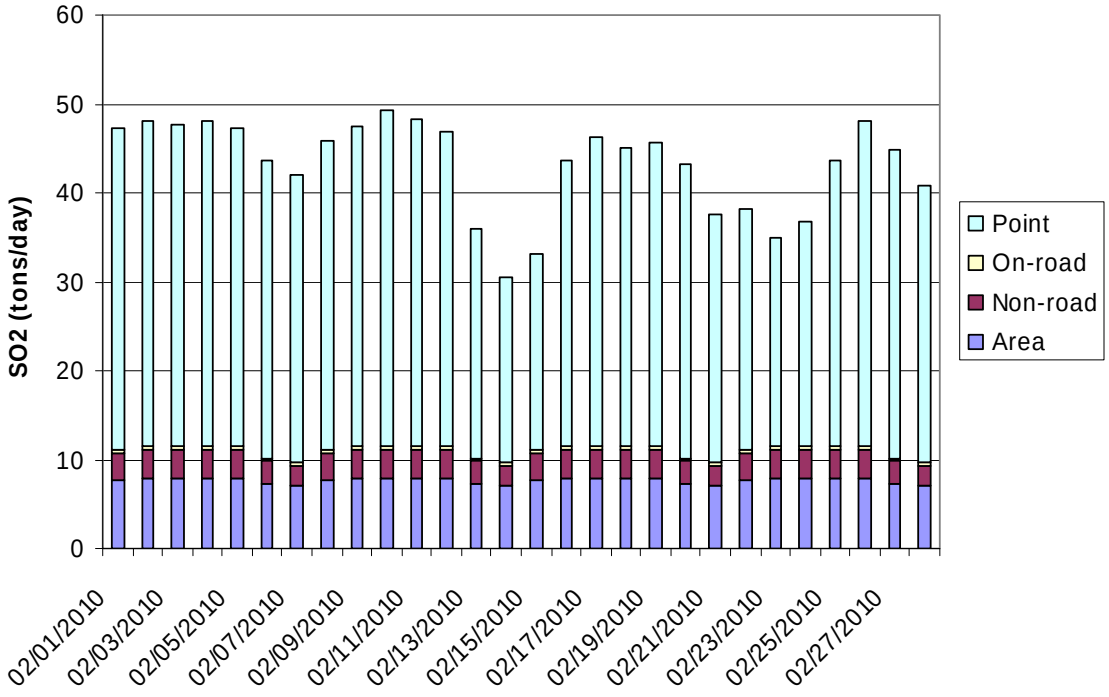

Figure 3-11. Daily SO_2 emissions for Cuyahoga County for February 2010.

3.4.4 Wyoming Ozone Evaluation

To support ongoing ozone modeling efforts in Wyoming's UGRB, Wyoming DEQ has begun collecting well-specific emissions data from all oil and gas operations in the state. For the 2008 bottom-up oil and gas production inventory, **Table 3-4** provides a summary of total emissions by source type for criteria pollutants.

Table 3-4. Criteria pollutant emissions (tons) from oil and gas production for 2008.

Source	NO_x	VOC	PM_{10}	SO_2
Stationary engines	1,929	496	112	35
Heaters	2,879	158	219	17
Tanks and pressurized vessels	572	47,176	1	971
Dehydration units	290	23,549	0	12
Pneumatic pumps	64	18,305	1	0
Fugitive losses	0	10,335	0	0
Venting and blowdown events	8	3,267	19	2
Drill rigs	5,320	839	157	291
Well completions	2,083	445	127	265
Truck loading	0	1,268	0	0
Total wellhead emissions	**13,145**	**105,841**	**635**	**1,594**

As part of the emissions data collection, Wyoming DEQ also requested speciated hydrocarbon emissions for several sources, including glycol dehydration units, pneumatic pumps, and well venting and blow-down events. Currently, Wyoming DEQ is examining the reactivity of different speciated hydrocarbons to improve model performance and identify effective control strategies.

3.5 NEI-Related Analyses

State and local agencies that participated in the local-scale focus group observed that, while the NEI serves as a good starting point for regional modeling applications, concerns exist about the quality and detail of the data with respect to local-scale analyses: specifically, the quality of stack parameter information, location coordinates, temporal resolution, and spatial resolution (e.g., county-level vs. link-based mobile source estimates).

Some focus group time was devoted to discussing the relationship between local-scale inventories and the NEI, and the extent to which emissions inventory improvements made during local area analyses are captured in local data systems and made available to the EPA's EIS. These discussions suggested a lack of connection between local-scale inventories developed for SIP modeling purposes and state inventories submitted to EPA's EIS for inclusion in the NEI. SLRT agencies that participated in the focus group indicated that, though some of the emission rates, stack parameters, and other local-scale information collected will be

included in EIS submittals, a number of barriers exist that hinder this process. Specific barriers identified include:

- The timing of inventory updates – In some cases, local-scale emissions inventory work is happening on the heels of a state's EIS submittal, and new information developed for the local-scale inventory may not be submitted as a correction, although it may be carried forward for future submittals. As a result, emissions inventories prepared for local area analyses and SIP modeling are often developed on a separate track from the emissions inventories submitted to the EIS.

- Resource requirements – It may be labor-intensive or difficult to prepare detailed local-scale emissions inventory data for submittal to the EIS. For example, the well-by-well inventories developed by the state of Wyoming for the majority of minor sources related to oil and gas fields are aggregated to the county level for EIS submittal purposes because submitting individual point source data for tens of thousands of wells would be too time-consuming. The more significant individual point sources (approximately 1,500 facilities) are being processed for submittal to the EIS.

- Communication between teams – Modelers may update inventories using information obtained from permit staff or individual facilities, and these updates may not be communicated back to the agency's emissions team.

- Emissions thresholds – For some local area analyses, detailed inventories were developed for facilities that did not meet emissions thresholds requiring facility-level emissions to be reported to the NEI under the Air Emissions Reporting Rule (AERR). As a result, some state and local agencies chose not to submit data for these inventories to the EIS.

- Usefulness for other agencies – Some SLRT agencies observed that, while their emissions inventory improvements impacted fine-scale modeling results, the magnitude of emissions changes was unlikely to impact regional air quality modeling performed by other states. Therefore, there was no motivation to ensure that the updated data were captured in EIS submittals.

These findings provide insight into reasons why the best-available emissions inventory information may not be reflected in EIS submittals and point to the need for additional investigation into the relationship between local-scale emissions inventories and the NEI and its uses.

4. Conclusions

The SLRT agencies that participated in the local-scale emissions inventory focus group provided valuable, experience-based information on local-scale inventory development and fine-scale modeling issues. This information is useful for providing guidance to other SLRT agencies that will be undertaking local-scale analyses in the future, as well as providing insight into the relationship between local-scale inventories and the NEI.

Regarding guidance for other SLRT agencies, the following actions were identified by focus group participants as elements of a potential checklist for local-scale emissions inventory development:

- Understand at the outset that the process is a lengthy one and plan accordingly. Identify partners you will need to collaborate with and establish clear timelines based on SIP due dates or other factors.

- Start with what you know—begin by identifying emissions sources in your area of interest, using existing inventories, permit data, and other sources of information.

- Communicate with owners/operators of individual facilities early and often. Use multiple channels of communication, including letters and face-to-face meetings, to educate facility owners/operators on local air quality issues, the results of analyses that have evaluated their facility's impact on monitored pollutant concentrations, and the need for controls. Explain why it is in everyone's best interest to make sure that the best data are being used for modeling.

- Use simple approaches, such as emissions-to-distance (Q/D) analysis, to prioritize sources in terms of potential impact on monitoring sites. Emissions-to-distance ratios provide a quick way of comparing local sources.

- Understand your monitoring data thoroughly, particularly speciated data. Investigate the variation of species concentrations by site, season, hour, etc., before attempting more detailed analyses such as receptor modeling.

- When conducting analyses on local source contributions, use a weight-of-evidence approach, combining the results of receptor modeling, wind analyses, and inter-monitor comparisons to zero in on sources with significant impacts on monitored concentrations.

- Take care to collect detailed information on stack parameters as well as emission rates. Work with facility operators to determine the best way to characterize sources for modeling, particularly fugitive sources.

- Perform a thorough quality assurance (QA) check on any data you receive from individual facilities. Talk to a permit engineer who understands the facility or industry to ensure that reported data are reasonable.

- Compare modeling results with results from other analyses (e.g., Q/D, PMF) to see if the modeling confirms earlier findings. If not, it may be necessary to reevaluate modeled emissions rates or stack parameters.

Project findings also provided insight into the relationship between local-scale emissions inventories developed by SLRT agencies and the NEI. Focus group participants identified potential barriers that may prevent local-scale emissions data from reaching the EIS. These barriers include timing issues, resource limitations, and the development of separate modeling inventories by agency modelers. As a result, the authors recommend further investigation into NEI data analyses that can support SLRT agencies that are developing more locally representative emissions data for fine-scale air quality modeling, as well as provide additional incentives to SLRT agencies to ensure that locally representative emissions data are reflected in EIS submittals. Potential next steps include:

1. Communicating the focus group's recommended actions for state and local agencies that want to develop local-scale emissions inventories by:

    - Presenting a project summary at the 2010 EPA Emissions Inventory Conference;

    - Developing a resource page for local-scale inventories on EPA's Clearinghouse for Inventories and Emission Factors (CHIEF) website;

    - Referencing the project final report (this document) in future versions of EPA guidance documents for PM, ozone, and regional haze modeling;

    - Sharing information directly with agencies that have local areas that are expected to exceed the NAAQS.

2. Investigating existing perceptions about the relationship between local-scale inventories and the NEI, including the idea that local-scale emission characterizations done by state and local agencies are unlikely to impact regional modeling efforts and are of limited benefit to the EIS/NEI. This could be accomplished by:

    - Developing a technical advisory committee consisting of representatives from state and local agencies, EPA, and regional modeling centers to further discuss and ground-truth these perceptions;

    - Comparing state and local agencies' local-scale emissions data and the NEI to evaluate differences in key elements such as control information.

3. In view of analytical approaches described by focus group participants, identifying complementary NEI-based data analyses that can be done to assist agencies in their preparation for local-scale emissions inventory development.

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Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

Docket No. EPA-HQ-OAR-2009-0491

Exhibit 5

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

Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

Docket No. EPA-HQ-OAR-2009-0491

Exhibit 6

Statement of Basis for a
Planned Revision of the
Clean Air Act Permit Program (CAAPP) Permit for:

U. S. Steel Corporation
Granite City Works
20th and State Streets
Granite City, Illinois

Source Identification No.: 119813AAI
Application/Permit No.: 96030056

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
P.O. Box 19276
1021 North Grand Avenue East
Springfield, Illinois 62791-9276

Table of Contents

Introduction

This document is the Statement of Basis that has been prepared in conjunction with the planned issuance of a revised Clean Air Act Permit Program ("CAAPP") permit for US Steel Corporation, Granite City Works ("US Steel"). A Statement of Basis is a support document that is meant to provide a narrative of the legal and factual basis underlying the planned issuance of a CAAPP permit. As the Statement of Basis is only an informational document, it is not a part of the CAAPP permit and it does not create any binding or enforceable rights or duties independent of the permit.

US Steel operates an integrated iron and steel mill in Granite City, Madison County, Illinois. Because of the type and quantity of emissions generated by this source, US Steel is required to obtain an operating permit under Illinois' CAAPP administered by the Illinois EPA.

The CAAPP generally requires that major stationary sources of regulated air pollutants apply for and obtain a CAAPP permit for their operations. CAAPP permits contain conditions identifying all applicable requirements under the federal Clean Air Act ("CAA") and the state Environmental Protection Act ("Act"). Testing, monitoring, compliance procedures, recordkeeping and reporting requirements are also established, as required or necessary, to assure compliance and accomplish the purposes of the Illinois CAAPP. The terms and conditions of a CAAPP permit are enforceable by the Illinois EPA, USEPA and the public.

The Illinois EPA previously issued a CAAPP permit to US Steel on September 3, 2009. US Steel filed an appeal with the Illinois Pollution Control Board ("PCB") challenging certain conditions of the issued permit and obtained an order from the PCB staying the effectiveness of the permit. In addition, a public petition requesting an objection to the permit was filed with USEPA on October 1, 2009. On January 31, 2011, USEPA took final action on the petition, granting it in part and denying it in part.

Following a review of USEPA's response to the petition, the Illinois EPA has elected to revise the CAAPP permit issued to US Steel. The revised CAAPP permit that the Illinois EPA intends to issue is being preceded by a 10-day comment period in accordance with Section 39.5(9)(g) of the Act. The revised CAAPP permit and this Statement of Basis are being mailed to persons who participated in the earlier comment period. These and other relevant documents are also being placed in repositories.

I. General Information

A. Applicant and Source Information

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

ID No: 119813AAI
SIC Code: 3312 – Integrated Steel Mill
County: Madison

Responsible Official

Richard E. Veitch, General Manager
(618)451-3456

B. Facility Description

US Steel Corporation's ("US Steel" or "source") Granite City Works is an integrated iron and steel mill producing flat rolled steel products. The principal operations at this facility are: (1) Coke Production (Coke Ovens and Coke Byproduct Plant), (2) Iron Production (Blast Furnaces), (3) Steel Production (Basic Oxygen Process Shop), (4) Steel Finishing, (5) Boilers, and (6) Handling and Processing of Bulk Materials. In addition, the roadways at the facility and nearby public roadways serving the facility emit fugitive dust due to vehicle traffic and entrainment of dust deposited on the road surface. More detailed descriptions of the various operations and emission units at the facility are found in the conditions of the revised CAAPP permit that provide "Descriptions" of units.

Coke Production (Coke Ovens and Coke Byproducts Plant)
Coke is manufactured at the facility for use in the blast furnaces in which iron is produced. Coke is an essential raw material in the operation of the blast furnaces, as it is the reducing agent that removes oxygen from the iron ore charged to the furnaces. The coke also serves as the fuel that provides heat to the furnaces.

Coke is produced by "cooking" appropriate coal at an elevated temperature to drive off the volatile fraction of the coal. There are two types of coke ovens, byproduct recovery ovens and heat recovery ovens. In byproduct recovery ovens, the combustible byproduct gas from the coking process is sent to a byproduct plant to recover certain chemicals in the gas. The processed gas is then used as fuel, both in the coke ovens themselves and at other units at the facility. In heat recovery coke ovens, the gas from the coking process is all immediately burned at the coke plant, with the energy value of this combustible gas recovered as steam. Coke is produced by both types of coke ovens, in batches, in four steps: 1) The charging of coal into a hot oven; 2) The actual coking of the coal in the oven; 3) The removal or pushing of the finished coke from the oven; and 4) The cooling or quenching of the hot coke with water in a separate quench station. This facility

has two batteries of byproduct recovery ovens. The source also has three new batteries of heat recovery ovens that began operation in late 2009, which are operated by a separate company, Gateway Energy and Coke. The coke from those new batteries is transferred by conveyor to the blast furnaces at the facility. Those batteries will be the subject of a separate CAAPP Permit issued to Gateway and will not be described further in this document.

By-product coke ovens are indirectly heated through combustion flues in the refractory work around each of the ovens. The flues from all the ovens exhaust through a common "main stack." The principal fuel used to heat the ovens is coke oven gas. At this facility, the coke oven gas may be supplemented with natural gas and blast furnace gas, a byproduct from the blast furnaces at the facility. Emissions from heating the coke ovens are controlled by work practices to avoid leaks in the refractory that enable some of the raw coke oven gas to go directly into the flues, bypassing the byproduct plant. Heating emissions are also controlled as raw coke oven gas and blast furnace gas are processed or cleaned to remove entrained particulate before being used as fuel. At this facility, coke oven gas is also normally further processed in a Desulfurization System to remove sulfur, lowering the SO_2 emissions that accompany its use as fuel.

In addition to combustion emissions from heating the ovens, which occur at the combustion or main stack, each of the steps in the production cycle in a byproduct coke oven poses issues for emissions. The ovens are charged by pouring coal into the ovens through ports on the top of the ovens. Emissions are minimized by equipment design and work practices that reduce the escape of coal dust. While the coal is being coked, leaks in the seals around doors and ports on the ovens will result in emissions. This is because the ovens are designed to operate at a slight positive pressure to prevent air from entering the ovens and to facilitate collection of the raw coke oven gas for processing in the byproducts plant. The emissions from leaks are minimized by the design features of the ovens and work practices to prevent and plug leaks. The emissions from pushing coke are minimized by practices to ensure that the coal is fully coked before being removed from an oven. Pushing emissions are also controlled by a mobile control system, with hooding and an associated scrubber that travel along with the coke receiving car. Emissions from quenching are controlled by requirements for the quality of quench water and a quench tower over the quench station, with a row of baffles to capture particulate matter.

At the byproducts plant, the collected coke oven gas from the ovens is processed to recover certain chemicals for sale, including coal tar, benzene, and ammonium sulfate. Emissions of vapors from the various vessels in the byproducts plants are generally controlled by gas blanketing systems. These systems exhaust back into the raw coke oven gas stream, so that vapors are ultimately controlled by combustion when the gas is used as fuel.

Any excess coke oven gas, which cannot be used as fuel at the facility, is disposed of by combusting it in a flare. This controls the organic compounds in the gas and converts the sulfur in the gas, which is generally present as hydrogen sulfide, to less noxious SO_2.

There are also two emergency by-pass flares, one on each of the coke oven batteries. Like the flare at the byproducts plant, these flares are safety devices. In the event of an upset, they are used to maintain the pressure in the coke oven gas collection system at a safe level by combusting some of the coke oven gas.

Iron Production (Blast Furnaces)

Blast furnaces are tall, cylindrical, stationary furnaces. The charge materials (iron ore, coke, limestone and other flux material) are fed into the furnace at the top through a double-bell lock system. Heated air is blown into the furnace through nozzles or tuyeres near the bottom of the furnaces. In the furnaces, the coke undergoes partial combustion to carbon monoxide providing the heat to melt the charge as well as reducing the iron ore to elemental iron. Molten iron and slag accumulate at the bottom of the furnace and are removed periodically by tapping the furnace. The hot, carbon monoxide rich exhaust from the furnace, known as blast furnace gas, goes into a duct at the top of the furnace, to be cooled and cleaned prior to use as fuel at the facility. Any excess blast furnace gas, which cannot be used as fuel, is disposed of by combustion in a flare.

Emissions occur from blast furnaces during the periodic tapping of the furnaces, when molten iron and slag are exposed to the atmosphere as they drain from a furnace and flow in troughs to vessels for transport. Covers and other measures are used to reduce the formation of emissions during tapping. At this facility, emissions are also controlled as tapping occurs in the casthouse, a covered area between the two blast furnaces at the facility, which is equipped with fabric filters or baghouses. The casthouse itself is exhausted to the large Casthouse Baghouse. Additional hooding is present at the iron spouts, where molten iron is poured into the "torpedo" rail cars, which are used to transport molten iron to the Basic Oxygen Process Shop. The hooding over the iron spouts exhaust to another baghouse, the Iron Spout Baghouse.

Emissions also occur from the stoves used to heat the blast air going into the furnaces. These stoves are fired with blast furnace gas. The blast furnace gas is cleaned to remove entrained dust before it is used as fuel. Otherwise, this dust would accumulate and interfere with the operation of the stoves.

Steel Production (Basic Oxygen Furnace (BOF) Shop and Continuous Casters

Iron produced at the blast furnaces is converted to steel in the Basic Oxygen Process Furnace (BOPF) or Basic Oxygen Furnace (BOF) Shop. The BOF Shop houses the hot metal desulfurization station, the basic oxygen furnaces (BOF), the ladle metallurgy furnace and the argon stirring stations. The steel is then cast into slabs in associated continuous casters.

At the BOF Shop, molten iron is first processed at the desulfurization station to reduce its sulfur content. This occurs in batches using desulfurization agents, such as lime, that react with sulfur dissolved in the molten iron. Molten iron from the blast furnace in torpedo cars is transferred to a ladle. The agents are then added to the molten iron with a lance. The sulfur-laden slag that is formed floats on the surface of the iron and is skimmed off the iron into a slag pot. The particulate emissions from the transfer of molten iron to ladles and the desulfurization and slag skimming processes are controlled by separate baghouses.

The desulfurized iron then goes to the BOF furnaces for conversion to steel. This occurs when oxygen injected into the molten metal reacts with carbon and silicon dissolved in the iron, driving these materials out of the metal, converting it to steel. Iron is processed in these furnaces in batches or heats that last less than an hour. The first step in a heat is charging a furnace. The furnace is tilted and molten iron is poured into the furnace from a ladle. Scrap metal is also emptied into the

furnace from large buckets. The emissions associated with charging are controlled by large hoods located above the furnaces that capture particulate matter. These hoods are ducted to an electrostatic precipitator ("ESP"). The next step is the actual conversion into steel, when oxygen is blown into the molten metal. A cover is placed on the furnace and an oxygen lance is introduced through a port in the cover. The associated emissions are directly controlled as the furnace is exhausted through a second port in the cover of the furnace that is ducted to the ESP. In addition, hooding over the furnaces captures most of the emissions that escape direct capture. The final step in a heat, when the "blow" is complete, is tapping the furnace. The furnace is again tilted, now in the direction opposite that for charging, the slag on top of the molten steel is poured into a slag pot, and then the steel itself is poured into another ladle. In addition to the hooding over the furnaces, tapping emissions are captured by local hoods over the pouring area, which also go to the ESP. The capture of emissions from the furnaces is facilitated as the roof over the furnaces is open to the atmosphere only through a roof monitor at the peak of the roof.

At the ladle metallurgy furnace and argon stirring stations, final adjustments are made to the composition of the molten steel from the BOFs. The composition of the metal in the ladle is first analyzed. Appropriate amounts of alloy material are then added to achieve the desired composition. This occurs in the ladle metallurgy furnace if the steel has cooled and must be brought back up to temperature. Otherwise, alloy materials are added at the argon stirring stations, where the steel is then "stirred" by injecting inert argon gas into the steel to disperse the alloy materials in the molten steel and maintain a uniform temperature. Emissions from these stations are controlled by another baghouse.

In the continuous caster, molten steel is formed into solid slabs, which may be sold or further processed in finishing operations at the facility. Molten steel from the ladle metallurgy station is poured into the continuous caster and steel slabs of the desired cross-section and length are produced. This is accomplished by passing the molten steel through a water-cooled die, further cooling the steel strand leaving the die with water sprays, and finally cutting the strand into sections of the desired length. The design of the continuous casting process reduces emissions because it minimizes exposure of molten steel to the atmosphere.

Finishing Operations (Reheat Furnaces, Rolling Mills and Galvanizing)

In the finishing departments, slabs are heated and then rolled or milled into sheet metal that is sold in large coils. The slabs are first heated in gas-fired "reheat furnaces" to a temperature at which the steel is malleable and can be readily processed in a rolling mill. Low- NO_x combustion techniques are employed at the reheat furnaces to control emissions of NO_x.

In the rolling mills, the hot steel slabs are reduced in thickness by being repeatedly passed through a series of heavy rollers to form sheet metal of the desired thickness and width. This sheet metal may then undergo galvanization, with the application of a thin film of zinc to the surfaces of the metal to prevent corrosion. A preliminary step in galvanization is "pickling," the processing of metal in acid baths to remove rust and oil from the surface. The cleaned metal is then heated and submerged in molten zinc. Oil may then be applied to the zinc coated metal to further protect against corrosion. Emissions from pickling are controlled by scrubbers. The various melting kettles, furnaces and heaters in the galvanizing process are all natural gas-fired. The largest furnace has a catalytic converter to reduce emissions of NO_x.

Utility Operations (Boilers)
Boilers at the facility provide the steam needed for certain process operations at the facility, as well as for some space heating. Two older boilers produce low-pressure steam and are fired by natural gas, coke oven gas, and blast furnace gas. A new "Cogeneration Boiler" (also known as Power Boiler 1) began operation in 2009. This boiler produces high-pressure steam used to generate electricity for the facility, with the low-pressure steam from the turbine-generators then being available for process operations and heating. The emissions from the boilers are generally minimized through fuel quality and good combustion practices.

Handling and Processing of Bulk Materials
Various bulk materials involved in the production of iron and steel are handled at the facility, including iron ore, scrap iron, coal, coke and limestone. These materials must be unloaded, held in storage piles or silos, and moved around the plant by various conveyor systems. Certain materials, like coal for coke ovens, must be processed by screening and crushing, before use. Slag from furnaces must also be handled and processed for use as construction aggregate or disposal. The particulate emissions from these emission units are controlled by various measures, specific to the unit, that act to minimize emissions. Baghouses are also used to control emissions from some emission units, such as the pulverizer used for final grinding of the coal feed to the coke ovens.

Vehicle Traffic on Roadways
Vehicle traffic on roadways, including the heavy equipment used to transport slag, around the facility results in emissions of fugitive dust. On paved roadways, these emissions are minimized by vacuum sweeping on a regular basis to remove silt from the road surface. On unpaved roadways and open areas, emissions are minimized by regular applications of water and surfactants.

C. Source Designation

Under the Illinois CAAPP, two or more facilities can be considered a single stationary source for purposes of CAAPP permitting if they: (1) belong to the same industrial grouping or, alternatively, operate in a support facility relationship, (2) are located on contiguous or adjacent properties, and (3) are under common control/ownership. All three of these criteria must be met in order to consider separate facilities as one source.

For purposes of CAAPP permitting, the following facilities are considered part of a single stationary source with US Steel:

> Stein Steel Mill Services (I.D. 119813AAD) located at 20th Street and Edwardsville Road in Granite City – Handling of Basic Oxygen Furnace (BOF) slag.
>
> Granite City Slag, LLC (I.D. 119040ATF) located at 20th Street and Edwardsville Road in Granite City – Handling of blast furnace slag.
>
> AKJ Industries, Inc. (I.D. 119040AEB) located at 20th Street and Edwardsville Road in Granite City – Processing by-product stream from the

coke by-product recovery plant.

Oil Technology, Inc. (I.D. 119040ATG) located onsite of US Steel (Route 203) in Granite City – Processing recovered waste oil for recycling.

Tube City, IMS (I.D. 119040ATL) located at 2500 East 23rd Street in Granite City – Handling of scrap metals.

Gateway Energy & Coke Co., LLC (I.D. 119040ATN) located at 2585 Edwardsville Road in Granite City – Production of coke in new heat recovery coke oven batteries.[1]

These facilities should be considered part of a single source with US Steel based on the CAAPP's definition of "source" and the accompanying definition of "support facility." *See,* Section 39.5(1) of the Act. This determination is based on the following factors: (1) each of the facilities possess supporting or mutually-dependent relationships with US Steel, (2) the facilities are contiguous or adjacent to the US Steel facility, and (3) the facilities are contractually intertwined with, and/or co-dependent upon, US Steel such as to provide the latter with presumptive or actual control over decisions affecting operation and compliance with environmental regulations.

Although considered a part of US Steel, it is appropriate that each of these other facilities, with their different responsible officials, is permitted individually under the CAAPP. This approach is consistent with the Illinois EPA's past permitting practice, as well as available USEPA guidance on single source permitting under the Title V program. Accordingly, these other facilities are not addressed in the revised CAAPP permit that the Illinois EPA intends to issue nor in this accompanying Statement of Basis.

D. Area Classification

Madison County, Illinois is currently designated as moderate nonattainment for the 8-hour ozone National Ambient Air Quality Standard (NAAQS), nonattainment for the NAAQS for particulate matter less than 2.5 micrograms, and as nonattainment for the lead NAAQS. Madison County is in attainment with or not classifiable under the NAAQS for all other criteria pollutants.

E. Major Source Status

This source is a major source based on emissions of various regulated pollutants, including NO_x, PM, SO_2, VOM, CO, hazardous air pollutants ("HAPs"), and greenhouse gases ("GHG").

F. Annual Emissions

The actual annual emissions of different pollutants from this facility as reported in the five most recent Annual Emission Reports (AER) submitted by US Steel, are provided below. (The AER for

[1] Gateway Energy & Coke Co. began operation in November 2009. The company submitted its CAAPP application on October 29, 2010, but no final action on the application has been taken by the Illinois EPA as yet. The assigned application number is 10100044.

2010 is not due until May 1, 2011.)

Pollutant	Annual Emissions (tons/year)				
	2009[a]	2008	2007	2006	2005
CO	4,644	11,915	12,503	12,644	12,614
NO_x	1,315	3,427	3,677	3,767	3,643
PM	372.8	1,039	1,103	1,122	1,119
SO_2	1,428	5,613	6,187	5,971	6,075
VOM	72	222.7	230.6	245.9	240.6
HAPs[b]	5.1	39.3	45.0	33.6	29.1
CO_2e[c]	143,568	420,109	293,189	-	-

a. Emissions were lower in 2009 than in other years because the facility did not operate for much of the year due to the general economic downturn.
b. Total emissions of the four HAPs emitted in the greatest amounts for each year.
c. Emissions of greenhouse gases (GHG), in carbon dioxide equivalents (CO_2e), based on emission data that US Steel has voluntarily submitted since 2007, when such data was first requested by the Illinois EPA.

G. Chronology of Events

Initial CAAPP Permit

In March 1996, the Illinois EPA received a CAAPP application for the Granite City Division of the National Steel Corporation, who was then the owner and operator of the facility. This application was timely submitted in accordance with the requirements of the CAAPP, which had become effective in Illinois following USEPA's interim approval of the program on March 15, 1995.

The Illinois EPA received over 730 initial applications for CAAPP permits from subject sources in Illinois. The application for the source was one of the last initial CAAPP applications reviewed and processed by the Illinois EPA. In the intervening years, the source was purchased by US Steel Corporation and the pending CAAPP application originally submitted for the source was transferred to US Steel as the new owner and operator of the Granite City Works.

The Illinois EPA subsequently prepared a draft CAAPP permit for US Steel and the public comment period for the draft permit commenced in mid October 2008. A public hearing was held on December 2, 2008. After the close of the comment period and a review of the public comments, the Illinois EPA prepared a proposed CAAPP permit and sent it to USEPA in mid June 2009 for a 45-day review, during which USEPA did not object to the proposed CAAPP permit. Following USEPA's review period, the Illinois EPA prepared its formal response to comments raised by the public and the applicant during the public comment period on the draft CAAPP permit. The Illinois EPA issued the CAAPP permit and an accompanying Responsiveness Summary on September 3, 2009.

Petition to Object before USEPA Administrator

The American Bottom Conservancy ("ABC") filed a Petition to Object ("Petition") with the USEPA in October 2009 requesting that USEPA object to the CAAPP permit issued to US Steel. The Petition asserted that the CAAPP permit failed to incorporate all "applicable requirements,"

including terms and conditions of prior state construction permits, failed to include the requisite Periodic Monitoring requirements and lacked required compliance schedules. The Petition also claimed that the CAAPP permit inappropriately allowed excess emissions during malfunction, breakdown and startup, failed to include compliance assurance monitoring, and contained terms and conditions that are not practically enforceable.

Permit Appeal before Illinois PCB

In a parallel state process, US Steel filed a Petition for Review ("permit appeal") before the PCB in October 2009, challenging certain terms and conditions of the issued CAAPP permit. Among other things, the permit appeal contested the imposition of certain testing, monitoring, record-keeping and reporting conditions. US Steel also disputed the manner in which certain state and federal requirements, including prior state construction permits, were addressed in the CAAPP permit and opposed the incorporation of certain compliance obligations from a recent state Consent Order. US Steel also generally asserted that the permit contained various typographical errors, mistakes and omissions.

US Steel also filed an accompanying motion with the PCB in the permit appeal proceeding seeking to stay the effectiveness of the issued CAAPP permit. On November 19, 2009, the PCB granted a full stay of the CAAPP permit pending the resolution of the permit appeal, finding that the permit had been automatically stayed under Section 10-65(b) of the Illinois Administrative Procedure Act. The permit appeal is currently pending before the PCB. It is anticipated that the Illinois EPA's planned issuance of a revised CAAPP permit as a consequence of USEPA's Petition Response discussed below will result in the permit appeal being dismissed by the PCB or withdrawn by US Steel.

USEPA Petition Response

On January 31, 2011, the USEPA responded to the Petition, denying in part and granting in part, the arguments raised by ABC. To summarize USEPA's response to the Petition ("Order"), USEPA refused to object to certain aspects of the issued CAAPP permit challenged by ABC. For example, USEPA concluded that a compliance schedule was not necessary to address pending Notices of Violations involving US Steel. USEPA also generally denied ABC's argument that the issued CAAPP permit improperly exempted certain emissions units from NESHAP standards during periods of startup, shutdown and malfunctions ("SSM").

The Order also granted the Petition with respect to certain aspects of the permit. For example, USEPA found that the CAAPP permit failed to include specific "applicable requirements" derived from conditions contained within certain preconstruction permits. Additionally, USEPA found that the CAAPP permit failed to adequately identify certain plans and/or plan requirements that were incorporated by reference into the permit and, further, that the CAAPP permit failed to contain enforceable steps and milestones for the terms of an existing consent order. USEPA also concluded that it could not determine whether the CAAPP permit established sufficient Periodic Monitoring requirements for numerous emission units. Citing a lack of sufficient explanation in the Illinois EPA's response to comments, the Oder directs the Illinois EPA to address this issue with greater specificity and analysis.

Current Permitting Action

The Illinois EPA must address the objections from the ABC petition that were granted by USEPA in its Order. Detailed discussions for each point are provided elsewhere in this Statement of Basis. The Illinois EPA's overall approach to the Order is summarized below.

Consistent with the Order's discussion concerning the meaning of "applicable requirements," the Illinois EPA intends to revise US Steel's CAAPP permit to impose updated terms from a previous consent order, including a schedule of measures with enforceable milestones that US Steel is currently implementing. In addition, the Illinois EPA intends to revise the CAAPP permit to reflect requirements from Title I construction permits issued by the Illinois EPA. This incorporation of relevant permit conditions from construction permits is not being limited to the specific New Source Review ("NSR") permits cited by Petition, but will encompass other relevant conditions from construction permits issued by the Illinois EPA in the intervening period since the Petition.

Additionally, the permit revisions that the Illinois EPA intends to make will follow current USEPA guidance regarding the "incorporation by reference" of certain plans or programs that relate to applicable requirements. Further, the revised CAAPP permit will clarify that the startup, shutdown and malfunction ("SSM exemption") formerly contained in the general provisions of the federal National Emissions Standards for Hazardous Air Pollutants ("NESHAP") rules is not applicable for US Steel's pickling line, which is units subject to the NESHAP, 40 CFR 63Subpart CCC.

The Illinois EPA has given considerable attention to the subject of Periodic Monitoring, which constituted a substantial component of ABC's Petition and USEPA's Order. In this permitting action, the Illinois EPA has explained in significantly greater detail in this Statement of Basis both the practical and technological reasons justifying the inclusion of certain Periodic Monitoring requirements established in the CAAPP permit, including the approach to and use of selected emission factors. At the same time, various enhancements or supplements will be made to monitoring, testing recordkeeping and reporting requirements so that Periodic Monitoring under US Steel's CAAPP permit is sufficient to assure compliance with applicable requirements.

In this action, the Illinois EPA is also addressing new "applicable requirements" that have become effective under the Act and the CAA since the filing of the Petition. The revised CAAPP permit will contain requirements from revisions to 35 IAC Part 217, Nitrogen Oxide Emissions. Revisions to these state rules were adopted August 20, 2009, subjecting certain emission units at this facility to additional emission standards and control measures for emissions of nitrogen oxides ("NO_x"). As the revised rules have not been approved by USEPA as part of Illinois' State Implementation Plan ("SIP"), the relevant conditions contained in this revised CAAPP permit are designated as state-only conditions, as provided for by Section 39.5(7)(m) of the Act.

This permitting action also addresses rules adopted by USEPA in June 2010 for the permitting of emissions of GHG. Those rules established a phased approach to permitting major sources of emissions of GHG under the CAA. However, there are currently no emission standards or other regulatory obligations relating to emissions of GHG that constitute "applicable requirements" for this facility. Accordingly, the revised CAAPP permit appropriately would not contain any substantive requirements for emissions of GHG.

Finally, NESHAP rules for industrial, commercial, and institutional boilers and process heaters were adopted by USEPA on February 21, 2011 (40 CFR 63 Subpart DDDDD). The revised CAAPP permit would include condition addressing these new NESHAP rules. The adoption of these rules by USEPA also eliminates any need for a case-by-case determination of Maximum Achievable Control Technology ("MACT") by the Illinois EPA, pursuant to Section 112(j) of the CAA and Section 39.5(19)(b) of the Act.[2]

The Illinois EPA plans to proceed with revisions to the US Steel permit under the procedures set forth in the CAAPP.[3] In general, this permit revision is an outgrowth of USEPA's public petition process. As set forth in the CAAPP, if a public petition objecting to a CAAPP permit is granted by USEPA after the permit has already been issued, the Illinois EPA is authorized to revise and resubmit the CAAPP permit to USEPA. *See generally,* Section 39.5(9)(e)-(g) of the Act and 35 IAC 252.301.[4] This authority, which effectively allows for a formal reconsideration of the issued permit, presents an opportunity for the Illinois EPA to reconcile its permitting decision with USEPA's Order. The CAAPP does not specify a time-frame for making such revisions; however, federal requirements provide that a permit authority must act within 90 days to address USEPA's concerns relating to a petition.[5]

Moreover, it is important to note that this permit revision is a continuation of the initial CAAPP permit proceeding, which stands in contrast to other proceedings addressed separately under the CAAPP.[6] Notwithstanding the time and resources that have gone into processing US Steel's application and issuance of a CAAPP permit to US Steel, with the issuance of the USEPA's Order, the process of creating an initial CAAPP permit for US Steel is now incomplete. This situation is due, in part, to the administrative processes of the CAAPP and corresponding federal Title V program, including the public petition process, that serve to ensure that a CAAPP permit complies with all legal requirements.[7] In any event, it is hoped that this further permitting action will bring

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[2] The Illinois EPA had previously been prepared to make a case-by-case MACT determination for subject emission units at the facility, addressing US Steel's pending application for a future significant modification to the CAAPP permit. That permitting transaction was not finalized and is now no longer necessary.

[3] The CAAPP, codified in state law at Section 39.5 of the Act, was enacted by the Illinois General Assembly in 1992 to fulfill the requirements of Title V of the Clean Air Act Amendments of 1990 and USEPA's implementing regulations under 40 CFR Part 70. As previously noted, USEPA granted final interim approval of the CAAPP on March 7, 1995. USEPA later granted full approval of the program, effective November 30, 2001, confirming that the minimum program elements required by Title V and Part 70 had been met.

[4] The process outlined in the CAAPP and implementing regulations essentially mirrors the procedures governing public petitions set forth in 40 CFR Part 70. *See generally,* 40 CFR 70.8(c)-(d).

[5] Under the federal requirements of Title V and Part 70, the failure of the permit authority to submit a revised permit within 90 days of receipt of USEPA's objection results in USEPA assuming responsibility for mending any deficiencies with the CAAPP permit. *See,* Section 505(c) of the Clean Air Act; *see generally,* 40 CFR 70.8(d) and 70.7(g)(4) and (5). Courts have yet to rule as to whether the 90-day requirement is a jurisdictional requirement, though litigation is reportedly moving forward in one or more federal district courts.

[6] Under the CAAPP, and as reflected in the various program elements of Part 70, this proceeding for an initial CAAPP permit is distinct from the proceedings governing CAAPP renewals, amendments, modifications (i.e., minor and significant) and reopenings.

[7] The nature of this proceeding is also partially owing to the operation of a state law that automatically stayed the earlier permit pending administrative review. For a CAAPP permit that is not yet in effect, the use of procedures for renewals, amendments, modifications, or reopenings are not applicable, as such procedures are more appropriately reserved for permits that are both final and effective.

to a close those procedures of the CAAPP relating to the issuance of US Steel's initial CAAPP permit.[8]

As required by the CAAPP, the planned revision of the CAAPP permit is being accompanied by the opportunity for further public comment by the Permittee and any person who previously participated in the public comment process. Other people that are interested may also submit comments. US Steel's CAAPP permit previously underwent the full range of procedures associated with an initial CAAPP permit proceeding, including a public comment period and a public hearing. The procedures for this permit revision under the CAAPP now consist simply of a 10-day comment period, as provided by Section 39.5(9)(g) of the Act. Notice of the comment period has been provided to US Steel and all persons who participated in the earlier public comment process.

H. Environmental Justice

US Steel is located in a potential environmental justice ("EJ") community.[9]
Given the location of this facility in a potential EJ area and significant public interest in the permitting of this facility, the Illinois EPA held an initial public hearing and solicited public input in the CAAPP permitting process beginning in October 2008. The Illinois EPA extended the comment period to provide more time for the public to review material related to the permit including any additional information gathered through the Freedom of Information Act (FOIA) process. A written Responsiveness Summary was prepared in which the Illinois EPA, to the best of its ability, responded to questions raised during the public hearing and in written comments.

While the Illinois EPA is sensitive to the location of this facility in a potential EJ community, Title V does not provide for substantive emission control requirements beyond those arising under currently applicable regulations. Thus, when issuing a CAAPP permit for this facility, the Illinois EPA does not have the authority to impose additional emission control requirements to reduce emissions beyond the levels provided for by applicable state and federal regulations. At the same time, CAAPP permits do not allow for additional emissions.

Having a facility subject to a CAAPP permit provides benefits for air quality, the public and the environment generally. CAAPP permits require more reporting on a facility's compliance status than is required by underlying state operating permits. For example, the requirements for semi-annual reports for all monitoring and annual compliance certifications only become applicable upon the effectiveness of a CAAPP permit. In addition, CAAPP permits generally provide clarity and awareness of applicable regulations and the mechanisms by which sources must comply with these regulations. CAAPP permits add to the compliance checks put on facilities. Where a facility

[8] If the Illinois EPA fails to address USEPA's concerns identified in the Order, the regulations governing USEPA's oversight of Title V charge that agency with the task of making further revisions to the US Steel CAAPP permit. *See*, 40 CFR 70.7(g)(5) and 71.4(e).

[9] The Illinois EPA's EJ-Public Participation Policy (www.epa.state.il.us/environmental-justice/public-participation-policy.pdf) states that "a 'potential' EJ community is a community with a low-income and/or minority population greater than twice the statewide average. In addition, a community may be considered a potential EJ community if the low-income and/or minority population is less than twice but still greater than the state-wide average and it has identified itself as an EJ community."

has outstanding compliance deficiencies, CAAPP permits may establish compliance schedules and other additional conditions for monitoring and reporting.

With this Statement of Basis, the Illinois EPA has made very clear the applicable emission limitations, standards, and other enforceable terms and conditions, as well as attendant monitoring, reporting, recordkeeping, and certifications to assure compliance. The Illinois EPA has provided an explanation of same, as well a justification for why the conditions that assure compliance are appropriate. The level of detail in the Statement of Basis is atypically involved and is in recognition of the public interest in the permitting of this complex facility in a potential EJ community. The Statement of Basis has been provided to the USEPA for its review. A copy has also been provided to each person who participated in the earlier public comment period for the CAAPP permit for this facility. The extremely detailed explanation of the requirements, particularly Periodic Monitoring, applicable to US Steel is intended to further meaningful public participation.

II. Compliance and Enforcement History

A. Closed/Resolved Federal Enforcement Cases

United States of America v. National Steel Corporation, No. 97-850, United States District Court for the Southern District of Illinois, filed May 20, 1998
This enforcement action involved alleged violations of the Illinois State Implementation Plan (SIP) opacity limitations applicable to basic oxygen furnace (BOF); violations of state construction permit conditions and SIP emission limits applicable to coke manufacturing operations; and violations of the National Emission Standards for Hazardous Air Pollutants (NESHAP) applicable to coke oven batteries and coke by-product recovery plants.

To resolve this matter, National Steel Corporation was required to certify that its BOF and its coke manufacturing facility were in compliance with all applicable laws, regulations and permits. In addition, National Steel was required to perform a Supplemental Environmental Project that reduced fugitive dust emissions from the coil storage area and adjoining roadways. Given National Steel completed all required measures consistent with the consent decree, the United States filed a motion to terminate the consent decree that was subsequently approved by the court.

United States of America v. National Steel Corporation, No. 81-3009, United States District Court for the Southern District of Illinois, filed May 18, 1991
This enforcement action alleged certain violations of the Illinois SIP, including Coke Oven Batteries B and C for charging emissions, Coke Oven Battery B for stack emissions and the BOF for main stack and roof monitor emissions. The consent decree contained compliance schedules for the BOF shop, the coke oven batteries, the continuous caster, the sinter plant, and the blast furnaces. In addition, National Steel was required to develop a preventative maintenance program covering the control equipment set forth in the consent decree. Lastly, the consent decree included coke oven inspection procedures, stack testing procedures, special baghouse procedures, and visible emission inspection procedures. In 1981, the Illinois EPA subsequently intervened in the proceeding resulting in a supplement to the consent decree including additional coke oven battery requirements.

In 1984, a second amended consent decree was filed requiring the installation of an emission control system for Blast Furnace A and B. In addition, the second amended consent decree set emission limitations for the blast furnace gas cleaning device and for fugitive emissions from the blast furnace cast house. This consent decree also contained a program to control fugitive dust emissions to be maintained for a period of 10 years unless subsequently modified. Many of these consent decree provisions were codified in the Illinois' SIP (See, 35 IAC Part 212 Visible and Particulate Matter Emissions, Subpart R Primary and Fabricated Metal Products and Machinery Manufacture) and were also included in various construction and operating permits.

Except as discussed in the following paragraph, the Consent Decree terminated six months following a demonstration of compliance with emissions limitations at each covered unit. By way of letter dated May 20, 1985, National Steel informed the USEPA that it would cease submitting progress reports as the source had complied with all required emission limitations.

In 1992, a third amended consent decree authorized the disconnection and removal of the slab ripping baghouse to allow for the construction of a new continuous caster facility. In conjunction with the removal of the slab ripping baghouse, the consent decree required additional fugitive dust control measures on an unpaved road referred to as Section F in order to suppress PM emissions. Subsequently, Section F was paved and additional fugitive dust control enhancements were included in the production increase permit (Construction Permit 95010001).

B. Closed/Resolved State Enforcement Cases

People of the State of Illinois v. Granite City Division of the National Steel Corporation, Madison County No. 89-MR-489, filed March 17, 1992
This enforcement action alleged operations caused emissions of smoke and other particulate matter in excess of regulatory standards and permit conditions. The consent order required National Steel to pay a civil penalty but did not require the performance of any technical requirements.

People of the State of Illinois v. United States Steel Corporation, Madison County No. 05-CH-750, filed September 14, 2005
The initial action alleged air pollution, permit, and operating violations at the ladle metallurgy facility; air pollution and permit violations at the coke oven pushing operations, the blast furnaces, A and B, the exhausters of the coke oven by-products plant, and the slag skimming station baghouse; and air pollution and operating violations of the coke oven doors.

The action was amended to include additional allegations of air pollution violations due to the release of coke oven gas from the coke oven gas-holding tank and excessive uncaptured emissions at the BOF. In addition, the second supplemental complaint alleged permit and prevention of significant deterioration violations from the combustion of blast furnace gas.

The consent order required US Steel to submit a compliance schedule for incorporation into US Steel's CAAPP permit. The planned revised CAAPP permit contains compliance schedules for both the BOF and blast furnaces derived through the orders entered under this enforcement action. The compliance schedule for the BOF has been updated from that which appeared in the earlier CAAPP permit. This compliance schedule for the BOF may be completed during the timeframe for the planned issuance of a revised CAAPP permit. As such, the schedule may not appear in any revised CAAPP permit. Copies of the order establishing this schedule and progress reports evidencing compliance forthwith are contained in the record for this permitting transaction.

C. Present Federal Enforcement Cases

On September 30, 2009, the USEPA issued a Notice of Violation and Finding of Violation ("NOV/FOV") for violations of the CAA, the NESHAP for Iron and Steel Manufacturing Facilities, 40 CFR Part 63 Subpart FFFFF ("Iron & Steel MACT"), the NESHAP for Coke Oven Batteries, 40 CFR Part 63 Subpart L ("Coke Oven Batteries MACT"), and the Illinois SIP. USEPA alleged that US Steel had not properly controlled emissions from its blast furnace casthouse, basic oxygen furnace shop and Coke Oven Battery A. In addition, USEPA alleged that

the source failed to apply for and obtain the proper air pollution control permit for Blast Furnace B. Lastly, USEPA alleged that the source failed to complete all required inspections and failed to comply with various operating and maintenance plans.

On April 23, 2010, US Steel responded to the NOV/FOV. As of March 1, 2011, USEPA had not filed a complaint against US Steel for the alleged violations.

D. Present State Enforcement Cases

On January 29, 2009, the Illinois EPA issued a violation notice (VN) for alleged violations of the Act, state and federal regulations, and operating permit conditions. Specifically, the Illinois EPA alleged fugitive dust violations, inspection and maintenance deficiencies, excessive use of the emergency reladling station and charging of Batteries A and B off the collecting mains. On March 12, 2009, the Illinois EPA issued another VN for alleged violations of the Act, state and federal regulations, and operating permit conditions. In this VN, the Illinois EPA addressed excess emissions from coke oven doors on Battery B and visible emissions from the #2 Tar Dehydrator Tank and deficiencies in the records for the leak detection and repair ("LDAR") program for the coke by-product recovery plant. On August 30, 2010, the Illinois EPA referred the source to the Illinois Attorney General's Office for the above violations.

On November 05, 2010, the Illinois EPA issued a VN for alleged violations of the Act, state and federal regulations, and operating permit conditions. Specifically, the Illinois EPA addressed excess PM emissions from the #3 mobile control system for pushing emission and excess emissions from the coke oven doors on Battery A and Battery B. The violations alleged in this VN have not yet been referred to the Illinois Attorney General's Office under the process for state enforcement under Section 31(a) of the Act.

E. Compliance Schedule

The identification of non-compliance and/or the issuance of a notice of violation or a violation notice and reference to information contained therein, alone, is not sufficient to satisfy the demonstration required under Section 505(b)(2) of the CAA for the inclusion of an approvable compliance schedule in a Title V permit. This alleged non-compliance is simply an early stage in the larger enforcement process of determining whether a violation, in fact, has occurred. This information noted above in Subsection C and D is, therefore, insufficient to warrant a compliance schedule without further investigation by appropriate enforcement staff at the state or federal level. Such an investigation typically involves additional information gathering sessions and exchanges that are part of the enforcement process and not a part of the permitting process. This stage of the enforcement proceeding is considered a critical step of fact finding under civil litigation procedures and affords the source its required due process. Neither the issuance of an notice of violation or a violation notice or the identification of alleged non-compliance has the force or effect of law and therefore is not subject to judicial review at this early stage.

If the Illinois EPA were to consider this information as a factor regarding applicable requirements for purposes of the planned revised CAAPP permit, other relevant considerations would need to be taken into account such as: 1) the quality and source of the information, 2) whether the facts are

disputable, 3) any defenses available to the source and 4) the nature of any disputed legal arguments. These factors may not be readily discernable at this early stage and would need to be considered within the constraints of the CAAPP permitting process. Section 39.5 of the Act and 40 CFR Part 70 do not contemplate this type of judicial review in the context of CAAPP or Title V permitting and do not provide the requisite authority to proceed with such investigation. As such, Illinois EPA must consider the potential impact that enforcement and permitting have on one another. Where there is a pending or active enforcement case at the same time as a permitting action, the source and the State of Illinois or United States could easily find themselves litigating the same matters in different venues with the risk of different and conflicting results.

Therefore, while nothing in the Act would prohibit the Illinois EPA from including a compliance schedule in the permit for the issues referenced in Subsection C and D, the question that presents itself is whether the inclusion of a compliance schedule is mandatory, particularly when such information is available before the matter has been adjudicated and required actions to achieve compliance have yet to be identified. USEPA has stated, in a number of petition responses regarding this topic of discretionary versus mandatory compliance schedules, it is entirely appropriate for the permitting authority to allow an enforcement case to take its course and to wait to see whether an order results. At that time, the Title V permit may be reopened to include a compliance schedule.

Based on the foregoing, it is the Illinois EPA's preliminary decision to wait until the enforcement cases identified in Subsections C and D have been resolved and/or adjudicated before including any necessary compliance schedule in a CAAPP permit for the facility. In the meantime, Condition 9.1.4 would be included in the planned revised CAAPP permit, which provides that any permit shield or the revised CAAPP permit, itself, may not be used as a defense during any enforcement proceedings and that the requirements of any compliance schedule will be complied with at the appropriate time.

III. Terms and Conditions of Title I Permits (Title I Conditions)

CAAPP permits must address all "applicable requirements," which includes the terms and conditions of preconstruction permits issued under regulations approved by USEPA in accordance with Title I of the CAA. (*See* definition of applicable requirements in Section 39.5(1) of the Act). Preconstruction permits, commonly referred to in Illinois as construction permits, derive from the New Source Review ("NSR") permit programs required by Title I of the CAA. These programs include the two major NSR permit programs: 1) the Prevention of Significant Deterioration ("PSD") program,[10] and the nonattainment NSR program.[11] These programs also encompass state construction permit programs for projects that are not major.

The incorporation, or carry-over, of terms or conditions from previous Title I permits into Title V permits typically does not occur on a wholesale basis. Recognizing that construction permits may frequently contain obsolete or extraneous terms and conditions, USEPA has emphasized that only "environmentally significant terms" from previous preconstruction permits must be carried over into Title V permits. *See,* White Paper for Streamlined Development of Part 70 Permit Applications, dated July 10, 1995. Permitting authorities generally focus on those conditions from Title I permits that establish mandatory emission limits under the CAA (i.e., Best Available Control Technology or Lowest Achievable Emissions Rate), mandatory requirements established under a provision of the State Implementation Plan, and voluntary limits and constraints accepted by a source to avoid the applicability of certain regulatory or program requirements.

In the CAAPP or Illinois's Title V permit program, the Illinois EPA's practice is to identify requirements that are carried over from an earlier Title I permit into a new or renewed CAAPP permit as "TI" conditions (i.e., Title I conditions). Title I conditions that are revised as part of their incorporation into a CAAPP permit are further designated as "TIR." Title I conditions that are newly established through a CAAPP permit are designated as "TIN." It is important that Title I Conditions be identified in a CAAPP permit because these conditions will not expire when the CAAPP permit expires. Because the underlying authority for Title I Conditions comes from Title I of the CAA and their initial establishment in Title I permits, the effectiveness of T1 Conditions derives from Title I of the CAA rather than being linked to Title V of the CAA. For "changes" to be made to Title I conditions, they must either cease to be applicable based on obvious circumstances, e.g., the subject emission unit is permanently shut down, or appropriate Title I procedures must be followed to change the conditions.[12]

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[10] The federal PSD program, 40 CFR 52.21, applies in Illinois. The Illinois EPA administers PSD permitting for major projects in Illinois pursuant to a delegation agreement with USEPA.

[11] Illinois has a state nonattainment NSR program, pursuant to state rules, Major Stationary Sources Construction and Modification ("MSSCM"), 35 IAC Part 203, which have been approved by USEPA as part of the State Implementation Plan for Illinois.

[12] For example, as part of the further consideration of Periodic Monitoring for the reheat furnaces in response to the USEPA's Order (Item II, G.2), the Illinois EPA also determined that several Title I conditions for the reheat furnaces in the current CAAPP permit (current Conditions 7.7.7(a) through (e) and associated Condition 7.7.7(f)) should not be retained in the revised permit as these conditions are wholly obsolete. These limitation originated in a state operating permit in which they appear to have been intended to facilitate compliance with the PM standard in 35 IAC 212.322. For this purpose, the amount of COG that could be fired by the furnaces was limited in relative terms, as a percentage of the total amount of fuel fired in the furnaces. It should be noted that this condition does not restrict the maximum heat input to the reheat furnaces. It also does restrict the PM emission rate from firing of COG. While both a maximum combined heat input rate (1915 million Btu per hour) and a COG PM emission rate (0.044 lb/mmBtu) are mentioned in

The issued CAAPP permit incorporated, or carried over, a number of Title I Conditions. In the planned revised CAAPP permit, the Illinois EPA would also include Title I conditions from newly issued construction permits, as listed below. The specific Title I conditions that have been carried over into the planned revised CAAPP permit from these construction permits are identified either through the heading for the condition, in the text of the condition, or in a note accompanying the condition. These Title I conditions were included in the revised CAAPP permit in response to the Order. In Section I of the Order, USEPA considered whether conditions from certain construction permits issued to US Steel still constituted applicable requirements even though the construction or modification was not yet complete and the project was not yet operational. USEPA found that those construction permits for "pending projects," like construction permits for projects that are complete and operational, also establish applicable requirements for this facility. Accordingly the Title I conditions from those construction permits and other construction permits issued since the original CAAPP permit was issued must be carried over into the revised CAAPP permit for this facility.

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this condition, this occurred in a phrase that explains part of the basis or derivation of the actual restriction in the condition. This explanatory phrase, as it is merely explanatory, is not an enforceable component of the condition. These limitations acted to address the ratio of different fuels fired in the reheat furnaces, presumably on an mmBtu basis. For example, when COG and natural gas were fired, the only scenario that is now even possible, COG was restricted to no more than 83.6 percent of the heat input to the reheat furnaces. This limitation originated from Condition 2 in state operating permit, Operating Permit 72080038, as renewed on February 15, 1996. That condition provided that "The C.O.G. heat input fraction from firing C.O.G. in conjunction with N.G. shall not exceed 0.863 based on a maximum heat input to the 4 slab heating furnaces of 1915 million Btu per hour and a calculate particulate emission rate of 0.044 pounds of particulate per million Btu per a stack test of 3-28-89."

As these limitations are obsolete, any need to establish Periodic Monitoring for these limitations would be appropriately dealt with by removing them from the revised CAAPP permit. These limitations are generally obsolete as they address firing of fuel oil in the reheat furnaces. Accordingly, they were developed based on a combined rated heat input for the furnaces of 1915 mmBtu per hour, considering the heat input for both the gas and oil fired burners on the furnaces. However, oil firing is no longer possible and the current combined capacity of the reheat furnaces based on firing of only gaseous fuels is 1461 mmBtu/hr. (See Condition 7.7.2 of the permit). Thus these limitations were not developed for and do not now appropriately address the current configuration of the reheat furnaces. In this regard, the limitations are also based on a PM emission rate, 0.044 lb/mmBtu, for firing of COG developed from emission testing in 1989. The age of that emission data is problematic. More importantly, the limitations would not consider or appropriately adjust for current data for the PM emission rate from firing of COG, as would be required to be determined as part of the Periodic Monitoring for the reheat furnaces.

Finally, the development or derivation of these limitations may also have been flawed. They appear to have been developed assuming that when the reheat furnaces operate at their maximum operating rate in terms of steel slabs processed, tons per hour, the furnaces would also be fired at their rated heat input capacity. However, the furnaces likely had surplus or overlapping heat input capacity, given historical firing of both oil and gaseous fuels, and the presence of several heating zones in each furnace, each with separate burners.

The limitations were also developed approaching the reheat furnaces as similar emission units for purposes of 35 IAC 212.322. However, these furnaces have separate stacks and different physical capacities and rated firing rates. These limitations also only addressed the maximum operation of the furnaces and did not consider the effect of lower process rates on the allowable PM emission rates. This is relevant as the relationship in 35 IAC 212.322 between the process weight rate and allowable PM emissions is not linear. Thus, the restrictions in the limitations at most only accurately addressed and were really appropriate for the reheat furnaces when operating at their maximum operating rates.

Newly Issued Construction Permits*		
Permit No.	Date Issued	Subject
06070022	1-16-2008	Emission Reduction Projects
06070023	1-30-2008	Cogeneration Boiler Project
06070088	3-13-2008	Coke Conveyance System
08060026	7-7-2010	New Quench Towers for Existing Quench Stations
08110016	9-30-2009	Fourth Fan for the Precipitator for the Basic Oxygen Furnaces
09030019	3-17-2009	Carbon Adsorbers for Coke By-Product Recovery Plant
10100042	1-7-2011	Portable Boilers 1 - 4
10080021	1-12-2011	Steam Rings for the Basic Oxygen Process Furnaces
10080022	2-9-2011	NO_x RACT Control – FGR Installation on Boilers 11 and 12

* Provisions from Construction Permit 07030008, for an "NSCR System for #4 COG Booster Pump," was not addressed as the engine for this pump has been replaced with an electric motor.

To implement the major NSR permit programs, Illinois' Title I permits must commonly include limits on the amounts of different pollutants emitted by the new or modified emission units that comprise the proposed projects addressed by the permits, defining their permitted emissions.[13, 14] As a general matter, the Periodic Monitoring for limits on emissions established in construction permits would be provided by the Monitoring that would required for these emission units related

[13] In Illinois' NSR permit program for non-major or "minor" projects, the amounts of pollutants that are permitted to be emitted or the "permitted emissions" from projects must be addressed during permitting. This is because the applicability thresholds for the major source NSR programs are based on annual emissions of proposed projects, in tons per year. Accordingly, Title I permits for proposed projects commonly include emissions limits that establish or memorialize the permitted emissions of the various new and modified emission units that are involved in projects. These permitted emissions then serve in place of the "theoretical" potential emissions of a project when addressing NSR applicability. This is generally beneficial as the permitted emissions allowed by the permit provide a clear statement of the maximum amounts of emissions that are allowed, which can then be routinely used in subsequent permitting and in air quality planning activities by the Illinois EPA. The Illinois EPA also does not need to make or review a determination of theoretical potential emissions during permitting, for which there may be disagreement between the Illinois EPA and the source. The Illinois EPA also does not need to subsequently reevaluate the potential emissions of permitted emission units, in response to changes in the operation of a source. The limits on permitted emissions in Title I permits are advantageous to sources as projects that would otherwise be subject to major NSR permitting due to their theoretical potential emissions are only subject to minor NSR permitting. Even for projects that are subject to major NSR permitting for certain pollutants, limits for permitted emissions of other pollutants are advantageous to the source as those limits reduce the extent of major NSR permitting for a project.

Illinois' major NSR permits also have limits for the permitted emissions of the different emission units that comprise a project. Rather than addressing applicability of NSR, these limits serve to implement the substantive requirements of NSR. In particular, the amount of emissions for which different emission units are permitted is a critical element of the air quality analysis that must precede the issuance of a permit for a proposed project under the PSD rules. The permitted emissions may also have a role in determining the appropriate emission control technology to be selected on a case-by-case for a proposed project during permitting. The permitted emissions of a proposed project may also be of interest or concern to members of the public as it constitutes basic information about the project and they must consider whether to comment upon the proposed issuance for the project.

[14] The nature of the limits set in Title I permits has also evolved both as the NSR permit programs have developed and as the administration of these permit programs has developed and improved. Accordingly, more recent Title I permits may have limits and associated compliance procedures that are more carefully thought out and developed than the limits in earlier Title I permits. Limits in earlier Title I may be more developed by more developed by A key For example, over time

to applicable regulatory standards and other emission control requirements, together with specific recordkeeping for the emissions factors and "throughput" of the units (i.e., the amount of material handled by these units or hours of operation). Recordkeeping would also be required for the determination of the actual amounts of emissions, for direct comparison to the applicable permit limits. The Periodic Monitoring for the operation of the subject emission units as related to other applicable requirements would verify proper operation of the units and serve to confirm that established emission factors for such units are appropriately used to determine the amount of emissions. The presence of these limits on the amount of emissions from such units does not necessitate additional or more frequent Monitoring for the operation of these units. As emissions of the units would be calculated using emission factors, the other information needed to determine actual emissions is their throughput or amount of material that is handled, with the actual emissions being the product of the applicable emission factor and the throughput or activity of a unit.[15] The Periodic Monitoring specifically for permit limits on the amount of emissions would entail the necessary records for the throughput of the subject units. The Monitoring would also include recordkeeping for the calculated emissions, as needed for direct comparison to the established permit limits.

When emission factors are used to calculate emissions, the critical element of the calculations is the emission factors that are selected for use. The revised CAAPP permit would require the Permittee to keep a file containing the emission factor(s) that it uses to determine actual emissions for purposes of determining compliance with permit limits. These records would also have to include the basis or supporting documentation for the selected factor(s). This would assure that the selected emission factors are memorialized in writing, along with factual basis for the emission factors. This would make the relevant supporting information available to the Illinois EPA personnel as well to the source's staff, both present and future, for their review and use. The permit would also accommodate changes to "established" factors by the source if new information may become available.[16] Changes to these "established" emission factors would also be required to be documented, with explanation and supporting data, and linked to a particular date.[17] A change to

[15] The exception to this practice would be pollutants for which the emissions of a pollutant from an emission units are determined by a "material balance" approach. In particular, when a sulfur containing fuel is used, the emissions of sulfur dioxide (SO_2) are calculated from the sulfur content of the fuel and the amount of fuel that is used. In the absence of add-on control equipment for SO_2 emissions (or the presence of sorbent materials in the flue gas of a unit that act to abate SO_2 emission), the SO_2 emissions of a unit may be directly calculated from the sulfur contained in the fuel. As the molecular weight of SO_2 is twice that of sulfur, the SO_2 emissions of a unit are twice the sulfur in the fuel used by the unit.

The circumstances are similar for VOM solvents in coatings and inks. The VOM emissions from use of these materials are often the direct result of the VOM content of the coating. In some cases, this relationship is not quite as simple as some of the VOM originally present in the materials may chemically react in the film of coating or be bound into the substrate.

[16] The simplest example of circumstances in which an established emission factor must be reevaluated is the performance of emission testing for the emission unit that is subject to the permit limit. Other circumstances would include emission testing of similar emission units, as might occur either at the facility or at other units operated by US Steel, when testing at those other units was the basis of the current factor. Established emission factors would also have to be reevaluated if USEPA revises its *Compilation of Air Pollutant Emission Factors*, AP-42, and that compilation was the basis of the current factor.

[17] The date that the emission factor used for a particular unit is changed may be significant. A change in an emission factor can result from a change in an emission unit or associated control equipment or control practices, so that the new emission factor would supersede the former factor on the date when the underlying change to the unit was made. A change in an emission factor can also reflect the availability of new information and better data. In such case, a change

the established emission factor that the source uses would be mandatory, with adoption of a new established emission factor, if it is determined that the current emission factor would understate actual emissions.[18]

A similar approach would also generally be used when a permit sets limits on the short-term emissions of an emission unit. The revised permit would require recordkeeping, with accompanying supporting analysis and documentation for the maximum shirt-term emission rate and typical emission rate. These records would work with the records for other applicable requirements that apply to such a unit to assure compliance with the short-term emission limits.

This approach to Periodic Monitoring for permit limits on emissions is dictated by the nature of the subject units and the available methodology to determine the actual emissions of these units. It is also consistent with the basis by which these limits were established in the underlying construction permits, as they were developed using emission factors. It is not feasible or practical to conduct direct monitoring of emissions to determine compliance with permit limits nor would it be reasonable to do so even if feasible.[19] This is particularly true as limits are established that address uncaptured emissions or fugitive PM, as defined by 35 IAC 211.2490, such as the limits established for the new coke conveyance system. Stacks are not present on this system as are essential for instrumental emissions monitoring. Fugitive PM emissions from material handling operations and road dust are routinely determined using established emission factors and emission determination methodology developed by USEPA.[20] As stacks are present on process and fuel combustion units at this facility that are subject to permit limits, technologies and procedures have not been developed for the use of continuous PM emissions monitoring systems on those units. As a technical matter, an essential prerequisite for any such PM monitoring, which is not yet satisfied for continuous PM monitoring, would be a demonstration that available monitoring technologies can be operated and maintained to provide reliable information on PM emissions when applied to the exhaust of a material handling operations. Moreover, even if continuous PM monitoring were feasible for the emission units at this facility, the effort entailed in applying current continuous PM monitoring methods, which have been developed for use on large coal-fuel fired boilers, to processed and emission units at the facility would be excessive.[21] Proper operation of these units

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to the emission factor may have retroactive implications for the emissions of the unit, especially if the former emission factor understated actual emissions of a unit.

[18] The relevant criterion for a mandatory change to an established emission factor is if the factor understates actual emissions. The permit would not preclude use of emission factors that overstate actual emission factors. In particular, the source need not adjust the established emission factor after every emission test if the established emission factor has conservatively been set at a level above all the test results, e.g., at the level of the applicable emission standard.

[19] Monitoring for the mass of emissions, as needed to determine compliance with emission limit set by construction permits, is more complicated than emissions monitoring. It entails not only measuring the concentration of a pollutant or loading in the exhaust but also monitoring for the flow rate of the units, as needed to determine the mass of emissions of a pollutant.

[20] Refer to Section 13.2, Introduction to Fugitive Dust Sources, in USEPA's *Compilation of Air Pollutant Emission Factors*, AP-42.

[21] On facilities where continuous emissions monitors are used, these monitors are often serve functions that are different from or in addition to determining compliance with permit limits on emissions. For example, emission monitoring for the SO_2 under the federal Acid Rain Program provides accurate quantification of SO_2 emissions. Accurate data on SO_2 emission is essential under the market-based provisions of the Acid Rain Program where sources must hold allowances for their SO_2 emissions and sell or trade allowances that they do not need cover their own emissions. In the absence of the Acid Rain program, such monitors would not necessarily be needed to address compliance with applicable state emission standards for SO_2 if an emission unit were being fired on low-sulfur

and their associated control devices can be readily verified by much simpler methods. In addition, the permit limits for emissions of PM and other pollutants were generally developed from data that was considered to represent the emission rate or emission factor that would be present when a unit and its associated control measures would be operating properly.

As such, it is appropriate for the Periodic Monitoring to address compliance with permit limits on emissions to focus and rely upon Monitoring to verify proper operation of units and their control equipment. This is provided by the Periodic Monitoring that would be provided for the regulatory emission standards and other control requirements that apply to the units. This Monitoring would require appropriate combinations of inspections, observations, emission testing and recordkeeping to verify the proper operation of different units as related to control of their emissions. As emission testing would be required as part of that Monitoring, it would also provide confirmation that the emission factors being used by the source to address emissions of a unit for purposes of emission limits are suitable and do not understate the actual emissions of the unit. This approach to Periodic Monitoring for emission units subject to permit limits on the amount of emissions, relying upon emission factors, production rates, and control efficiencies has been upheld by USEPA. *See* Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, In the Matter of East Kentucky Power Cooperative, Inc. (USEPA, Dec. 14, 2009); (where USEPA reasonably relied on emission factors along with recordkeeping to demonstrate compliance with emission limitations).[22]

It should also be clearly understood that certain terms and conditions in Title 1 permits may pose issues or concerns for Periodic Monitoring that that are not present for applicable requirements that were developed by rulemaking. However, this is because of the nature of Title I permitting, Title I permits must set certain emission limits that are very different from emission standards that are established by rulemaking. Rulemaking are generally focused on regulating or controlling the emissions of particular pollutants from a particular category or categories of emission units. During rulemaking, the emission units that will actually be subject to regulation may be considered and the scope of regulation may be adjusted. The emission standards that are finally adopted will consider the nature of the emissions from the units, how they might appropriately be controlled and in what terms emission standards should be set.[23, 24] By contrast, the scope of Title I permits is set

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compliance coal, without use of flue gas desulfurization system. Even if a source were using a scrubber for compliance, less rigorous monitoring for the SO_2 emissions, in lb/mmBtu, would be feasible if the source were not required to quantify its mass of SO_2 emissions, in tons per year.

[22] It should be recognized that this approach to permit limits does not decouple the ongoing Monitoring for such limits from the actual operation of such units. This is because the appropriate emission factor used to determine actual emissions can differ based on how a unit is operated. For example, if the normal emission factor for a unit is predicated on control of PM emissions by a baghouse and the unit operates during a period when the baghouse is damaged, it is appropriate for the emissions during such period to be calculated using a higher factor that accounts for actual condition of the baghouse during such period.

[23] For example, the NESHAP for Integrated Iron and Steel Manufacturing, 40 CFR 63 Subpart FFFFF, regulates uncaptured emissions of particulate matter from units at BOF shops with standards that address the opacity of those emissions. This NESHAP does not set quantitative standards on the amounts or mass of particulate emissions, in pounds per ton of steel processed or the concentration of particulate in the exhaust, in gr/scf. This NESHAP also does not address emissions of pollutants other than particulate, such as NOx or SO_2, from units at BOF shops.

[24] In the context of this discussion, requirements that are set as BACT or LAER during permitting are appropriately thought of as "regulatory limits." This is because these requirements are the result of a specific evaluation of appropriate control technology for a particular emission units.

by the emission units that will comprise the particular projects and the provisions of the NSR programs, which act to dictate that quantitative emission limits must be set for those units in the Title I permits. Accordingly, because of the nature of Title I permitting, certain terms and conditions in Title I permits may pose issues for Periodic Monitoring that are not present for applicable requirements that were developed by rulemaking. Title I permits must set limits for certain emission units for which testing of emissions is not feasible or impractical. Most significantly, limits must be set for certain emission units that lack stacks, for which it is not possible to obtain measurements of exhaust or air flow rates and calculate the mass of emissions.[25] Limits must also be set for uncaptured emissions from certain units, which bypass the stack, for which measurements of emissions are also not possible. Limits may also be set for certain units for which the emissions are negligible, either in absolute terms or relative to the emissions of the principal emission units and emission streams at a facility.[26]

[25] Measurements of the mass of emissions (e.g., emissions in pounds or kilograms per hour or other time period) are conducted by measuring the concentration of a pollutant in the exhaust stream from an emission unit and the flow rate or volume of the air or exhaust stream. Both measurements are necessary as the mass of emissions is the product of the two measurements, concentration multiplied by flow rate.

[26] This also has implications for the projected emissions of certain units are determined by applicants, as then transformed into limits in a construction permit. In addition to being developed from emission factors, data for projected emissions may be based on projections or extrapolations of emission test data from "similar" emission units at other sources, engineering calculations, or engineering estimates. The normal practice in making such projections is to be conservative, i.e., err on the side of overstating emissions.

IV. Periodic Monitoring

Pursuant to Section 504(c) of the Clean Air Act, a Title V permit must set forth monitoring requirements, commonly referred to as "Periodic Monitoring," to assure compliance with the terms and conditions of the permit. A general discussion of Periodic Monitoring is provided below. The Periodic Monitoring that is proposed for specific operations and emission units and at this facility is discussed in Attachment C of this Statement of Basis. Attachment C provides a narrative discussion of and justification for the elements of Periodic Monitoring that would apply to the different emission units and types of emission units at the facility.

As a general matter, the required content of a CAAPP permit with respect to such Periodic Monitoring is addressed in Section 39.5(7) of the Environmental Protection Act (Act).[27] Section 39.5(7)(b) of the Act[28] provides that in a CAAPP permit,

> The Agency shall include among such conditions applicable monitoring, reporting, record keeping and compliance certification requirements, as authorized by paragraphs d, e, and f of this subsection, that the Agency deems necessary to assure compliance with the Clean Air Act, the regulations promulgated thereunder, this Act, and applicable Board regulations. When monitoring, reporting, record keeping and compliance certification requirements are specified within the Clean Air Act, regulations promulgated thereunder, this Act, or applicable regulations, such requirements shall be included within the CAAPP permit.

Section 39.5(7)(d)(ii) of the Act further provides that a CAAPP permit shall,

> Where the applicable requirement does not require periodic testing or instrumental or noninstrumental monitoring (which may consist of recordkeeping designed to serve as monitoring), require Periodic Monitoring sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit… ."

Accordingly, the scope of the Periodic Monitoring that must be included in a CAAPP permit is not restricted to monitoring requirements that were adopted through rulemaking or imposed through permitting. When applicable regulatory emission standards and control requirements or limits and control requirement in relevant Title 1 permits are not accompanied by compliance procedures, it is necessary for Monitoring for these standards, requirements or limits to be established in a CAAPP permit.[29, 30] Monitoring requirements must also be established when standards and control

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[27] The provisions of the Act for Periodic Monitoring in CAAPP permits reflect parallel requirements in the federal guidelines for State Operating Permit Programs, 40 CFR 70.6(a)(3)(i)(A), (a)(3)(i)(B) and (c)(1).

[28] Section 39.5(7)(p)(i) of the Act also provides that a CAAPP permit shall contain "Compliance certification, testing, monitoring, reporting and record keeping requirements sufficient to assure compliance with the terms and conditions of the permit."

[29] The classic example of regulatory standards for which Periodic Monitoring requirements must be established in a CAAPP permit are state emission standards that pre-date the 1990 Clean Air Act Amendments that were adopted without any associated compliance procedures.[29] Periodic Monitoring must also be established in a CAAPP permit when standards and limits are accompanied by compliance procedures but those procedures are determined to be inadequate to assure compliance with the applicable standards or limits.

[30] Another example of emission standards for which requirements must be established as part of Periodic Monitoring is certain NSPS standards that require initial performance testing but do not require periodic testing or other measures to address compliance with the applicable limits on a continuing basis.

requirement are accompanied by compliance procedures but those procedures are not adequate to assure compliance with the applicable standards or requirements.[31, 32] For this purpose, the requirements for Periodic Monitoring in a CAAPP permit may include requirements for emission testing, emissions monitoring, operational monitoring, non-instrumental monitoring, and recordkeeping for each emission unit or group of similar units at a facility, as required by rule or permit, as appropriate or as needed to assure compliance with the applicable substantive requirements. Various combinations of monitoring measures will be appropriate for different emission units depending on their circumstances, including the substantive emission standards, limitations and control requirements to which they are subject.

What constitutes sufficient Periodic Monitoring for particular emission units, including the timing or frequency associated with such Monitoring requirements, must be determined by the permitting authority based on its knowledge, experience and judgment.[33] For example, as Periodic Monitoring must collect representative data, the timing of Monitoring requirements need not match the averaging time or compliance period of the associated substantive requirements, as set by the relevant regulations and permit provisions. The timing of the various requirements making up the Periodic Monitoring for an emission unit is something that must be considered when those Monitoring requirements are being established. For this purpose, Periodic Monitoring often consists of requirements that apply on a regular basis, such as routine recordkeeping for the operation of control devices or the implementation of the control practices for an emission unit. For certain units, this regular monitoring may entail "continuous" monitoring of emissions, opacity or key operating parameters of a process or its associated control equipment, with direct measurement and automatic recording of the selected parameter(s). As it is infeasible or impractical to require emissions monitoring for most emission units, instrumental monitoring is more commonly conducted for the operating parameters of an emission unit or its associated control equipment. Monitoring for operating parameter(s) serves to confirm proper operation of equipment, consistent with operation to comply with applicable emission standards and limits. In certain cases, an applicable rule may directly specify that a particular level of an operating parameter be maintained, consistent with the manner in which a unit was being operated during emission testing. Periodic Monitoring may also consist of requirements that apply on a periodic basis, such as inspections to verify the proper functioning of an emission unit and its associated controls.

The Periodic Monitoring for an emission unit may also include measures, such as emission testing, that would only be required once or only upon specific request by the Illinois EPA. These requirements would always be accompanied by Monitoring requirements would apply on a regular

[31] The need to establish Monitoring requirements as part of Periodic Monitoring when existing compliance procedures are determined to be inadequate, as well as when they are absent, was confirmed by the federal appeals court in Sierra Club v. Environmental Protection Agency, 536 f. 3d 673, 383 U.S. App. D.C. 109.

[32] The need to establish Monitoring requirements as part of Periodic Monitoring is also confirmed in USEPA's Petition Response. USEPA explains that "…if there is periodic monitoring in the applicable requirements, but that monitoring is not sufficient to assure compliance with permit terms and conditions, permitting authorities must supplement monitoring to assure such compliance." Petition Response, page 6.

[33] The test for the adequacy of "Periodic Monitoring" is a context-specific determination, particularly whether the provisions in a Title V permit reasonably address compliance with relevant substantive permit conditions. 40 CFR 70.6(c)(1); *see also* 40 CFR 70.6(a)(3)(i)(B); *see also, In the Matter of CITGO Refinery and Chemicals Company L.P.*, Petition VI-2007-01 (May 28, 2009); *see also, In the Matter of Waste Management of LA. L.L.C. Woodside Sanitary Landfill & Recycling Center, Walker, Livingston Parish, Louisiana,* Petition VI-2009-01 (May 27, 2010); *see also, In the Matter of Wisconsin Public Service Corporation's JP Pulliam Power Plant,* Petition V-2009-01 (June 28, 2010).

basis. When emission testing or other measure is only required upon request by the Illinois EPA, it is included as part of the Periodic Monitoring for an emission unit to facilitate a response by the Illinois EPA to circumstances that were not contemplated when Monitoring was being established, such as the handling of a new material or a new mode of operation. Such Monitoring would also serve to provide further verification of compliance, along with other potentially useful information. As emission testing provides a quantitative determination of compliance, it would also provide a determination of the margin of compliance with the applicable limit(s) and serve to confirm that the Monitoring required for an emission unit on a regular basis is reliable and appropriate. Such testing might also identify specific values of operating parameters of a unit or its associated control equipment that accompany compliance and can be relied upon as part of regular Monitoring.

There are a number of considerations or factors that are or may be relevant when evaluating the need to establish new monitoring requirements as part of the Periodic Monitoring for an emission unit. These factors include: 1) The nature of the emission unit or process and its emissions; 2) The variability in the operation and the emissions of the unit or process over time; 3) The use of add-on air pollution control equipment or other practices to control emissions and comply with the applicable substantive requirement(s); 4) The nature of that control equipment or those control practices and the potential for variability in their effectiveness; 5) The nature of the applicable substantive requirement(s) for which Periodic Monitoring is needed; 6) The nature of the compliance procedures that specifically accompany the applicable requirements; 7) The type of data that would already be available for the unit; 8) The effort needed to comply with the applicable requirements and the expected margin of compliance; 9) The likelihood of a violation of applicable requirements; 10) The nature of the Periodic Monitoring that may be readily implemented for the emission unit; 11) The extent to which such Periodic Monitoring would directly address the applicable requirements; 12) The nature of Periodic Monitoring commonly required for similar emission units at other facilities and in similar circumstances; 13) The interaction or relationship between the different measures in the Periodic Monitoring for an emission unit; and 14) The feasibility and reasonableness of requiring additional measures in the Periodic Monitoring for an emission unit in light of other relevant considerations.[34]

The Illinois EPA has developed the revised CAAPP permit for US Steel's Granite City Works to include appropriate Periodic Monitoring for the various emission units at this facility. As compared to the original CAAPP permit issued to this source, this permit would include additional requirements for testing and instrumental and non-instrumental monitoring for certain emission units at the source, to assure that the permit would require sufficient Periodic Monitoring. For example, the permit would include additional requirements for inspections for the Basic Oxygen Furnaces (BOF) to address substantive requirements related to opacity of the exhaust through the roof monitor on the BOF Shop. The permit would now also include detailed provisions for Periodic Monitoring for the various material handling and processing operations at the facility.

As already explained, the Periodic Monitoring the various emission units at this facility is

[34] A number of these factors are specifically listed by USEPA in its Petition Response. USEPA also observes that the specific factors that it identifies in its Petition Response with respect to Periodic Monitoring provide "…the permitting authority with a starting point for its analysis of the adequacy of the monitoring; the permitting authority also may consider other site-specific factors." Petition Response, page 7.

discussed in Attachment C. The discussions in this attachment focus on the need to establish Periodic Monitoring in the revised CAAPP permit, either as the applicable rules are not accompanied by compliance procedures or the relevant compliance procedures set by rule for the applicable regulatory standards and requirements are insufficient and must be supplemented in the CAAPP permit. The detailed discussions in this attachment also focus on emission limits and control requirements set in construction permits that address certain emission units, which requirements were established during permitting rather than by rulemaking. As already discussed, one factor in the need to supplement the compliance procedures that accompany the substantive emissions control requirements that apply to an emission unit is the nature and rigor of the compliance procedures and other related requirements established by applicable rules. In addition to establishing compliance procedures, e.g., provisions for inspections, testing and recordkeeping, to accompany emission standards, applicable rules may also establish "work practice" requirements that function to facilitate compliance with the applicable emission standards. These requirements may consist of broad obligations to operate and maintain emission units and associated control equipment in order to minimize emissions, as present in the federal NSPS and NESHAP standards. Work practice requirements may also specify actions by a source, such as preparation and implementation of written procedures for a unit or control equipment that constitute proper operation for control of emissions. As such work practices address all operation of an emission unit, these practices generally act to reduce the need to supplement the compliance procedures for an emission unit when Periodic Monitoring is being established.

As a general matter, it should also be noted that as related to the recordkeeping that would be required as Periodic Monitoring, there are also some common features in these records that are directly tied to the other elements of the Periodic Monitoring for an emission unit. When particular measures or "actions" are required as elements of the Periodic Monitoring for a unit, these measures and actions must always be accompanied by certain records that appropriately document that those measures and actions have been performed, as well as by records for the specific data or information that was measured or collected. As a general matter, specific work practices that are required by rules are accompanied by appropriate records for the type of work practice, as also specified by rule. For example, for the leak detection and repair program that is required at the coke by-product recovery plant, the applicable rules require detailed records for this program, including identification of components covered by this program and records for the periodic instrumental measurements that must be conducted to identify leaking components. All written plans or procedures that the source must prepare and follow for certain emission units or activities also become records that the source must retain. As these related records are always required when certain substantive requirements apply, these records generally are not further addressed in the unit-specific discussions in Attachment C.

Similarly, all inspections of emission units or control equipment that would be required as Periodic Monitoring must be accompanied by records for the inspections. These records must identify who performed the inspection, what was inspected, and what was seen or observed. All observations for visible emissions must be accompanied by records for the performance of the observations. These records must include items such as the name and identity of the observer, the time of the observations, the emission units for which observations were performed, and, if visible emissions were observed, the units and emission points from which visible emissions were seen. All required emission tests and other performance tests must be accompanied by formal test reports, which

become records for such testing that the source must retain. These test reports must include not only results of the tests but information describing the operational conditions of the subject emission unit when testing was conducted and information documenting that appropriate testing methodology was followed. Similar records must also be kept when sampling and analysis is required for particular parameters. For required continuous monitoring systems, records are required for the operation and maintenance of the systems, as well as records for the measured parameter, which for continuous monitoring must generally be automatically recorded. For other required instrumentation, records must also be kept for the operation and maintenance of the instrumentation, as well as for the measured parameter periodically recorded if not automatically recorded. The need for these "related records" is readily apparent as they provide necessary records to accompany actions and activities that are being required as Periodic Monitoring. Again, as these related records are always required when inspections, testing, sampling and analysis, monitoring, or instrumentation are required as part of the Periodic Monitoring for an emission unit, these records generally are not further addressed in the unit-specific discussions in Attachment C.

In addition, when certain regulatory provisions would apply to an emission unit, they are always accompanied by certain records. In particular, as provided for by 35 IAC Part 201, Subpart H, the permit contemplates or "prepares for" potential violations of certain state emission standards by certain emissions unit during startup or in the event of a malfunction or breakdown. (See also discussions at Section ?? of this Statement of Basis.) When such violations are contemplated by the permit during the startup of an emission unit, detailed records are required related to the startup of the unit. When such violations are contemplated for malfunction and breakdown events, detailed records are required for such events. In either case, a maintenance and repair log may also be required for the unit, as may be relevant to show that the unit has been properly maintained and repaired so as to reduce the likelihood of events that would result in violations. Again, these related records generally are not further addressed in the unit-specific discussions in Attachment C.

It should also be noted that, as reporting may also be considered a part of Periodic Monitoring, there are some reports that the source would always be required to submit and certain reports that are directly tied to the applicable regulatory standards that apply to an emission unit. Prompt reporting of deviations is always required. Monitoring reports are required on a semi-annual basis. Annual compliance reports, in which a source must certify to and explain the compliance status during the previous year of the various emission units at a facility, are also always required. In addition certain emission standards also require specific reports that address operation or emissions of subject units or their compliance status. For example, for both the blast furnaces and the BOF shop, semi-annual compliance reports are required by the applicable NESHAP standards, 40 CFR 63 Subpart FFFFF.

Finally, it should be understood that as observations for opacity, observations for the presence of visible emissions, emission testing, or opacity monitoring are required as Periodic Monitoring for emission units, these activities must be conducted in accordance with standard methodologies and procedures developed by USEPA for such activities. In particular, observations of the opacity of emissions must be conducted in accordance with USEPA Method 9. Method 9 requires that observations of opacity be made by an individual whose ability to reliably observe and "read" opacity has been certified in accordance with Method 9. Observations for visible emission must be conducted in accordance with USEPA Method 22, unless other more specific methods apply (e.g.,

USEPA Method 303 for observations for visible emissions at coke oven batteries). Appropriate test methods adopted by USEPA must generally be used for testing emissions of different pollutants. Emission testing must also generally be conducted at the maximum operating range of emission units and other conditions that would be representative of future operation of the units and associated emission control equipment. Opacity monitoring systems must also be operated and maintained in accordance with applicable performance specifications and quality assurance procedures adopted by USEPA for such monitoring.

For specific information about the Periodic Monitoring that is proposed for the various emission units at this facility, refer to Attachment C. Attachment C also provides a narrative discussion and justification for the elements of Periodic Monitoring that would apply to the various types of units at the facility. As already explained, the narrative discussions in this attachment focus on the need to establish Monitoring requirements to accompany the applicable compliance procedures set by rule, either as the applicable rules lack such procedures or such procedures may be insufficient.

V. Reporting

Among other terms and conditions, CAAPP permits contain reporting obligations to assure compliance with applicable requirements. These reporting obligations are generally four-fold. More specifically, each CAAPP permit sets forth any reporting requirements specified by state or federal law or regulation, requires prompt reports of deviations from applicable requirements, requires reports of deviations from required monitoring and requires a report certifying the status of compliance with terms and conditions of the CAAPP permit over the calendar year.

The number and frequency of reporting obligations in any CAAPP permit is source-specific. That is, the reporting obligations are directly related to factors, including the number and type of emission units and applicable requirements, the complexity of the source and the compliance status. This four-fold approach to reporting is common to virtually all CAAPP permits as described below. Moreover, this is the approach established in the planned revised CAAPP permit for US Steel.

Regulatory Reports

Many state and federal environmental regulations establish reporting obligations. These obligations vary from rule-to-rule and thus from CAAPP source to CAAPP source and from CAAPP permit to CAAPP permit. The variation is found in the report triggering events, reporting period, reporting frequency and reporting content. Regardless, the CAAPP makes clear that all reports established under applicable regulations shall be carried forward into the CAAPP permit as stated in 39.5(7)(b) of the Act. Generally, where sufficiently detailed to meet the exacting standards of the CAAPP, the regulatory reporting requirements are simply restated in the CAAPP permit. Depending on the regulatory obligations, these regulatory reports may also constitute a deviation report as described below.

The revised CAAPP permit for US Steel would embody all regulatory reporting as promulgated under federal and state regulations under the CAA and the Act. Depending on the frequency of the report, the regulatory report may also satisfy the prompt reporting obligations discussed below. These reports must be certified by a responsible official.

These reports are generally found in the reporting sections for each emission unit group. The various regulatory reporting requirements are summarized in the table at the end of this Reporting Section.

Deviation Reports (Prompt Reporting)

Section 39.5(7)(f)(ii) of the Act mandates that each CAAPP Permit require prompt reporting of deviations from the permit requirements.

Neither the CAAPP nor the federal rules upon which the CAAPP is based and was approved by USEPA define the term “prompt”. Rather, 40 CFR Part 70.6(a)(3)(iii)(B) intended that the term have flexibility in application. The USEPA has acknowledged for purposes of administrative efficiency and clarity that the permitting authority (in this case, Illinois EPA) has the discretion to define “prompt” in relation to the degree and type of deviation likely to occur at a particular source. The Illinois EPA follows this approach and defines prompt reporting on a permit-by-

permit basis. In instances where the underlying applicable requirement contains "prompt" reporting, the Illinois EPA typically incorporates the pre-established time frame in the CAAPP permit (e.g. a NESHAP or NSPS deviation report). Where the underlying applicable requirement fails to explicitly set forth the time frame for reporting deviations, the Illinois EPA generally uses a time frame of 30 days to define prompt reporting of deviations.

This approach to prompt reporting of deviations as discussed herein is consistent with the requirements of 39.5(7)(f)(ii) of the Act as well as 40 CFR Part 70 and the CAA. The reporting arrangement is designed so that the source will appropriately notify the Illinois EPA of those events that might warrant attention. The timing for these event-specific notifications is necessary and appropriate as it gives the source enough time to conduct a thorough investigation into the causes of an event, collecting any necessary data, and developing preventive measures, to reduce the likelihood of similar events, all of which must be addressed in the notification for the deviation, while at the same time affording regulatory authority and the public timely and relevant information. The approach also affords the Illinois EPA and USEPA an opportunity to direct investigation and follow-up activities, and to make compliance and enforcement decisions in a timely fashion .

The CAAPP permit for US Steel would require prompt reporting as required by the Act in the fashion described in this subsection. In addition, pursuant to 39.5(7)(f)(i), this CAAPP permit would also require the source to provide a summary of all deviations with the semi-annual monitoring report. These reports must be certified by a responsible official, and are generally found in the reporting sections for each emission unit group.

Semi-Annual Monitoring Reports

Section 39.5(7)(f)(i) of the Act mandates that each CAAPP permit require a report relative to monitoring obligations as set forth in the permit. Depending upon the monitoring obligation at issue, the semi-annual monitoring report may also constitute a deviation report as previously discussed. This monitoring at issue includes instrumental and non-instrumental emissions monitoring, emissions analyses, and emissions testing established by state or federal laws or regulations or as established in the CAAPP permit. This monitoring also includes recordkeeping. Each deviation from each monitoring requirement must be identified in the relevant semi-annual report. These reports provide a timely opportunity to assess for compliance patterns of concern. The semi-annual reports shall be submitted regardless of any deviation events. Reporting periods for semi-annual monitoring reports are January 1 through June 30 and July 1 through December 31 of each calendar year. Each semi-annual report is due within 30 days after the close of reporting period. The reports shall be certified by a responsible official.

The CAAPP permit for US Steel would require such reports at Condition 8.6.1.

Annual Compliance Certifications

Section 39.5(7)(p)(v) of the Act mandates that each CAAPP permit require a source to submit a certification of its compliance status with each term and condition of its CAAPP permit. The reports afford a broad assessment of a CAAPP sources compliance status. The CAAPP requires that this report be submitted, regardless of compliance status, on an annual basis. Each CAAPP permit requires this annual certification be submitted by May 1 of the year immediately following

the calendar year reporting period. The report shall be certified by a responsible official.

The CAAPP permit for this source would require such a report at Condition 9.8.

TABLE V.1 Regulatory Reports

CAAPP Condition	Regulatory Reference	Substance of Required Report
5.3.9	40 CFR 63.7500(a)(1)	Comprehensive report on energy assessment for Subpart DDDDD
5.10.2	35 IAC Part 254	Annual Emission Report
5.10.4(a), 7.1.10(a)(i), 7.13.10(a)	35 IAC 212.316(g)(5)	Annual and Quarterly report for fugitive dust control requirements
5.10.4(b), 7.1.10(a)(i)	35 IAC 212.324(g)(6)	When pollution control equipment was not in operation
5.10.5(a), 7.2.10(f), 7.2.10(g), 7.3.11(e), 7.4.5-2(b)(i)(D), 7.5.10(e), 7.10.3(j), 7.10.10(d)	35 IAC 201.263	Malfunction/breakdown (state rules)
5.10.5(b)	40 CFR 63.10(d)(5)	SSM (Federal)
5.10.7	40 CFR 63.9(h)(2)(ii) and 63.7530	Notification of Compliance Status report (Subpart DDDDD)
7.2.10(b)	40 CFR 63.7336(a)	When emission limitations, O/M requirements are not met
7.2.10(c)	40 CFR 63.7341(a)(3) and (4)	Quarterly and semi-annual compliance reports for battery stacks and semiannual compliance reports for all other affected sources
7.2.10(d)(i)	40 CFR 63.311(d)	Semi-annual compliance certification
7.2.10(d)(ii)	40 CFR 63.311(e)	Venting report
7.3.6(c)	40 CFR 61.355(a)(4) and 61.357	Reports on exceedance of 1.1 ton/yr of the generated benzene waste
7.3.11(a)(i)	40 CFR 61.138(f)	Semi-annual report on leaks, defects, results of performance tests
7.3.12(b)(ii)	40 CFR 61.247(b)	Semi-annual reports on leaks, repairs, shutdown
7.4.10(a)(i), 7.5.8(c) (iv) (D), 7.5.10(a)(i)	40 CFR 63.7841	Semi-annual compliance reports
7.4.10(a)(iii)	40 CFR 63.10(d)(5)(ii)	Immediate SSM reports
7.7.14(d), 7.8.14(d), 7.10.12(a)(i)(D)	35 IAC 217.156	Testing protocols, emissions exceedance
7.8.5(c)	40 CFR 63.7640(a)(10(vi)	Annual reports (if required) for tune-ups
7.8.11(b)	40 CFR 63.1164	SSM reports, progress reports, immediate reports, etc.
7.10.10(f)	40 CFR 7550	Deviation reports

VI. Start-up/Shutdown/Malfunction Breakdown

A. SIP Start-up/Malfunction-Breakdown Authorization

The Illinois EPA does not provide for "automatic exemptions" within CAAPP permits for operation with excess emissions during malfunction/breakdown or startups. The permits and the language regarding such exemptions are consistent with the Illinois SIP and federal guidance on the topic. An explanation of Illinois' SIP and its permitting practice is provided below.

Illinois' SIP at 35 IAC 201.149 prohibits continued operation of an emission unit during malfunction or breakdown of the unit or associated air pollution control equipment, or startup of an emission unit or associated air pollution control equipment, if such operation would cause a violation of applicable emission standards or limitations absent express permit authorization (emphasis added). Further provisions pertaining to such permit authorization are set forth in 35 IAC Part 201, Subpart I. These provisions make clear that the process in Illinois for addressing malfunction/breakdown and startup is in two steps. The first step, as set forth at 35 IAC 201.261, consists of seeking authorization by means of an application for permit to prospectively make a claim of malfunction/breakdown or startup. Pursuant to the provisions for malfunction/breakdown, the application shall include an explanation of why continued operation is necessary; the anticipated nature, quantity and duration of emissions; and measures that will be taken to minimize the quantity and duration of emissions. Pursuant to the applicable regulation, for startup, the application shall include a description of the startup procedure, duration and frequencies of startups, type and quantity of emissions during startups, and efforts to minimize emissions, duration and frequency. These regulatory requirements are acknowledged by the CAAPP, pursuant to Section 39.5(5)(s) of the Act. Absent a request for authorization in an application for a CAAPP permit that satisfies both the requirements for application content and the standards for granting, and, after Agency review, an express grant of such authorization in a CAAPP permit issued by Illinois EPA, a CAAPP source cannot make a claim of malfunction/breakdown or startup under Illinois regulations.

The second phase of Illinois' process for operation with excess emissions during malfunction/breakdown or startup, as set forth at 35 IAC 201.262, addresses the showing that must be made in order to make a viable claim of malfunction/breakdown or startup. Pursuant to the regulations for malfunction/breakdown, this showing consists of a demonstration that operation was necessary to prevent injury to persons or severe damage to equipment, or was required to provide essential services. There are two elements to the required showing, "need" and "function". For startup, it shall consist of a demonstration that all reasonable efforts have been made to minimize emissions from the startup event, to minimize the duration of the event, and to minimize the frequency of such events. To a certain extent, this showing may be evaluated on past practice. However, this showing is also prospective, like the showing for malfunction/breakdown, as it relates to future events, which and whose exact circumstances are not known, and which, in fact, may or may not occur.

The approach taken by Illinois' regulation can be distinguished from and contrasted with that of the federal NESHAP regulations, under 40 CFR Part 63. These federal regulations address excess emissions during malfunction (and shutdown) or startup without the initial step required by

Illinois' rules. This is because all sources are able to claim exclusion from an otherwise applicable standard during a malfunction or startup event. The validity of the claims is then subject to scrutiny by USEPA and the state enforcement authority, as to the acceptability of a source's claim that an incident should qualify for an exemption. That is, that the excess emissions could not be readily prevented and were not contrary to good air pollution control practices. In fact, this case-by-case scrutiny is the second step provided for in Illinois' regulations. This "federal approach" is set forth in the planned revised CAAPP permit for select emission units that are subject to certain NESHAPs. Violations of applicable NESHAP emission limits are governed by the "federal approach." Violations of emissions standards found in state air pollution control regulations at 35 IAC Subtitle B chapter c are governed by the SIP approach.

For those units for which US Steel seeks malfunction/breakdown or startup authorization under Illinois' SIP, the CAAPP permit application contains complete Forms 204-CAAPP and 203-CAAPP, respectively entitled Request To Continue To Operate During Malfunction And Breakdown and Request To Operate During Startup of Equipment. These forms seek the specific information required by the relevant state regulation. Again, that information is an explanation of why continued operation is necessary; the anticipated nature, quantity and duration of emissions; and measures that will be taken to minimize the quantity and duration of emissions for malfunctions and breakdowns. It is a description of the startup procedure, duration and frequencies of startups, type and quantity of emissions during startups, and efforts to minimize emissions, duration and frequency for start-up. Accordingly, US Steel seeks malfunction/breakdown as well as startup authorization in accordance with applicable Illinois regulation. Illinois EPA thoroughly reviewed this information against the SIP. Based on its review, the planned revised CAAPP permit would grant authorization to the facility to make a claim of malfunction/breakdown or startup. That the planned revised CAAPP permit affords such authorization, does not equate to an "automatic exemption." The grant of such initial authorization is fully consistent with long standing practice in Illinois permitting and enforcement. Due to the size and complexity of the source and the inability to simply shutdown equipment or the level of hazards associated with improper start-up or shutdown, the source may experience excess emissions due to events that cannot be readily anticipated or reasonably avoided. However, the facility is also fully aware that it may be held accountable for any excess emissions that occur regardless of any such authorization.

Neither the provisions in the SIP nor the provisions in the CAAPP permit delineating the elements for a viable claim of malfunction/breakdown or startup translate into any advanced determination on excess emissions. Rather, together the regulations and the CAAPP permit simply provide a framework whereby a source may have an opportunity to make a claim of malfunction/ breakdown or startup, with the viability of such claim subject to specific review against the requisite requirements. Indeed, 35 IAC 201.265 clearly states that violating an applicable state standard even if consistent with any expression of authority regarding a malfunction/breakdown or startup set forth in a permit shall only constitute a prima facie defense to an enforcement action for violation of said regulation. The malfunction/breakdown or startup authorization provided in the planned revised CAAPP permit does not provide shields from state emission standards that may be violated during said events. Rather, the source is subject to the applicable limitations or standards on any malfunction/breakdown or startup authorization included within the permit. As a result, any excess emissions during these events would constitute violations potentially subject to

enforcement action.

For any source that receives such authorization, the type of authorization (i.e., malfunction/breakdown or startup), the emission units for which authorization has been received, and the conditions under, and manner in which such authorization may be utilized are clearly set forth in the CAAPP permit. The origin of these authorizations is 35 IAC 201.149.

B. Federal Start-up/Shutdown/Malfunction Provisions

As originally adopted, the General Provisions of the NESHAP, 40 CFR Part 63 Subpart A (40 CFR 63.6(f) and (h)) provided that the limits of the NESHAP generally did not apply during startup, shutdown and malfunction (SSM) events (the "SSM Exemption") unless otherwise provided in a particular subpart for a particular category of source or emissions unit.[35] However, in December 2008, a US Court of Appeals decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), vacated this SSM Exemption.[36]

On July 22, 2009, Adam Kushner, Director of the Office of Civil Enforcement of the USEPA issued guidance identifying the categories of sources that would no longer be exempt from applicable numerical NESHAP standards during startup, shutdown, and malfunction as a result of the vacatur of the SSM exemption (the SSM Vacatur). This guidance states that the SSM vacatur immediately affects only the NESHAP standards for source categories that both (i) incorporate the SSM Exemption by reference and (ii) contain no other regulatory text that provides an exemption or exception from otherwise applicable limits during startup, shutdown or malfunction events. The NESHAP standards for many source categories contain such separate category-specific exemption language for startup, shutdown and malfunction events. These provisions were not at issue in the *Sierra Club* case and decision, and accordingly those separate provisions would not be affected by the vacatur of the SSM Exemption in 40 CFR 63 Subpart A. The guidance identifies the NESHAP standards for various categories of sources that would be affected by the SSM vacatur and the standards for other categories of sources that would not be affected ("Table 1" and "Table 2," respectively, of the guidance).[37]

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[35] During startup, shutdown and malfunction, a source was instead required to minimize emissions of subject emission units in a manner consistent with good air pollution control practice. A startup shutdown and malfunction plan must be maintained by a source setting forth how it operate emission units to minimize emissions during events, ideally so that they are not accompanied by any violations of the applicable standards. Finally, the term "malfunction" is also narrowly defined under the NESHAP. Malfunctions only include events that are sudden, infrequent and not reasonably preventable. Events that are caused, even in part, by poor maintenance or careless operation are not malfunctions for purposes of any SSM exemption.

[36] The *Sierra Club* decision has created concern for the sources that are subject to NESHAP standards and have relied upon the SSM Exemption. For some source categories, the technological capability to maintain compliance with numerical NESHAP standards during SSM events may not currently exist. Numerical standards were also adopted without critical consideration necessarily having been given to whether those standards could reasonably and appropriately be met during startup, shutdown or malfunction events. Consequently, the vacatur of the SSM Exemption creates uncertainty and concern about how to apply these NESHAP standards pertaining to such events.

[37] The USEPA guidance contains a caveat. USEPA recognizes that the source category-specific SSM exemption provisions may be challenged separately. As such, the analysis in its guidance could be subject to change. USEPA indicates that it intends to evaluate which source category-specific SSM exemption provisions should be revised. The Illinois EPA is not aware of any such specific challenges that have been made to source category-specific SSM exemption provisions in the NESHAP.

Illinois EPA has followed USEPA's guidance in preparing the planned revised CAAPP permit. For the NESHAP for Steel Pickling, 40 CFR 63 Subpart CCC there is no longer a SSM exemption as this NESHAP is listed in "Table 1" of USEPA's guidance as being impacted by the SSM vacatur. Accordingly, the limits of 40 CFR 63 Subpart CCC now apply at all times (See Condition 7.8.5-1(b) of the planned revised CAAPP permit). For the recently adopted NESHAP for Boilers and Process Heaters, 40 CFR 63 Subpart DDDDD, there is likewise no SSM exemption. This standard is not directly addressed by USEPA's guidance for the SSM vacatur as it was only recently adopted. However, this standard, as adopted, does not include any provisions that exempt sources from compliance with its limits during SSM.[38] The balance of the NESHAPs to which this facility is subject are not affected by the SSM vacatur. That is, the facility is subject to NESHAP standards that contain category-specific SSM exemption and are listed in Table 2 of USEPA's guidance for the SSM vacatur.

[38] In its adoption of 40 CFR 63 Subpart DDDDD, the USEPA has responded to the decision in *Sierra Club v EPA.* USEPA has not provided an SSM exemption in this new standard. The newly established emission limits and the applicable operating limits would apply during SSM. However, for malfunctions, the USEPA does recognize that in certain circumstances, subject to appropriate actions by the source, and subject to prompt notification to the relevant air pollution control authority, a source may, in an enforcement action, assert an affirmative defense to a claim for civil penalties for violations of limits under this NESHAP that are caused by a malfunction (See 40 CFR 63.7501).

VII. Incorporation by Reference

In its Order issued on January 31, 2011, USEPA found that the Illinois EPA did not properly incorporate certain documents into the CAAPP permit.[39] USEPA acknowledged that the five plans and/or programs (commonly referred to as "plans") identified by the Petition were incorporated by reference into the CAAPP permit. However, USEPA concluded that the CAAPP permit did not appropriately refer to the specific documents or materials that represented these plans by identifying their respective dates, titles or contents. In the absence of sufficiently descriptive terms, USEPA reasoned that the public might be confused as to which version of a plan was being incorporated or as to the actual contents of the plan.

The Illinois EPA has reviewed the USEPA Order on this subject, as well as the *White Paper 2* and past petition responses by the Administrator. Based on this guidance, it is recognized that Title V permit authorities may, within their discretion, incorporate plans by reference. As recognized in the *White Paper 2*, permit authorities can effectively streamline the contents of a Title V permit, avoiding the inevitable clutter of restated text and preventing unnecessary delays where, as here, permit issuance is subject to a decision deadline.[40] However, it is also recognized that the benefits of incorporation of plans must be carefully balanced by a permit authority with its duty to issue permits in a way that is "clear and meaningful" to the Permittee and the public.[41]

The criteria that are mentioned in USEPA's Order stress the importance of identifying, *with specificity*, the object of the incorporation.[42] The Illinois EPA agrees that such emphasis is generally consistent with USEPA's pronouncements in previous guidance and, in fact, was expressly acknowledged in the Responsiveness Summary for the original CAAPP permit. However, as the earlier permit may have lacked reference to certain manifest attributes of the incorporated document, such as its date and title, the revised CAAPP permit will include them. This action should ensure that both the Permittee and public are not confused as to which version of a plan is being incorporated into the CAAPP permit.

For each condition incorporating a plan, the Illinois EPA is also briefly describing the general manner in which the plan applies to the source. Identifying the nature of the source activity, the

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[39] *See*, Order at pages 42-44. The cited documents included the following US Steel plans and/or programs: Fugitive Particulate Matter Operating Program, the PM10 Contingency Measure Plan, the Episode Action Plan, the Soaking Work Practice Plan for implementing 40 CFR Subpart CCCCC and the Work Practice Plan for implementing 40 CFR Subpart L.

[40] Among other things, USEPA observed that the stream-lining benefits can consist of "reduced cost and administrative complexity, and continued compliance flexibility…". *White Paper 2*, page 41.

[41] *See*, In the Matter of Tesoro Refining and Marketing, Petition No. IX-2004-6, Order Denying in Part and Granting in Part Petition for Objection to Permit, at page 8 (March 15, 2005); *see also*, *White Paper 2* at page 39 ("reference must be detailed enough that the manner in which any referenced materials applies to a facility is clear and is not reasonably subject to misinterpretation").

[42] The Order provides that permit authorities must ensure the following: "(1) referenced documents be specifically identified; (2) descriptive information such as the title or number of the document and the date of the document be included so that there is no ambiguity as to which version of the document is being referenced; and (3) citations, cross references, and incorporations by reference are detailed enough that the manner in which any referenced material applies to a facility is clear and is not reasonably subject to misinterpretation." *See*, Petition Response at page 43, citing *White Paper 2* at page 37.

regulatory requirements or the nature of the equipment associated with the plan is a recommendation of the *White Paper 2* and should adequately address USEPA's concerns from the Order.[43] The Illinois EPA has stopped short of enumerating the actual contents of a plan, as restating them in the permit would plainly defeat the purpose of incorporating the document by reference and be contrary to USEPA guidance on the subject.[44]

Some plans may need to be revised from time to time, as occasionally required by circumstance or by underlying rule or permit requirement. Except where expressly precluded by the relevant rules, the revised CAAPP permit allows the Permittee to make future changes to a plan without undergoing formal permit revision procedures. This approach will allow US Steel flexibility to make required changes to a plan without separately applying for a revised permit and, similarly, will lessen the impacts that could result for the Illinois EPA if every change to a plan's contents required a permitting transaction.[45] Changes to the incorporated plans during the permit term are automatically incorporated into the revised CAAPP permit unless the Illinois EPA expresses a written objection. The exception to this practice is the PM_{10} Contingency Measure Plan, for which a permit revision is needed for any changes to the plan.[46]

The revised CAAPP permit incorporates by reference the following plans: the Fugitive Particulate Matter Operating Program, the PM_{10} Contingency Plan, the Episode Action Plan and a Work Practices Plan relating to 40 CFR Subpart L.[47] After further reconsideration, the Illinois EPA has elected not to proceed with incorporating the Soaking Plan for implementing 40 CFR Subpart CCCCC into the CAAPP permit. The plan does not contain the type of information that is integral to assuring compliance with applicable requirements, including emissions limitations, compliance certification, testing monitoring, reporting or recordkeeping requirements, and is indistinguishable from other types of plans (such as operating and maintenance plans and SSM plans) [48]that USEPA has historically concluded need not be incorporated into Title V permits.[49]

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[43] *See*, *White Paper 2* at page 39.

[44] Nothing in USEPA guidance, including the *White Paper 2* or previous orders responding to public petitions, supports the notion that permit authorities incorporating a document by reference must also restate contents of a given plan in the body of the Title V permit. Such an interpretation contradicts USEPA recognition that permit authorities need not restate or recite an incorporated document so long as the document is sufficiently described. *White Paper 2* at page 39; *see also*, In the matter of Consolidated Edison Co. of New York, Inc., 74th St. Station, Petition No. II-2001-02, Order Granting in Part and Denying in Part Petition for Objection to Permit at page 16 (February 19, 2003).

[45] This approach is consistent with USEPA guidance, which has previously embraced a similar approach to certain SSM plans. *See*, Letter and Enclosures, dated May 20, 1999, from John Seitz, Director of Office of Air Quality Planning and Standards, to Robert Hodanbosi and Charles Lagges, STAPPA/ALAPCO, pages 9-10 of Enclosure B.

[46] The PM10 Contingency Measure Plan is not being provided the same flexibility with respect to revising the plan's contents, as the underlying SIP rule treats the contents of the plan as federally enforceable. Any future revisions to this plan during the permit term are required to undergo procedures for permit modification. *See*, Condition 5.3.3(d).

[47] Each incorporated plan addressed by this Section of the Statement of Basis is part of US Steel's permit file. As such, these plans are available to any person interested in viewing the contents of a given plan may do so at the public repository during the comment period or, alternatively, may request a copy of the same from the Illinois EPA under the Freedom of Information Act. See also 71 FR 20447.

[48] *See*, Letter and Enclosures, dated May 20, 1999, from John Seitz, Director of Office of Air Quality Planning and Standards, to Robert Hodanbosi and Charles Lagges, STAPPA/ALAPCO, page 9 of Enclosure B.

[49] In the most recent final rulemaking for 40 CFR 63, Subpart A – General Provisions, the US EPA dealt with the need for SSM Plans to be available, the level of detail in an SSM necessary for purposes including permitting and whether a SSM Plan is tantamount to a compliance schedule necessary for incorporation into a Title V permit. USEPA concluded that SSM Plans need not be mandatorily available for public access but rather must be made available upon

request by the permitting authority. In addition, these plans do not contain enforceable requirements necessary to demonstrate compliance with the general duty clause at 63.6(e)(1)(i) and are therefore not applicable requirements. Lastly, SSM Plans are not of the same ilk as a compliance schedule required in 502(b)(8) or 503(c) of the CAA or 40 CFR 70.5(c)(8) as the criteria for such documents are clearly distinguishable for each. See, FR Vol. 71, No. 76/Thursday, April 20, 2006 (pg. 20447 and 20449 – 20451); FR Vol. 70, No. 145/Friday, July 29, 2005 (pg. 43993 – 43994); FR Vol. 67, No. 236/Monday December 9, 2002 (pg. 72880). Therefore, the Illinois EPA has concluded that these plans are not required to be incorporated by reference or any of the content of such plans need be incorporated into the CAAPP permit.

VIII. Applicable Requirements for Emissions of Greenhouse Gases (GHG)

On June 3, 2010, USEPA adopted rules for the initial permitting of major sources of emissions of greenhouse gases (GHG). *See*, 75 FR 31514-31608. Prompted by the earlier adoption of GHG emissions standards for motor vehicles under Title II of the CAA, the USEPA's rules implement a two-phased program for permitting major sources of GHG under Title V permit programs.[50] As Illinois EPA is planning to issue a revised CAAPP permit for US Steel during the first phase of the rules, GHG emissions must be addressed during this CAAPP permitting action.[51] Annual Emission Reports submitted to the Illinois EPA by US Steel, which detail the facility's actual annual emissions of GHG, provide the necessary data to appropriately address emissions of GHG in the revised CAAPP permit.[52] The data in these reports clearly show the facility is a major source for emissions of GHG.

The new federal rules also require subject Title V sources to comply with any applicable GHG-related requirements that arise from other CAA programs.[53] However, there are currently no emission standards or other regulatory obligations relating to GHG that constitute "applicable requirements" for this facility. For this reason, the planned revised CAAPP permit for US Steel does not contain any substantive requirements for GHG. At the federal level, the only venue that could potentially establish GHG-related requirements at this time is the PSD program. As of January 2, 2011, sources triggering PSD must evaluate GHG emissions resulting from projects that trigger the major source or major modification rules.[54] US Steel has neither constructed such a project, nor received a permit authorizing such a project, since January 2, 2011, to the present, and therefore has not triggered any GHG-related requirements under the PSD program.

There are no other GHG-related requirements established under the CAA that are applicable to US Steel at this time. In particular, the mandatory reporting rule for GHG promulgated by USEPA in 2009 [*see generally*, 40 CFR Part 98] is not an applicable requirement and therefore would not be included in the revised CAAPP permit for this facility.

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[50] The new rules apply the first phase of permitting to sources already subject to Title V by virtue of their conventional, non-GHG pollutants. As noted above, these sources are expected to address GHG in their permitting applications and to comply with any substantive requirements for GHG that have been established through other CAA programs such as PSD. The second phase of permitting that begins July 1, 2011, essentially applies the same requirements to sources who will become subject to Title V based on their GHG emissions alone (i.e., existing or newly constructed sources with a potential to emit of equal to or greater than 100,000 tons per year of CO2*e* and 100 tons per year of GHG on a mass basis).

[51] USEPA has stated that the first phase of its new rules requires existing Title V sources to address GHG in their Title V applications by citing to any pollutants for which the Title V source is major and to all regulated air pollutants. *See*, PSD and Title V Permitting Guidance for Greenhouse Gases, prepared by the Office of Air Quality Planning and Standards, page 51 (November 2010).

[52] Based on emission data voluntarily submitted by US Steel in its Annual Emission Reports, the facility is a major source of GHG emissions, with actual emissions of greenhouse gases, in carbon dioxide equivalents, that are typically in the range of 300,000 to 400,00 tons per year.

[53] *See generally*, PSD and Title V Permitting Guidance for GHG at pages 53-56.

[54] A major source subject to PSD based on potential emissions of a non-GHG pollutant and potential emissions of GHG equal or greater than 75,000 tons per year of CO2*e* is required to address GHG emissions in evaluating control options and associated monitoring, reporting, etc, for any construction of a new major source or a major modification of an existing major source.

There are also no GHG-related requirements under the Act or contained within Illinois' SIP that apply to the facility at this time. Other state laws or regulations in Illinois relating to GHG, including efforts to reduce emissions of GHG under authority other that the Act, do not constitute applicable requirements under the CAAPP.

Attachment A: Summary of Source-Wide Requirements

a. The source-wide emissions control programs and planning requirements that apply to this facility, as addressed in Sections 5 of the revised CAAPP permit, are identified below.

Table A.1 Applicable Emission Control Programs

Program/Plan	Applicable
Emissions Reduction Market System (ERMS)	No
Nitrogen Oxides (NO_x) Trading Program	No
Acid Rain Program	No
Fugitive Particulate Matter (PM) Operating Program	Yes
Risk Management Plan (RMP)	Yes
PM_{10} Contingency Measure Plan	Yes

b. The following table indicates source-wide site-specific requirements addressed in Section 5 of the revised CAAPP permit.

Table A.2 Site Specific Requirements

Non-Applicable Rules and Requirements w/justification
• The following source-wide state non-applicability rules (with certain exemptions) being established in the proposed permit (See Condition 5.4 for more details): • 35 IAC 312.321 and 312.322 • 35 IAC 212.324 • 35 IAC Part 219 Subpart PP and Subpart TT
Title I Conditions and/or Synthetic Minor Limits
• Source-wide Title I limits and conditions are being carried over from previously issued Title I permits (See Condition 5.6.3 for details). • Source-wide "synthetic minor" conditions not being established.
Control Requirements and Work Practices
• Maintenance and repair and requirements for control equipment established in 35 IAC 212.324(f) (See Condition 5.5 for details).
Testing, Monitoring, Recordkeeping, and Reporting
• Testing: COG flow meters (See Condition 5.7 for details)
• Monitoring: Annual benzene waste quantity determination at the source is monitored by the methods and procedures of 40 CFR 61.355 and described in Condition 5.7(c). • Monitoring: Concentration of H_2S content in COG (See Condition 5.8).

- Recordkeeping: Records of the source-wide annual HAP emissions shall be kept by the source based on the individual HAP emissions from certain operations.
- Recordkeeping: Copy of the most current version of the fugitive particulate matter operating plan (See Condition 5.9.3(a)).
- Recordkeeping: Copy of the current PM_{10} contingency plan (See Condition 5.9.3(b)).
- Recordkeeping: Operating records required by 35 IAC 212.316 for the fugitive particulate matter operating program (See Condition 5.9.3(c)).
- Recordkeeping: Operating and maintenance records for control equipment required by 35 IAC 212.324 (See Condition 5.9.3(d)).
- Recordkeeping: Records required by FESOP permit 94120017 (See Condition 5.9.4).
- Recordkeeping: Records required by 40 CFR 61.356 (Benzene Waste Operations, Subpart FF)(See Condition 5.9.5).

- Reporting: Reports required by FESOP permit 94120017 (See Condition 5.10.3)
- Reporting: Quarterly reports(See Condition 5.10.4)
- Reporting: Reports required by 40 CFR 61.357 (Benzene Waste Operations, Subpart FF) (See Condition 5.10.5)
- Reporting: Reports on malfunctions and breakdowns (See Condition 5.10.6)
- Reporting: Reports on startups (See Condition 5.10.7)

Attachment B: Summary of Regulatory and Title I Requirements for Emission Units

The following tables include information on the requirements that apply to various groups of significant emission units at this source, as addressed in Section 7 of the revised CAAPP permit

Table B.1 (Section 7.1 of the revised CAAPP permit)

Emission Units	
Name	Material Handling and Processing Operations (coal handling and processing; blast furnace and steelmaking material handling)
Emission Control Equipment	Baghouse (Coal Pulverizer) Baghouses (New Coke Conveyance System) Trackhopper Baghouse (Steelmaking) Bin Floor Baghouse (Steelmaking) Baghouse #1 (Steelmaking)
Applicable Emission Standards	
Emission Limits & Requirements	• 35 IAC 212.301: No visible fugitive emissions at the property line • 35 IAC 212.316(b): 10% opacity for fugitive PM from crushing and screening operations • 35 IAC 212.316(f): 20% opacity for fugitive PM from transfer operations • IAC 212.321(a) and 212.322(a): Process weight rule • 35 IAC 212.458(b)(7): 0.01 gr/scf for stack PM_{10} emissions • 35 IAC 212.309, 212.310 and 212.312: fugitive PM operating program • 35 IAC 212.324(f): maintenance and repair requirements for air pollution control equipment • 35 IAC 212.307: transporting and unloading operations shall be enclosed or utilize spraying, pelletizing, screw conveying or other equivalent methods
Streamlining of Standards	• N/A
Non-Applicability Provisions	
	• 35 IAC 212.324(b) is not applicable to these operations. Pursuant to 35 IAC 212.324(a)(3), the operations are subject to 35 IAC Part 212, Subpart R, "Primary and Fabricated Metal Products and Machinery Manufacture"
Title I Conditions	
	• Permit 06070088 (Condition 7.1.6(a) of CAAPP permit) • Permit 95010001 (Condition 7.1.6(b) of CAAPP permit)
Compliance Procedures	
Recordkeeping	• Records for control equipment pursuant to 35 IAC 212.324(g) • Records for dust control implementation pursuant to 35 IAC 212.316(g)(5)
Reporting	• Reports for dust control implementation pursuant to 35 IAC 212.316(g)(2)

Table B.2 (Section 7.2 of the draft permit)

Emission Units	
Name	Coke Oven Batteries A and B
Emission Control Equipment	• Emergency Bypass Flares (Batteries A and B) • Mobile Venturi Scrubber – PCS Cars #3 and #4 (Coke Pushing) • Tower and Baffles (East Quench Station, under construction) • Tower and Baffles (West Quench Station)
Applicable Emission Standards	

Emission Limits & Requirements	• <u>Coke Oven Charging:</u>
	  • 35 IAC 212.443(b)(1)(A): Duration of visible emissions shall not exceed 125 seconds for 5 consecutive charges
	  • 40 CFR 63.304(b)(2) (iv) : No more than 12 seconds of visible emissions per charge
	• <u>Leaks from Doors:</u>
	  • 35 IAC 212.443(d): Visible emissions from no more than 10 percent of all coke oven doors
	  • 40 CFR 63.304(b)(3)(ii): 3.3 percent leaking coke oven doors
	• <u>Leaks from Lids</u>
	  • 35 IAC 212.443(e): Visible emissions from no more than 5 percent of all coke oven lids
	  • 40 CFR 63.304(b)(2)(ii): No more than 0.4 percent leaking topside port lids
	• <u>Leaks from Offtakes</u>
	  • 35 IAC 212.443(f): Visible emissions from no more than 10 percent of all coke oven offtake piping
	  • 40 CFR 63.304(b)(2)(iii): 2.5 percent leaking offtake system(s)
	• <u>Coke Oven Pushing</u>
	  • 35 IAC 212.443(c)(1)(A) : for uncaptured emissions, 20 percent opacity
	  • 35 IAC 212.443(c)(2) : for the control system (captured emissions) 0.040 pounds PM per ton of coke pushed and 20 percent opacity
	  • 40 CFR 63.7290(a)(4): 0.04 lb PM per ton of coke pushed
	• <u>Coke Quenching</u>
	  • 40 CFR 63.7295(a)(1)(i): concentration of total dissolved solids in quenching water no more than 1,100 mg/l
	  • 40 CFR 63.7295(b): for towers with baffles, no more than 5 percent of the cross sectional area may be uncovered; baffles shall be washed once per day; inspection and repair requirements of baffles
	  • 35 IAC 212.443(h)(1): baffles shall cover 95 percent or more of cross sectional area
	  • 35 IAC 212.443 (h)(2): concentration of total dissolved solids in quench water no more than 1,200 mg/l
	• <u>Combustion Stack (Battery Stack)</u>
	  • 35 IAC 212.243(g): emissions of PM to exceed 110 mg/dscm (0.05

	gr/dscf) and 30 percent opacity • 40 CFR 63.7296: Daily average 15 percent opacity on a normal coking cycle and 20 percent opacity on battery-wide extended coking • <u>Bypass/Bleeder Stack</u> • 40 CFR 63.307(a)(1): bypass flare system is capable of controlling 120 percent of normal gas flow generated by batteries
35 IAC Part 201 Subpart I	• Possible violation of state standards during startup • Possible violation of state standards during malfunction/ breakdown
Streamlining of Standards	• N/A
Non-Applicability Provisions	
	• 35 IAC 212.324 is not applicable pursuant to 35 IAC 212.324(a)(3), as the operations are subject to 35 IAC Part 212, Subpart R • 35 IAC 212.321 and 35 IAC 212.322 are not applicable pursuant to 35 IAC 212.441,as the operations are subject to 35 IAC 212.443
Title I Conditions	
Permit C8080048 (Battery B)	• Limit on coal throughput • Visible emissions shall not exceed a total of 55 seconds during 5 consecutive charges • No visible emissions from more than 5 percent of the door areas • No visible emissions from more than 1 percent of the charging ports or lids • No visible emissions from more than 4 percent of the offtake piping • Pushing scrubber : 0.040 pounds of PM per ton of coke pushed • Pushing uncaptured fugitive emissions: 20 percent opacity
Permit 82060043	• Non-sulfate PM emissions of the combustion stack on Battery B not shall exceed 0.03 gr/dscf
Permit 88070071	• At least 95 percent of the ovens on Battery B and 90 percent of the ovens on Battery A shall push into a quench car
Operating Limits	
Pushing	• 40 CFR 63.7323: For the scrubber for pushing, comply with site-specific operating limits for pressure drop and scrubber water flow rate.
Work Practices	
Soaking Plans	• Comply with the work practice standards for fugitive pushing emissions as specified by 40 CFR 63.7291 • Pursuant to 40 CFR 63.7294(a), operate coke ovens pursuant to a written work practice plan for soaking (soaking plan)
Work Practice Plan	• Pursuant to 40 CFR 63.306(a), for affected units subject to the 40 CFR 63 Subpart L, maintain a written emission control work practice plan (work practice plan) for the affected battery designed to achieve compliance with visible emission limitations for doors, topside port lids, offtake systems, and charging operations under 40 CFR 63 Subpart L.
Startup, Shutdown and Malfunction Plan	• Pursuant to 40 CFR 63.7310, for affected units subject to 40 CFR 63 Subpart CCCCC, develop and implement a written startup, shutdown and malfunction plan according to the provisions in 40 CFR 63.6(e)(3).

	• 40 CFR 63.310: Startup, Shutdown and Malfunction requirements
Compliance Procedures	
Observations for Visible Emissions and Leaks	• 40 CFR 63.309(a): daily observations (performance tests) conducted by a certified observer each day, 7 days per week for each battery. • 40 CFR 63.308: for the collecting mains, daily inspections for leaks and promptly repair any leaks as specified by 40 CFR 63.308(a) through (d).
Opacity Observations	• 35 IAC 212.443(c)(1)(B): Opacity observations for uncontrolled pushing emissions by a qualified observer located in a position where the oven being pushed, the coke receiving car and the path to the quench tower are visible.
Emission Testing	• 40 CFR 63.7321: For each control device subject to a PM emission limit in 40 CFR 63.7290(a), periodic performance tests no less frequently than twice (at mid-term and renewal) during each term of the Title V permit.
Opacity Monitoring	• 40 CFR 63.7330(e): For each combustion stack, continuous opacity monitoring (COMS) in accordance with 40 CFR 63.7331(j)
Operational Monitoring	• 40 CFR 63.7330(b) and 63.7330(d): For pushing, for each scrubber and each capture system, continuous operational monitoring in accordance with the requirements of 40 CFR 63.7331
Inspections	• 40 CFR 63.7295(b): for the quench tower, inspections on at least a monthly basis for damaged or missing baffles and initiate repair or replacement within 30 days, which shall be completed as soon as practicable, as specified by 40 CFR 63.7295(b)(3) and (4)

Recordkeeping	• 40 CFR 63.7342 and 63.7343:
	  • Copy of each notification and report;
	  • Records of performance tests, performance evaluations, and opacity observations;
	  • Monitoring data for each COMS or CPMS
	• 40 CFR 63.311(f) and (g):
	  • A copy of the work practice plan;
	  • The design drawings and engineering specifications for the bypass/bleeder stack flare system
	  • Records of the total annual coke production at batteries “A” and “B” (ton/yr) and separately for the battery “B”.

Reporting	▪ 40 CFR Part 63, Subpart CCCCC (40 CFR 63.7341):
	  ▪ Quarterly compliance reports for battery stacks and semiannual compliance reports for all other affected sources;
	  ▪ Immediate startup, shutdown, and malfunction report;
	  ▪ Part 70 monitoring report
	▪ 40 CFR Part 63, Subpart L (40 CFR 63.311):
	  ▪ Semiannual compliance certification;
	  ▪ Report for venting of coke oven gas other than through a flare system.

Table B.3 (Section 7.3 of the draft permit)

Emission Unit	
Name	Coke By-Product Recovery Plant
Emission Control Equipment	• Steam Blanketing (By-Product Recovery) • Clean Gas Blanketing and Steam Blanketing (Light Oil Processing) • Negative Pressure Systems (Coal Tar Processing) • Closed System and Thermal Oxidizer (COG Desulfurization System)
Applicable Emission Standards	
Emission Limits & Requirements	• 40 CFR 61.132 and 61.133: No detectable emissions (above 500 ppm) for control systems and various individual components, work practice standards, inspections and repair requirements • 40 CFR 61.135(d): For exhausters, detectable emissions are established at above 10,000 ppm • 40 CFR Part 61, Subpart V: Methods of determining detectable emissions for the operations in benzene service • 40 CFR Part 61, Subpart FF: Pursuant to 61.355(a)(5), records of the total annual benzene waste generated on site. Current amount of the benzene waste generation stays below 1.1 ton/yr. • 35 IAC 214.301: SO_2 emissions shall not exceed 2000 ppm • 35 IAC 212.123(a): No opacity greater than 30 percent for COG desulfurization, COG flare and by-product recovery plant
35 IAC Part 201, Subpart I	• Possible violation for state standards during malfunction/breakdown for COG flare
Streamlining	• N/A
Non-Applicability Provisions	
	• 35 IAC 219.120 not applicable. Pursuant to 35 IAC 219.119(b), vessels located at coke by product recovery plants are not subject • 35 IAC 219.121 not applicable. Liquids kept in the tanks are not the product of petroleum refinery, pursuant to the definition of VPL/petroleum liquids in 35 IAC Part 211
Title I Conditions	
Permit 06070022	• Production and operating limits • Limits on H_2S content in the raw and cleaned COG • PM_{10} and SO_2 emission limits for the thermal oxidizer
Operating Limits	
	• COG flare: shall be operated with no visible emissions

Table B.4 (Section 7.4 of the draft permit)

Emission Unit	
Name	Blast Furnaces "A" and "B"
Emission Control Equipment	• Casthouse Baghouse and Iron Spout Baghouse (Blast Furnace Casthouse)
Applicable Emission Standards	
Emission Limits & Requirements	• 35 IAC 212.445(a): Uncaptured PM emissions from any opening in a cast house shall not exceed 20 percent opacity • 35 IAC 212.445(b)(1): Controlled PM emissions from the tap hole, trough, runners or iron/slag spouts shall not exceed 0.023 g/dscm (0.010 gr/dscf) • 35 IAC 212.445(b)(2): Opacity from control equipment used to collect PM from the tap hole, trough, runners or spouts shall not exceed 10 percent • 35 IAC 212.123(a): Opacity from other processes shall not exceed 30 % • 35 IAC 214.301: SO_2 emissions shall not exceed 2000 ppm • 40 CFR 63.7790(a), paragraph 7 of Table 1: PM emissions from a control device at each casthouse shall not exceed 0.01 gr/dscf; and uncaptured secondary emissions shall not exceed opacity greater than 20 percent
35 IAC Part 201, Subpart I	• Possible violation for state standards during startup • Possible violation for state standards during malfunction/breakdown
Streamlining	• N/A
Non-Applicability Provisions	
	• 35 IAC 212.324 is not applicable, pursuant to 35 IAC 212.324(a)(3) as the affected operations are subject to the limit of 35 IAC Part 212, Subpart R • 35 IAC Part 216.121: Blast furnace processes are not fuel combustion as defined in 35 IAC 211.2470 • 35 IAC 212.321 and 212.322 are not applicable pursuant to 35 IAC 212.441 as the operations are subject to 35 IAC 212.445
Title I Conditions	
Permit 95010001	• Limit on daily iron production • Limit al limit of pellets use • Limits on emission of the casthouse and iron spout baghouses • Limits on uncaptured emissions from the casthouse • Limits on emission from blast furnace charging and the slag pits
Permit 06070023	• PM content of the BFG burned shall not exceed 0.01 grains/dscf
Operating Limits	

Casthouse and Iron Spout Baghouse	• 40 CFR 63.7831: Monitored parameters:
	  • Motor amperage (Casthouse and Iron Spout baghouses)
	  • Damper positions (Iron Spout baghouse)
	  • Blast furnace B tilt runner damper position (Iron Spout baghouse)

Work Practices	
Operation and	• Pursuant to 40 CFR 63.7800, blast furnace processes shall be operated in

Maintenance Plan	accordance with an Operation and Maintenance plan
Startup, Shutdown and Malfunction Plan	• Pursuant to 40 CFR 63.7810 (c), the Permittee shall implement a written SSM plan for the blast furnace casthouse

Table B.5 (Section 7.5 of the draft permit)

Emission Unit	
Name	Basic Oxygen Furnace Processes
Emission Control Equipment	• Reladle/Desulfurization Baghouse (Hot Metal Transfer and Hot Metal Desulfurization Stations) • Skimmer Baghouse (Slag Skimming Station) • Electrostatic Precipitator (BOF #1 and #2) • Baghouse #2 (Ladle Metallurgy Furnace Station and Argon Stirring Stations)
Applicable Emission Standards	

Emission Limits & Requirements	• 35 IAC 212.446(a): For charging, refining and tapping, PM emissions shall not exceed the allowable emission rate specified by 35 IAC 212.322.
	• 35 IAC 212.446(b)(1): PM emissions from hot metal transfers shall be collected and ducted to control equipment and emissions shall not exceed 0.03 gr/dscf
	• 35 IAC 212.446(c): Opacity from openings in the BOF shop: 20 percent
	• 35 IAC 212.458(b)(23): Emissions of PM_{10} from all BOF operations shall not exceed 60 lbs/hr and 0.225 lbs/ton of total steel produced, whichever is more stringent
	• 35 IAC 212.123(a): Opacity shall not exceed 30 percent
	• 35 IAC 214.301: SO_2 emissions shall not exceed 2000 ppm
	• 40 CFR 63.7790(a), paragraph 9 through 12 of Table 1:
	  • PM emissions from a BOF primary control: 0.02 gr/dscf ;
	  • PM emissions from each metal transfer, slag skimming and hot metal desulfurization operation control devices: 0.01 gr/dscf
	  • PM emissions from an LMF control device: 0.01 gr/dscf
	  • Opacity from the openings in the BOF building: 20 percent
	• 40 CFR 63.7790(b)(3): Opacity from electrostatic precipitator shall not exceed 10 percent on an hourly average basis

35 IAC Part 201, Subpart I	• Possible violation for state standards during malfunction/breakdown
Streamlining	• N/A
Non-Applicability Provisions	
	• 35 IAC 212.324 is not applicable, pursuant to 35 IAC 212.324(a)(3) are the affected operations are subject to the emission limitations of 35 IAC Part 212, Subpart R • 35 IAC Part 216.121: BOF processes are not fuel combustion as defined in 35 IAC 211.2470 • Except as specified, 35 IAC 212.321 and 212.322 are not applicable pursuant to 35 IAC 212.441 to operations subject to 35 IAC 212.446
Title I Conditions	
Permit 95010001	• Limit on daily steel production • Total annual emissions for each regulated air pollutant emitted by BOF • Limits for emissions from the BOF ESP Stack

	• Limits for emissions from the BOF roof monitor • Limits for emissions hot metal desulfurization and hot metal transfer • Limits for hot metal charging and ladle slag skimming • Limits for emissions from argon stirring stations & material handling • Minimum set points for the operation of BOF vessels • Limits on total annual emissions from blast furnace operations
Permit 83050042	• PM emissions from the ladle metallurgy station • Maximum hourly production rate for argon stirring, ladle reheater, alloy addition, ladle slag skimming and hot metal desulfurization
Work Practices	
Operation and Maintenance Plan	• Pursuant to 40 CFR 63.7800, BOF processes shall be operated in accordance with an Operation and Maintenance plan
Startup, Shutdown and Malfunctions Plan	• Pursuant to 40 CFR 63.7810 (c), development and implementation of a written SSM plan

Table B.6 (Section 7.6 of the draft permit)

Emission Unit	
Name	Continuous Casting
Emission Control Equipment	• Baghouse #1 (Deslagging Station)
Applicable Emission Standards	
Emission Limits & Requirements	• 35 IAC 212.458(b)(7): Emissions of PM_{10} shall not exceed 0.01 gr/scf • 35 IAC 212.458(b)(8): Opacity for continuous caster spray chambers or continuous casting operations shall not exceed 5 percent • 35 IAC 212.123(a): No opacity greater than 30 percent for continuous casting
35 IAC Part 201, Subpart I	• Possible violation for state standards during malfunction/breakdown
Streamlining	• N/A
Non-Applicability Provisions	
	• 35 IAC 212.324 is not applicable pursuant to 35 IAC 212.324(a)(3), as the caster operations are subject to 35 IAC Part 212, Subpart R • 35 IAC 212.309 and 212.310 are not applicable: Continuous casting is not identified in 35 IAC 212.304 through 212.308 • 40 CFR 63 Subpart FFFFF: Continuous casting is not defined as part of BOPF and shop ancillary operations in 40 CFR 63.7782(c)
Title I Conditions	
Permit 95010001	• Limits of total emissions of from continuous casting • Limits on emissions from deslagging station & material handling • Limits on emissions of from caster molds • Limits on emissions of from casters spray chambers • Limits on emissions of from slab cut-off

Table B.7 (Section 7.7 of the draft permit)

Emission Unit	
Name	Hot Strip Mill
Emission Control Equipment	N/A
Applicable Emission Standards	
Emission Limits & Requirements	• 35 IAC 212.458(b)(10): Emissions of PM_{10} shall not exceed 0.09 lbs/mmBtu of heat input • 35 IAC 212.321(a) and 212.322(a): PM limit based on process weight rate • 35 IAC 214.301: SO_2 emissions shall not exceed 2000 ppm • 35 IAC 212.123(a): Opacity shall not exceed 30 percent
35 IAC Part 201, Subpart I	• Possible violation for state standards during startup
Streamlining	• N/A
Non-Applicability Provisions	
	• 35 IAC 212.324 is not applicable, pursuant to 35 IAC 212.324(a)(3), as the affected operations are subject to the emission limitations of 35 IAC Part 212, Subpart R • 40 CFR 63 Subpart FFFFF: Slab reheat furnaces are not defined as part of BOPF or Blast Furnace operations in 40 CFR 63.7782(c)
Title I Conditions	
Permit 06070022	• Total annual usage of fuels • Limits on NO_x emission rate (lbs/mmBtu) of each reheat furnace • Limits on monthly and annual NO_x emissions

Table B.8 (Section 7.8 of the draft permit)

Emission Unit	
Name	Finishing Operations
Emission Control Equipment	Two Fume Scrubbers (HCL Pickling Line); Fume Scrubber (Galvanizing Line #7A); Fume Scrubber (Galvanizing Line #8); and NO_x Catalytic Converter (Galvanizing Line #8)
Applicable Emission Standards	
Emission Limits & Requirements	• 35 IAC 212.458(b)(7): Emissions of PM_{10} shall not exceed 0.01 gr/scf • 35 IAC 212.321(a) : Process weight rate (cleaner section, two galvanizing pot of Galvanizing Line #7A and coating operations) • 35 IAC 212.322(a): Process weight rate (cleaner section, galvanizing pots and the melting kettle of Galvanizing Line #8) • 35 IAC 219.204(d): VOM content of coatings shall not exceed 1.7 lb/gal • 35 IAC 212.123(a): Opacity shall not exceed 30 percent • 40 CFR 63.1157(a): HCL concentration in the gases exiting pickling line shall not exceed 18 ppmv
35 IAC Part 201, Subpart I	• N/A
Streamlining	• N/A
Non-Applicability Provisions	
	• 35 IAC 212.324 is not applicable, pursuant to 35 IAC 212.324(a)(3) as the affected operations are subject to the emission limitations of 35 IAC Part 212, Subpart R • 40 CFR 63 Subparts SSSS and MMMM: Protective oils, as coating, are excluded from the definition of coating under these Subparts • 35 IAC 212.321 and 212.322: Pickling line is not subject pursuant to 35 IAC 266.190
Title I Conditions	

Permit 95010005	• Galvanizing Line #8 – Operating & Emission Limits:
	  • Maximum firing rates of fuel combustion units (the furnace, space heaters, and building and storage area heaters)
	  • Combined natural gas usage (for heaters
	  • Production rates of the melting kettle
	  • Limits for CO, PM/PM_{10}, VOM, NO_x, SO_2 from fuel combustion units (furnace, space heaters, drying oven and storage area heaters, and miscellaneous heaters
	  • PM limits for cleaner section and melting kettle

Work Practices	
Operation and Maintenance Plan	• Pursuant to 40 CFR 63.1160(b), scrubbers for pickling line must be operated in accordance with an Operation and Maintenance plan Cleaning of the scrubber internals

Table B.9 (Section 7.9 of the draft permit)

Emission Unit	
Name	Wastewater Treatment
Emission Control Equipment	N/A
Applicable Emission Standards	
Emission Limits & Requirements	None
Non-Applicability Provisions	
	• 40 CFR 61 Subpar FF: Excluded from operating and control requirements based on the total benzene waste generated at the source is less than 11 tons/year • 40 CFR 63 Subpar QQ: 40 CFR 61 Subpart FF does not have reference to Subpart QQ
Compliance Procedures	
	None

Table B.10 (Section 7.10 of the draft permit)

Emission Units	
Name	Boilers and associated Cooling Tower
Emission Control Equipment	Flue Gas Recirculation (planned for Boilers 11 and 12)
Applicable Emission Standards	
Emission Limits & Requirements	• 35 IAC 212.458(b)(9): For Boilers #11 and #12, emissions of PM_{10} shall not exceed 0.075 lbs/mmBtu of heat input from burning of COG • 35 IAC 214.421: For Boilers #11 and #12, emissions of SO_2 shall not exceed the limits calculated from the equations for multiple burning fuels • 35 IAC 212.123(a): For Boilers #11 and #12, opacity shall not exceed 30 percent • 35 IAC 212.122(a): For Boiler #1, opacity shall not exceed 20 percent • 35 IAC 216.121: CO emissions shall not exceed 200 ppm
35 IAC Part 201, Subpart I	• Possible violation for state standards during startup • Possible violation for state standards during malfunction and breakdown
Streamlining	• N/A
Non-Applicability Provisions	
	• 35 IAC 212.324 is not applicable pursuant to 35 IAC 212.324(a)(3), as the boilers are subject to the limitations of 35 IAC Part 212, Subpart R • 35 IAC 217.141 is not applicable to Boilers #11 and #12 because each boiler's heat input capacity is less than 250 mmBtu/hr • 35 IAC 217.121 is not applicable to Boiler #1because the used fuel is not a "fossil fired fuel" as defined by 35 IAC 211.2425 • 40 CFR 60, Subpart Da: Boiler #1 is not an electric utility steam generating unit • 40 CFR 60 , Subpart Db, PM standards: Boiler #1 does not fire solid or liquid fuels • 40 CFR 60 , Subpart Db, NO_x standards: Boiler's #1 annual capacity factor for natural gas is 10 percent or less • 35 IAC 219.986(d): Cooling tower does not cool process water • 40 CFR 63, Subpart Q: Cooling tower does not use chromium-based water treatment chemicals
Title I Conditions	

Permit 06070023	• Galvanizing Line #8 – Operating/Production Limits:
	  • Maximum hourly firing rate of Boiler #1
	  • Maximum hourly design BFG input of Power Boiler #1
	  • Annual natural gas and BFG fuel usage for Power Boiler #1
	  • Limits for the emission rates (lbs/mmBtu) of Power Boiler #1
	  • Limits on emissions for Power Boiler #1
	  • Dissolved solids content in the circulated water in the cooling tower
	  • Limits on PM emissions from the cooling tower

Table B.11 (Section 7.11 of the revised CAAPP permit)

Emission Unit	
Name	Internal Combustion Engine
Emission Control Equipment	None
Applicable Emission Standards	
Emission Limits & Requirements	• 35 IAC 212.458(b)(7): Emissions of PM_{10} shall not exceed 0.01 gr/scf • 35 IAC 212.123(a): Opacity shall not exceed 30 percent • 35 IAC 214.301: SO_2 emissions shall not exceed 2000 ppm
35 IAC Part 201, Subpart I	• N/A
Streamlining	• N/A
Non-Applicability Provisions	
	• 35 IAC 212.324 is not applicable pursuant to 35 IAC 212.324(a)(3), as the affected engine is subject to the limits of 35 IAC Part 212, Subpart R • 35 IAC Part 217 is not applicable because engines are not addressed by Part 217 • 35 IAC 212.321 is not applicable, an engine does not have a process weight rate as defined in 35 IAC 211.5250 • 35 IAC 216.121, the engine is not by definition a fuel combustion emission unit • 40 CFR 63 Subpart ZZZZ because the engine is not a spark ignition engine • 40 CFR 60, Subpart IIII: engine was manufactured before 2006 and not modified thereafter
Title I Conditions	
Permit 00060003	• Limits on emissions • Limits on hours of operation per year

Table B.12 (Section 7.12 of the draft permit)

Emission Unit	
Name	Gasoline Storage and Dispensing
Emission Control Equipment	Vapor Balance System on Larger Tanks
Applicable Emission Standards	
Emission Limits & Requirements	• 35 IAC 219.122(b): each tank shall be equipped with a submerged loading • 35 IAC 219.583(c)(1): control system for vapor displacement during filling and equipped with pressure/vacuum relief valves • 35 IAC 219.585(a): requirements and the limits on the pressure of gasoline being dispensed
35 IAC Part 201, Subpart I	• N/A
Streamlining	• N/A
Non-Applicability Provisions	
	• 40 CFR 60 Subpart Kb; 35 IAC 219.121; and 35 IAC 219.122(a): size of the storage tanks less than applicability thresholds established by these standards • 35 IAC 219.581 and 219.582: by definition not part of bulk gasoline plant or bulk gasoline terminals • 35 IAC 219.301: organic material (gasoline) is not used by the tanks for production/operating purposes but temporary stored at these tanks

Table B.13 (Section 7.13 of the draft permit)

Emission Unit	
Name	Fugitive Dust
Emission Control Equipment	None
Applicable Emission Standards	
Emission Limits & Requirements	• 35 IAC 212.309, 212.310, 212.312: fugitive operating program • 35 IAC 212.316: a) no more than 10 percent opacity from a storage pile; b) no more than 5 percent opacity from a roadway or parking area; c) no more than 20 percent opacity from other fugitive activities
35 IAC Part 201, Subpart I	• N/A
Streamlining	• N/A
Non-Applicability Provisions	
	• N/A
Title I Conditions	
Permit 95010001	• Annual PM/PM_{10} emission limit from all roadways at the source
Work Practices	
Operating Program	• Fugitive Dust Operating Program pursuant to 35 IAC 212.309

Attachment C: Detailed Description And Explanation of Proposed Periodic Monitoring

C.1 Material Handling Operations (Section 7.1 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for material handling operations would include the following:

- Monthly inspection of new coke conveyor system

- Quarterly inspection of control measures, including the following:
  - For all units, confirm proper operation of unit and control measures
  - For crushers and pulverizers, also confirm choke feeding
  - For conveyors, also confirm that covers and dribble pans are present and in good condition
  - For baghouses, check differential pressure, dust removal system, compressed air system, bag conditions, fan condition and structural components

- Annual observations of opacity

- Emissions testing
  - For selected emission units controlled by baghouses, "baseline" testing of PM emissions with concurrent opacity observations

- Recordkeeping
  - Records for implementation of control measures
  - Records for maintenance and repair activities
  - Records for malfunctions resulting in excess emissions

- Reporting
  - Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)
  - Quarterly and Annual Reports, as required by 35 IAC 212.316(g)(1) and (5)

b. Justification for Periodic Monitoring for Material Handling And Processing Operations

To provide Periodic Monitoring for the material handling and processing operations, the permit would impose various requirements on the source for inspections, observations for visible emissions and opacity, testing of emissions, recordkeeping, and reporting. As necessary to provide Periodic Monitoring for these operations, the permit would go beyond and supplement the compliance procedures established by applicable rules. The combination of requirements selected as Periodic Monitoring is appropriate given the nature of these emission units and the associated emission control measures. Particulate emissions from handling many of the bulk materials used at this facility, including coke, iron ore pellets, and limestone, are minimal or readily controlled by the nature of the material and the nature of the equipment handling them. For handling of certain other materials or processing of materials, various practices that are simple, readily implemented and reliable are available to reduce the amount of dust that is generated or is emitted and comply

with applicable standards and permit limits.

The primary approach to Periodic Monitoring for these operations would be recordkeeping to document that the associated control measures are being implemented properly so as to comply with all applicable emission standards and control requirements. This recordkeeping is facilitated as some material handling operations, like the new coke conveyor, are sources of fugitive particulate matter and must be operated in accordance with a formal Operating Program for control of emissions of fugitive dust pursuant to 35 IAC 212.309. (See also Section 7.13 of the permit.) This recordkeeping is facilitated as emission control equipment is used on other material handling operations, such as the material handling systems that support steelmaking operations. The state rules that apply to these operations, 35 IAC 212.324(f) and (g), require practices for these operations, with associated recordkeeping, to assure proper operation of emission control equipment, including regular inspection of control equipment and expeditious repairs, unless the operation is shutdown.

1. Fugitive particulate matter material handling units (units without stacks)

State Emission Standards

Limits for opacity (35 IAC 212.316(b)/Condition 7.1.3(b) and 35 IAC 212.316(f)/Condition 7.1.3(c)) -stack emissions and fugitive emissions) – The required Operating Program for control of fugitive dust, pursuant to 35 IAC 212.309, would serve to address the opacity standards that apply to fugitive emissions from material handling and processing operations as this Program must be designed to significantly reduce fugitive particulate matter emissions from subject operations. Among other things, this Operating Program must identify the practices that the source is using to control fugitive emissions from operations such as conveyors, screens, crushers, and conveyor transfer points. Pursuant to 35 IAC 212.310(e), this includes a detailed description of the "…management practices utilized to achieve compliance with this Subpart [35 IAC Part 212, Subpart K] including an engineering specification of particulate collection equipment, application systems for water, oil, chemicals and dust suppressants utilized and equivalent methods utilized." Pursuant to 35 IAC 212.316(g)(1) and (2), the source must keep records documenting implementation of its Operating Program. The Periodic Monitoring for these operations would also require the source to conduct periodic inspections, with formal observations for visible emissions and/or opacity for these operations. These inspections will provide further verification that the material handling operations and associated control measures are being properly operated. For conveyors and transfer points, this would include confirmation that covers and dribble pans are in place. For crushers and pulverizers, these inspections would confirm that choke feeding is present. These inspections will also provide direct verification of compliance with applicable emission standards that are expressed in terms of opacity, as well as verify that the provisions in the Operating Program ensure compliance with these standards. To address compliance with applicable opacity standards, these inspections would include formal observations for visible emissions conducted in accordance with Method 22. If visible emissions are observed from unit(s), the source must conduct formal observations for opacity in accordance with Method 9 for those unit(s) to provide a direct verification of compliance with the applicable emission standards. Given the nature of these units and the associated control measures and the fact that these inspections and observations are a secondary element of the Periodic Monitoring for these units,

these inspections would generally be required to be conducted on a quarterly basis. Inspections would be required more frequently for the new coke conveyor system, which is subject to more stringent requirements. This combination of provisions provides a structured approach to these operations that is sufficient to serve as Periodic Monitoring.

Fugitive dust control program (35 IAC 212.309(a)/Condition 5.3.2) – This standard requires that emissions of material handling operations that are "fugitive dust" emission units that at the facility be controlled in accordance with a "Operating Program" prepared by the source that is designed to significantly reduce fugitive particulate matter emissions from the facility. Among other things, this Operating Program must identify the practices that the source is using to control emissions of fugitive dust from the various operations. Pursuant to 35 IAC 212.310(e), this includes a detailed description of the "…management practices utilized to achieve compliance with this Subpart [35 IAC Part 212, Subpart K] including an engineering specification of particulate collection equipment, application systems for water, oil, chemicals and dust suppressants utilized and equivalent methods utilized." Pursuant to 35 IAC 212.316(g)(1) and (2), the source must keep records documenting implementation of its Operating Program. Pursuant to 35 IAC 212.316(g)(5), the source must report deviations from this Program on a quarterly basis. As detailed recordkeeping is required for implementation of the Program, as well as lapses in implementation, the Periodic Monitoring for this requirement is sufficient.

Limit on PM (35 IAC 212.321/Condition 7.1.3(d) and 35 IAC 212.322/Condition 7.1.3(e)) –These state rules, commonly referred to as the "process weight rate" rules, limit the mass or amount of PM emissions from the affected operations, in pounds per hour, relative to the amount of material handled or processed by an operation or its "process weight rate" (PWR). The Periodic Monitoring to address other applicable state emission standards would serve to provide Monitoring to address these rules. Given the nature of these operations and the PWR rules, the PWR rules do not actually constrain the PM emissions of the units as a practical matter. The lowest allowable emission rate for PM set by the PWR rules for an emission unit or group of similar units ducted to a common control system is 0.55 pounds per hour.[55] Accordingly, the Periodic Monitoring for other applicable state emission standards also serves as Monitoring for the PWR rules.

2. "Other" material handling emissions units (emission units with stacks)

PM (stack emissions) – The Periodic Monitoring for the subject emission units that are controlled with baghouses, i.e., the coal crushers and material handling operations in the steelmaking area, would also require the source to conduct periodic internal inspections of the baghouses that are used to control emissions from these units. These inspections would address the conditions of the filter bags and other features of the baghouses that are relevant to proper operation, such as the bag cleaning systems and dust removal systems. These inspections will provide further verification for the proper operation of these baghouses, as well as identify the need for preventative maintenance or repair to the baghouses to maintain proper operation. Given the given the nature of materials

[55] Given the amount of material handled by the subject emission units, 35 IAC 212.321 and 212.322 would set an allowable emission rate for particulate matter (PM) that is much greater than the minimum 0.55 pounds per hour allowed. For example, for existing emission units, for a nominal PWR of 100 ton per hour, 35 IAC 212.322 would set an allowable PM emission rate of 51.2 pounds per hour. For new emission units, for a PWR of 100 tons per hour, 35 IAC 212.321 would set an allowable PM emission rate of 29.5 pounds per hour.

handled by the emission units that are controlled by baghouses, these inspections would be required to be conducted on a quarterly basis. This frequency should enable deterioration in the components of the baghouses for subject units to be identified and appropriately addressed before any deterioration could lead to actual problems in the actual operation of the baghouses.

The Periodic Monitoring for the material handling operations equipped with baghouses, which have stack emissions, would also include provisions for the source to conduct emissions testing for certain operations. These measurements for particulate matter emissions would provide direct verification of compliance with the substantive standard that applies to the stack emissions from the subject operations, e.g., PM_{10} emissions of no more than 0.01 gr/scf, pursuant to 35 IAC 212.458(b)(7). Given the nature of the subject operations and the use of baghouses to control emissions, only "baseline" emission testing is required within 30 months of the effectiveness of the permit. Emission testing is only one element of Periodic Monitoring for these emission units and a single test is sufficient to verify that the baghouses are capable of complying with applicable emission standards if properly operated, which would be confirmed in day-to-day practice by the other elements of Periodic Monitoring for the units.[56]

Limits for opacity from fugitive emissions (35 IAC 212.316(b)/ Condition 7.1.3(b)) – Periodic observations for visible emissions, followed by observations for opacity is visible emissions are present, would serve as Periodic Monitoring, in a manner similar to that for fugitive particulate matter emission units.

Note: The stack emissions from these units readily comply with 35 IAC 212.123(a), which limits opacity to 30 percent. The Periodic Monitoring for the stack emissions of PM and fugitive PM emissions, if any, will also serve to address 35 IAC 212.123(a).

Limit on PM (35 IAC 212.321/Condition 7.1.3(d) and 35 IAC 212.322/Condition 7.1.3(e)) –As already discussed, these state "process weight rate" rules do not actually constrain the PM emissions of the units as a practical matter. Accordingly, the Periodic Monitoring for other applicable state emission standards will also serve as Monitoring to assure compliance with the PWR rules.

Permit Limits (Construction Permit 95010001)

Limits on PM emissions (Condition 7.1.8(b)) - The Periodic Monitoring for the operation of the emission units that are subject to limits on the amount of PM emissions would build upon the Monitoring related to other applicable requirements. That Monitoring would verify proper operation of the units and serve to confirm that established emission factors for such units are appropriately used to determine the amount of emissions. For example, as already discussed, those Periodic Monitoring requirements would include recordkeeping related to proper operations of

[56] In addition, the PM emissions from certain material handling operations, such as the BOF Hopper (baghouse) would be negligible. The PM emission factor and emission limit for this operation, which were established in a PSD permit (Construction Permit No. 95010001), were developed using Section 11.2.3-3 of AP-42 (subsequently moved to Section 13.2.4 of AP-42.) The emission factor and limit were incorporated from an existing construction permit, relying on the associated application. The monitoring and recordkeeping requirements provided in Condition 7.5.6(a) are sufficient. In addition, compliance with the PM10 emission limit is addressed by the production limits in Conditions 7.5.6(a)(i) and (ii) (Construction Permit No. 95010001) and the requirement to keep production records.

control equipment to comply with emission standards for the rate of PM emissions (gr/scf). Periodic inspections and observations for visible emissions or opacity would also be required. Testing of PM emissions for selected material handling operations, including several operations that are subject to permit limits, would also be required to verify that these operations comply. The presence of limits set in permits on the amounts of PM emissions from such units does not necessitate additional or more frequent Monitoring for the operation of these units to address their emission rates. Rather, as emission of the units would be calculated using emission factors, the other information needed to determine actual emissions are those emission factors and the throughput or amount of material that is handled, with the actual PM emissions being the product of the applicable emission factor and the throughput or activity of a unit. The Periodic Monitoring specifically for permit limits on the amount of emissions would entail the necessary records for the emission factors that are used to determined PM emissions and the throughput of the subject units. The Monitoring would also include recordkeeping for the actual emissions, calculated from this data, as needed for direct comparison to the established permit limits.

When emission factors are used to calculate emissions, the critical element of the calculations is the emission factors that are selected for use. The revised CAAPP permit would require the Permittee to keep a file containing the PM emission factor(s) that it uses to determine actual emissions of material handling operations for purposes of determining compliance with permit limits. These records would also have to include the basis or supporting documentation for the selected factor(s). This would assure that the selected emission factors are memorialized in writing, along with factual basis for the emission factors. This would make the relevant supporting information available to the Illinois EPA personnel as well to the source's staff, both present and future, for their review and use. The permit would also accommodate changes to "established" factors by the source if new information may become available.[57] Changes to these "established" emission factors would also be required to be documented, with explanation and supporting data, and linked to a particular date.[58] A change to the established emission factor that the source uses would be mandatory, with adoption of a new established emission factor, if it is determined that the current emission factor would understate actual emissions.[59]

3. Permit for the New Coke Conveyance System (Construction Permit 06070088)

Operational Limit (Condition 7.1.6(a)) - The permit limits the amount of coke handled by the new

[57] The most obvious situation in which an established emission factor must be reevaluated is when emission testing is conducted for the emission unit that is subject to the permit limit. Other circumstances would include emission testing of similar emission units, as might occur either at the facility or at other units operated by US Steel, when testing at those other units was the basis of the current factor. Emission factors would also have to be reevaluated if USEPA revises its Compilation of Air Pollutant Emission Factors, AP-42, and it was the basis of the current factor.

[58] The date that the emission factor used for a particular unit is changed may be significant. A change in an emission factor can result from a change in an emission unit or associated control equipment or control practices, so that the new emission factor would supersede the former factor on the date when the underlying change to the unit was made. A change in an emission factor can also reflect the availability of new information and better data. In such case, a change to the emission factor may have retroactive implications for the emissions of the unit, especially if the former emission factor understated actual emissions of a unit.

[59] The relevant criterion for a mandatory change to an established emission factor is if the factor understates actual emissions. The permit would not preclude use of emission factors that overstate actual emission factors. In particular, the source need not adjust the established emission factor after every emission test if the established emission factor has conservatively been set at a level above all the test results, e.g., at the level of the applicable emission standard.

coke conveyance system, which transfers coke produced by Gateway Energy to the facility. Periodic Monitoring for this requirement would be provided by recordkeeping for the amount of coke that is handled. This is appropriate as this limit addresses the throughput of this system on an annual basis. In addition, reliable throughput data for this system is also important to the source as it must pay for the coke that it receives from Gateway Energy.

Operational Requirements (Condition 7.1.5(d)(i)(B)) - The permit requires that the day bins that are part of the new coke conveyance system must be vented to a control device that is operated in accordance with good air pollution control practice. Periodic Monitoring for this operational requirement is provided as this requirement overlaps applicable regulatory requirements of 35 IAC 212.324(f) and (g).

Prohibition on Visible Emissions (Condition 7.1.5(d)(i)(A) and (ii)) – The permit prohibits visible fugitive emissions from the conveyors and the day bins that make up the new coke conveyance system. Observations for the presence of visible emissions from these units to address this requirement may be readily conducted. The applicable procedure, Method 22, provides that such observations may be made by any individual that is capable of discerning the presence of visible emission, unlike Method 9, which requires that observations for opacity to be made by an individual who has been trained and certified to make such observations. Accordingly, the Periodic Monitoring for this requirement would be provided by the Monitoring for the applicable state opacity standards.

Limit for PM/PM_{10} Emission Rate (Condition 7.1.5(d)(iii)) - The permit limits PM/PM_{10} emissions from the control devices on the new coke conveyance system to 0.005 gr/scf. The emission testing for this baghouse, as required by the construction permit, to verify compliance with this permit limit and 35 IAC 212.458(b)(7) confirms compliance, with filterable PM emissions that are less than 0.1 pounds per hour.[60] As this limit is in the same terms as 35 IAC 212.458(b)(7) (i.e., gr/scf) and is applicable to a filter or baghouse, the Periodic Monitoring for this limit would be provided by the Monitoring for 35 IAC 212.458(b)(7).

Limits on amount of PM Emissions (Condition 7.1.6(a)(ii)) – As is generally the approach for permit limits on the amount of emissions from emission units, the Periodic Monitoring for these permit limits for PM/PM_{10} emissions from the new coke conveyance system would build on the Monitoring related to other applicable requirements for this system. To specifically address the permit limits, relevant records would be required for the throughput of this system, the emission factors used by the Permittee to calculate emissions from the system, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for compliance with these permit limits, particularly as emissions of the system must be well controlled with enclosure and baghouse and visible emissions are not allowed.

[60] Data from emission testing of the baghouses in April 2010 follows:

Emission Test Data for the Coke Conveyance System Baghouses					
PM (filterable)			PM (filterable and condensable)		
Measured (gr/scf)	Allowed* (gr/scf)	Margin	Measured (gr/scf)	Allowed* (gr/scf)	Margin
0.00052	0.005	85%	0.0021	0.005	58%

* Emission rate set by the construction permit. The applicable state standard limits emissions of PM (filterable) to 0.01 gr/scf.

C.2 Coke Production (Coke Oven Batteries) (Section 7.2 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for operations at the coke oven batteries would include the following:

- ✓ Opacity Monitoring
  - For each combustion stack, continuous opacity monitoring

- ✓ Observations for Visible Emissions and Opacity
  - For charging operations, daily observations for the duration of visible emissions
  - For oven doors, topside port lids and offtakes of ovens, daily observations for leaks (visible emissions)
  - For pushing operations, daily opacity observations for at least four consecutive pushes, with opacity observations for all ovens conducted at least every 90 days
  - For the collecting mains on the batteries, daily observations for leak

- ✓ Inspections
  - For the quench towers, monthly inspection for damaged or missed baffles
  - For the pushing operation, monthly inspection of the capture system

- ✓ Sampling and Analysis of Quench Water
  - Sampling of the total dissolved solids concentration in the quench water at least five days per week
  - Weekly samples and analyses of quench water for total dissolved solids

- ✓ Emission Testing Requirements
  - For coke pushing, testing of PM emissions from the mobile scrubber system at least every 30 months
  - For the coke oven combustion stacks, testing of emissions of PM, VOM, CO, and NO_x in the year prior to expiration of this permit

  Note: In addition, for the West Quench Station, after construction of the new low-emission quench tower is complete, testing of particulate emissions is required within two years of initial start up of the new tower

- ✓ Recordkeeping
  - Engineering specifications for flare systems
  - Malfunction and breakdown events
  - Records of maintenance activities
  - Production/operating data of different activities

- ✓ Reporting
  - Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)
  - Quarterly and semiannual compliance reports (Subpart CCCCC)

b. Justification for Periodic Monitoring for Coke Oven Batteries

To provide Periodic Monitoring for the two existing coke oven batteries, the permit would impose various requirements on the source for observations for visible emissions or leaks, observations of opacity, inspections, sampling and analysis of quench water, emission testing, recordkeeping, and reporting. As necessary to provide Periodic Monitoring, the requirements imposed by the permit would go beyond and supplement the compliance procedures established by applicable rules.

For the coke oven batteries, the applicable emission standards that are of particular concern are the NESHAP standards that address "coke oven emissions" and loss of coke oven gas (COG) directly to the atmosphere. These NESHAP standards set rigorous requirements to minimize these emissions given the potential threat they may pose to public health. Careful operation and maintenance of coke oven batteries is necessary to comply with these requirements. However, the relevant NESHAP standards also establish rigorous compliance procedures for these operations of concern and for other operations at the batteries that are subject to NESHAP standards. 40 CFR 63 Subparts L for Coke Oven Batteries addresses emissions from charging, leaks from coke oven doors, topside port lids, and offtake systems, and bypass/bleeder stacks. The NESHAP for Coke Ovens: Pushing, Quenching, and Battery Stacks, 40 CFR 63 Subpart CCCCC, addresses pushing (including soaking), quenching and the battery stacks. The compliance procedures of these NESHAP provide a solid foundation for the required Periodic Monitoring for the coke oven batteries at the facility. For example, these compliance procedures require that the source conduct daily performance tests for certain subject operations. In addition, the procedures of the NESHAP are an essential component of certain work practice standards under the NESHAP. For example, the "emission standard" for leaks in collection mains, 40 CFR 63.308, is a daily inspection of the collecting mains for the presence of leaks by USEPA Method 303, with temporary repairs made as soon as possible and long-term repairs initiated and completed as expeditiously as possible. As a general matter, given the central nature of the applicable NESHAP for control of emissions from the coke oven batteries and the rigorousness of the compliance procedures in these NESHAP, it is appropriate to generally rely on those compliance procedures. However, as certain standards and limits set by applicable state rules and construction permits are not matched by NESHAP standards, the Periodic Monitoring for the coke oven batteries would supplement the compliance procedures in the NESHAP.

1. Coke oven battery charging and leaks

Federal Emission Standards (40 CFR 63 Subpart L)

Charging and Leaks (40 CFR 63.304(b)(2)(iv)/Condition 7.2.3-1(b), 40 CFR 63.304(b)(3)(ii)/ Condition 7.2.3-2(c), 40 CFR 63.304(b)(2)(ii)/Condition 7.2.3-3(c), 40 CFR 63.304(b)(2)(iii)/ Condition 7.2.3-4(c), 40 CFR 63.307 /Condition 7.2.3-8(a) and /40 CFR 63.308/Condition 7.2.8-1(b)) - This NESHAP sets standards for emissions from charging of coke ovens and from leaking doors, lids, offtakes and collecting mains on coke ovens. The duration of visible emissions from charging and the percentage of leaking components are limited, on a 30-day rolling logarithmic average and 30-day arithmetic rolling average, respectively. Daily performance tests must be conducted to collect the data to confirm compliance with these limits, and calculate 30-day rolling averages for comparison to the relevant limits. Collection mains must be inspected on a daily basis

and any leaks promptly repaired. Given the nature of these standards, the compliance procedures in the NESHAP, as they address frequency and nature of measurements to determine compliance with these standards, are appropriately considered part of the standards and should be considered to be sufficient as Periodic Monitoring. In this regard, 40 CFR 63.309 (f) specifically provides that compliance with 40 CFR 63 Subpart L shall not be determined more frequently than the schedule for performance tests specified in 40 CFR 63.309. In addition, 40 CFR 63.306 requires the source to develop and implement a work practice plan for control practices for prevention of leaking components. Implementation of the relevant corrective actions pursuant to the plan is required if two independent exceedances of the standard for a particular category of emission point occur in a six-month period (40 CFR 63.306(c)). This requirement further reinforces the adequacy of the compliance procedures of this NESHAP as being sufficient to address these NESHAP standards.

Lowest Achievable Emission Rate (LAER) Limits for Battery B

Charging (Condition 7.2.3-1(c)) – The applicable LAER limit for charging, which limits the duration of five consecutive charges to 55 seconds (average 11 seconds per charge) is superficially similar to the relevant NESHAP standard, 40 CFR 63.304(b)(2)(iv), which limits the duration of visible emissions from charging to no more than 12 seconds per charge. However, as the NESHAP limit would apply on a 30-day average, this LAER limit, which applies to any five consecutive charges, may in practice be more stringent than the NESHAP standard. Accordingly, observation practices and collection of data to address this state standard would be required in conjunction with the daily performance tests or observations required to be conducted by the NESHAP. Because these observations would be conducted on a daily basis, they should be sufficient to identify deterioration of the control practices for charging and enable corrective actions to be taken for control practices before violations would occur. As such, these daily observation would be sufficient for the Periodic Monitoring for this limit.[61]

Limits for Leaks (Conditions 7.2.3-2(b), 7.2.3-3(b) and 7.2.3-4(b)) - The applicable LAER limits for the percentages of doors, lids and offtakes that are leaking, which were established in the late seventies, are numerically less stringent than the applicable NESHAP standards, 40 CFR 63.304(b)(3)(ii), (b)(2)(ii) and (b)(2)(iii)(2)(iv), respectively. In particular, the LAER limits the percentage of leaks to no more than 5, 1 and 4 percent compared to 3.3, 0.4 and 2.5 percent, respectively. However, given the 30-day averaging period associated with these NESHAP standards, the NESHAP standards are not necessarily more stringent in all cases. Accordingly, Periodic Monitoring would be required for these state standards in a manner similar to the Monitoring for the LAER limit for charging, as discussed above.

State Emission Standards (Coke Oven Battery A)*

* The following state standards are in the same terms as the LAER limits that apply to Battery B

[61] In the event that a required daily observations does identify a violation of this limit (or other required daily observation identifies a violation of a limit or standard), the Permittee may of course conduct additional observations on that day to provide further information on its compliance status. Those observations might indicate that the initial observation may have been an aberration or that the corrective actions that were implemented have eliminated the violation. Thos observations could also confirm that a violation is present and that further corrective actions are needed to restore compliance. If the source elects to conduct such "supplemental" observations on a particular day, the records for those supplemental observations would also be required records for purposed of Periodic Monitoring.

and numerically less stringent, i.e., higher. Accordingly, these standards are only of practical concern for Battery A, which is not subject to and constrained by LAER limits.

Standard for Charging (35 IAC 212.443(b)(1)(A)) /Condition 7.2.3-1(a) – The applicable state standard for charging limits the duration of visible emissions from five consecutive charges to 125 seconds. This standard appears substantially less stringent than the applicable NESHAP standard, 40 CFR 63.304(b)(2)(iv), which limits the duration of visible emissions from charging to no more than 12 seconds per charge (equivalent to at most 60 seconds for five consecutive charges). However, since the NESHAP standard applies on a 30-day average and this state standard would apply to any five consecutive charges, it could occasionally be more stringent than the NESHAP limit. Accordingly, daily observations would be required for Battery A to address this state standard, in a manner similar to the daily observations required for Battery B. These daily observation would also be sufficient as the Periodic Monitoring for this standard.

Standards for Leaks (35 IAC 212.443(d)/Conditions 7.2.3-2(a), 35 IAC 212.443 (e)/Condition 7.2.3-3(a) and 35 IAC 212.443 (f)/Condition 7.2.3-4(a))) – The applicable state standards for the percentages of doors, lids and offtakes that are leaking are also numerically less stringent than the applicable NESHAP standards, 40 CFR 63.304(b)(3)(ii), (b)(2)(ii) and (b)(2)(iii)(2)(iv), respectively. In particular, the state standards limit the percentage of leaks to no more than 10, 5 and 10 percent compared to 3.3, 0.4 and 2.5 percent, respectively. However, given the averaging periods associated with the NESHAP standards, the NESHAP standards are not necessarily more stringent in all cases. Accordingly, Periodic Monitoring would be required for these standards in a manner similar to the Monitoring for the LAER limits for charging, as discussed above.

2. Coke oven battery pushing

Federal Emission Standards

40 CFR 63 Subpart CCCCC for Control Devices for Pushing (40 CFR 63.7290(a)(4)/ Condition 7.2.3-5(c)) – This NESHAP limits the "stack emissions" from pushing to 0.04 lb PM per ton of coke pushed. For the mobile scrubbers at this facility, which are "pushing control devices" pursuant to this NESHAP, the NESHAP requires continuous operational monitoring (40 CFR 63.7291). The NESHAP also requires establishes work practices to assure that these scrubbers are properly maintained and operated. Finally, the NESHAP requires testing for PM emissions each of the scrubber cars for pushing to be conducted every 30 months. As identical limits apply to these control devices under state rules and the compliance procedures of the NESHAP appropriately address the day-to-day operation of the scrubbers, the Illinois EPA will consider whether additional Periodic Monitoring is needed in the revised permit to supplement NESHAP compliance procedures relative to the LAER limit and applicable state emission standard.

Other limits for control equipment (LAER Limits for Battery B and State Emission Standards)

PM limit for control equipment (Condition 7.2.3-5(d)(i) and 35 IAC 212.443(c)(2))/Condition 7.2.3-5(b(i)) – These limits for stack emissions from pushing, 0.04 lb PM per ton of coke pushed, are identical to the applicable NESHAP standard, 40 CFR 63.7290(a)(4). Accordingly, the compliance procedures of the NESHAP should also serve as Periodic Monitoring to address these

limits. In particular, the NESHAP requires the operational monitoring that is appropriate for scrubbers, and is supported by work practices to facilitate proper operation and maintenance of a scrubber.[62] However, the measured PM emissions during recent testing of one of the mobile scrubber cars used for pushing was in excess of 0.04 lb/ton.[63, 64] Because of this violation, additional emission testing would be required for purposes of the scrubbers unless NESHAP testing demonstrates a distinct compliance margin, at least 10 percent. If this compliance margin is not shown, further emission testing could be required at the "mid-point" between NESHAP testing, 12 to 18 months after such testing. This timing would provide for such testing after a period of "wear and tear" on the scrubber. If the source conducts an emission test prior to the mid-point of NESHAP emissions testing, that test would have to show at least a 25 percent compliance margin to be excused from mid-point testing. This greater compliance margin would address the longer time for deterioration in the condition of the scrubber until the next NESHAP test would otherwise be performed. This approach to the emission testing required as Periodic Monitoring for pushing is sufficient as it provides for such testing on a regular basis related to the compliance margin shown by the NESHAP testing.

Opacity standard for control equipment (Condition 7.2.3-5(d)(ii) and 35 IAC 212.443(c)(2)(B)/ Condition 7.2.3-5(b)(ii)) – This standard for captured emissions from pushing, 20 percent opacity, is not accompanied by a parallel NESHAP standard. However, the NESHAP limit for PM emissions and its work practice requirements for scrubbers control systems, along with the associated compliance procedures of the NESHAP, which include operational monitoring, would generally be sufficient to assure routine compliance with this state standard and serve as Periodic Monitoring. To directly verify compliance with this standard, opacity observations would be required on a monthly basis.

Opacity standards for uncaptured emissions (35 IAC 212.443(c)(1)(A) /Condition 7.2.3-5(a)) – This standard for uncaptured emissions from pushing, 20 percent for four consecutive pushes, is not accompanied by a parallel NESHAP standard.[65] However, the NESHAP, 40 CFR 63.7291, establishes work practice requirements for pushing, which also act to provide consistent operation of the pushing control system. Accordingly, the relevant compliance procedures of the NESHAP generally serve to address this state standard and serve as Periodic Monitoring as they require daily observations of opacity. As related to the state standard, the revised permit would require these observations be accompanied by observations and collection of data as needed to determine compliance with this state standard. Because these observations would be conducted on a daily basis, they should be sufficient to identify deterioration of the control practices for charging and enable corrective actions to be taken for control practices before violations would occur. As such,

[62] Opacity monitoring is not practical for these scrubbers because of the interference of water droplets in the exhaust with accurate measurement of opacity. These water droplets would potentially interfere with continuous PM monitoring, if it were feasible for a mobile control systems like these scrubber cars. (In addition to process of pushing coke from the ovens, the scrubber car controls the "hot car," loaded with hot coke as it is moved to a quench station, travelling along in tandem with the hot car.)

[63] The source took corrective actions and subsequent emission testing showed compliance.

[64] The source has suggested that one factor that may have contributing to the violation may been the period of about a year when the facility was idled due to the poor economy.

[65] The NESHAP addresses uncaptured emissions from pushing, requiring daily observations of opacity (40 CFR 63.7291/ Condition 7.2.8(i)). However, "excess opacity" triggers a requirement to initiate corrective action for the pushing control system. The excess opacity itself would not be a violation of any standard.

these daily observation would be sufficient for the Periodic Monitoring for this standard.

Permit Limits

Limits on PM emissions (Condition 7.2.6(b)) - As is generally the approach for permit limits on the amount of emissions from emission units, the Periodic Monitoring for these permit limits for PM emissions from the mobile scrubber cars would build on the Monitoring related to other applicable requirements for this system. To specifically address the permit limits, relevant records would be required for the throughput of this system, the emission factors used by the Permittee to calculate emissions from the system, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for compliance with these permit limits, particularly as emissions of the scrubbers are subject to NESHAP standards and associated NESHAP compliance procedures.

3. Coke Oven Batteries – Quenching

Federal Emission Standards (40 CFR 63 Subpart CCCCC)

Quenching (40 CFR 63.7295/Condition 7.2.3-6(a)) – The NESHAP limits the total dissolved content (TDS) of quench water to 1,100 milligrams per liter. The compliance procedures of the NESHAP (40 CFR 63.7333(f)) specify that samples of quench water shall be collected and analyzed on at least a weekly basis to determine compliance with this standard. Given the nature of quench water, which is obtained from a standard supply and managed in a consistent manner, this minimum frequency of sampling is sufficient to address this standard.

Design Requirement for Quench Towers (Condition 40 CFR 63.7295(b)/Condition7.2.3-6(a)(ii)) – This NESHAP standard sets requirements for the condition and operation of the quench towers (not including emergency quench stations). For example, baffles covering at least 95 percent of the cross-sectional area of the tower are required. Baffles must be washed on a daily basis. As these standards address design and operating requirements for quench towers, the associated recordkeeping is sufficient to address these requirements and serve as Periodic Monitoring.

State Emission Standards

Operational Requirement for Quench Water (35 IAC 212.443(h)(2)/Condition 7.2.3-6(c)) – This state standard limits the TDS content of quench water used in quench towers to 1,200 milligrams per liter, weekly average. Since this state standard is less stringent than the NESHAP standard, both in terms of the numerical limit, the form of the limit, and the averaging time or compliance period, the frequency of sampling specified by state rules is sufficient.[66]

Design Requirement for Quench Towers (35 IAC 212.443(h)(1)/Condition 7.2.3-6(b)) – This state equipment standard for the design of the quench tower, i.e., baffles covering at least 95 percent of the cross-sectional area of the tower, is identical to a design requirement of the NESHAP, 40 CFR

[66] For purposes of 35 IAC 212.443(h)(2), the revised CAAPP permit would include procedures delineating how quench water should be sampled and analyzed for a quench station or quench tower that operates for less than five days in a week. (See Condition 7.2.12(c).)

63.7295(b). Accordingly, the relevant compliance procedures of the NESHAP will directly serve to address this state standard and serve as Periodic Monitoring.

Permit Limits

Limits on the usage of the conventional quench station (Condition 7.2.6(d)) – These limits restrict the operation of the conventional quench station after the new low-emission quench tower begins operation so that coke is preferentially quenched on this new tower. As these limits address usage of the conventional quench station, the associated recordkeeping is sufficient to address these limits and serve as Periodic Monitoring.

4. Battery Stacks or Coke Oven Battery Combustion Stacks

Federal Emission Standards (40 CFR 63 Subpart CCCCC)

Opacity (40 CFR 63.7296(a)(4)/Condition 7.2.3-7(b)) – This NESHAP limits opacity from each battery stack to 15 percent, daily average. The NESHAP requires continuous opacity monitoring be conducted to address this standard. (This monitoring is necessary as a practical matter as the NESHAP standard is set in terms of average daily opacity.) As this monitoring would directly address the applicable standard, it clearly constitutes sufficient Periodic Monitoring.

State Emission Standards

Opacity Standard for Combustion Stacks (35 IAC 212.443(g)/Condition 7.2.3-7(a)(ii)) - The applicable state standard for opacity, 30 percent, is not accompanied by a parallel NESHAP standard. However, the NESHAP, standard requires continuous opacity monitoring. This opacity monitoring system will collect opacity data on a 6-minute average. As this monitoring would directly address the applicable standard, it clearly constitutes sufficient Periodic Monitoring.

PM Standard for Combustion Stacks (35 IAC 212.443(g)/Condition 7.2.3-7(a)(i)) - The applicable state standard for PM emissions, 0.05 gr/dscf, is not accompanied by a parallel NESHAP standard. However, as the NESHAP requires opacity monitoring, opacity data would be collected on a short-term basis (6-minute averages and hourly-averages) that would also address this standard for PM emissions. The revised permit would include provisions for periodic testing of emissions to directly address this limit. Since such testing was last conducted a number of years ago,[67] initial

[67] In the most recent emission testing for the Battery B Underfire Stack in October 2000, the results of which are provided below, measured PM emissions were less than half the applicable standard, for a compliance margin of over 50 percent:

PM Emissions			Non-Sulfate PM Emissions		
Tested Rates		Allowable Rates	Tested Rates		Allowable Rates
gr/scf	lb/hr	lb/hr*	gr/scf	lb/hr	lb/hr*
0.0466	23.53	25.3	0.0122	6.27	15.4

* Calculated from the tested PM emission rate, in lb/hr, by applying the ratio of the allowable PM emissions, 0.05 gr/scf and 0.03 gr/scf, respectively, and the tested emission rate, in gr/scf.

testing under the CAAPP permit would be required in 24-months. Thereafter, the frequency of emission testing would test on the compliance margin shown in the previous tests. If there is not an ample compliance margin, emission testing would be required to be repeated in 30 months, i.e., the frequency of the NESHAP, 40 CFR 63 Subpart FFFFF, for units of "high interest." If there is an ample compliance margin, emission testing would be required to be repeated in 60 months, the frequency of 40 CFR 63 Subpart FFFFF, for units of "less interest." This approach to the emission testing required as Periodic Monitoring is sufficient as it provides for such testing on a regular basis related to the compliance margin shown by the prior test.

Permit Limits and Requirements

Limit on non-sulfate PM emissions for Battery B (Condition 7.2.3-7(c)) - Construction Permit 82060043 limits non-sulfate PM emissions of Battery B to 0.03 gr/scf. Periodic Monitoring for this limit is generally provided by the Periodic Monitoring for the state PM standard. To specifically address this limit, emission testing would have to include measurements for both PM emissions and non-sulfate PM emissions.

Limits on emissions from supplemental use of natural gas (Condition 7.2.6(c)) - The Periodic Monitoring for these permit limits for emissions associated with combustion of natural gas to heat the coke oven batteries would rely on standard USEPA emission factors for combustion of natural gas, as published by USEPA in its Compilation of Air Pollutant Emission Factors, AP-42. To specifically address the permit limits, relevant records would be required for the use of natural gas and actual emissions for comparison to applicable limits (See Condition 7.2.9(j)(ii)). This is sufficient Periodic Monitoring for compliance with these permit limits, particularly as they involve emissions from combustion of natural gas.[68]

5. Coke Oven Battery Bypass & Bleeder Stacks and Emergency Flares

Federal Emission Standards

Requirements of 40 CFR 63 Subpart L for Bypass & Bleeder Stacks and Emergency Flares (40 CFR 63.307/ Condition 7.2.3-8) - This NESHAP standard sets requirements for the operation of these aspects of the coke oven batteries. For example, coke oven emissions may not be directly vented from the battery but must be flared if they are not sent to a coke byproducts plant. These flares must be operated to comply with the general requirements of the NESHAP for flares used to comply with the NESHAP. As this standard sets operational requirements for the coke oven batteries, the recordkeeping provisions of the NESHAP are sufficient to serve as Periodic Monitoring for these operational requirements. For example, the NESHAP provides that observations for visible emissions shall be conducted if flare operates for more than 5 minutes (cumulative) during any 2 hour period, observations for visible emissions shall be conducted (40 CFR 63.309(h)(1)/Condition 7.2.8-5).[69]

[68] Compliance with these limits also cannot be verified directly. When natural gas is used, it is only as a supplement to the COG fired to heat the coke ovens. The natural gas only makes up only a portion of the fuel.

[69] It would be inappropriate for the permit to mandate that these emergency flares be operated, when not otherwise needed in response to an emergency, for the specific purpose of conducting observations for visible emissions. Such observations would also not be representative as they would not address actual operation of the flares as would occur

C.3 Coke By-Product Recovery Plant (Section 7.3 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for the coke by-product recovery plant would include the following:

✓ Operational Monitoring

- Continuous monitoring system for H_2S content in COG
- Continuous monitoring of the thermal oxidizer combustion chamber temperature

✓ Leak Detection and Repair

- Instrumental measurement of non-detectable emissions in accordance with 40 CFR Part 61 Subpart L conducted on an annual basis
- Semi-annual inspections and monitoring of the connections and seals on a control system

✓ Inspections

- Semi-annual inspections of control systems in accordance with 40 CFR 61 Subpart L
- Annual maintenance inspections of the control systems in accordance with 40 CFR 61 Subpart L
- For the COG flare, verification of the certain conditions once per shift
- For the COG flare, semi-annual inspections of the flare ignition system and follow-up inspections for maintenance activities

✓ Emission Testing

- For the oxidizer on the COG desulfurization unit, testing of SO_2 and PM_{10} emissions in the year prior to expiration of the CAAPP permit

✓ Observations for Visible Emissions

- For the COG flare, observations for visible emissions on an annual basis

✓ Recordkeeping

- Records of COG flare inspections and opacity observations
- Records of the maintenance and operation of the COG desulfurization unit
- Records of COG production
- Records of the amounts of by-products being produced

✓ Reporting

- Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)
- Semi-annual reports in accordance with 40 CFR 61 Subpart L
- Semi-annual reports in accordance with 40 CFR 61 Subpart V
- Reports on changes in the quantity of total annual benzene waste being generated in accordance with 40 CFR 61 Subpart FF

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during emergencies, which are not planned events.

b. Justification for Periodic Monitoring for Coke By-Product Recovery Plant

1. Coke By-Product Recovery Plant

To provide Periodic Monitoring for the coke byproduct plant, the permit would impose various requirements on the source to verify proper operation of the systems that control emissions or gaseous losses from the various process vessels, tanks and other components that make up this plant. However, as this plant is designed and equipped to operate as a closed continuous chemical process plant, the coke by-product recovery plant is different from most other emission units at the facility. Unlike other emission units at the facility for which emissions are an inherent aspect of operation and stacks are presents to discharge exhaust gases to the atmosphere, the coke by-product recovery plant is designed to operate as a closed system, without direct emissions to the atmosphere from the plant.

For the coke by-product recovery plant, the applicable rules that are relevant are the NESHAP standards that addresses losses directly to the atmosphere. Emissions or losses from process equipments are addressed by the National Emission Standards for Benzene Emissions from Coke By-Product Recovery Plants, 40 CFR 61 Subpart L. Losses from leaking piping, ductwork, valves and other components at the plant are addressed by the National Emission Standards for Equipment Leaks (Fugitive Emissions), 40 CFR 61 Subpart V. To minimize losses or emissions from coke by-product recovery plant, given the potential threat they may pose to public health, these NESHAP standards require coke byproduct recovery plants to operate as closed systems without direct release of emissions to the atmosphere. With consistent operation and maintenance of equipment and control systems, the plant should readily comply with this requirement..

Federal Emission Standards

National Emission Standards for Benzene Emissions from Coke By-Product Recovery Plants (40 CFR 61 Subpart L/Condition 7.3.3(b)) – This NESHAP addresses process vessels, tanks and other operations at coke by-product recovery plants with requirements to prevent direct emissions from these units to the atmosphere. This is commonly achieved with gas blanketing systems that accommodate increases in the amount of material held in vessels and tanks without displacement of vapor laden air to the atmosphere. Inspections and monitoring with portable instruments must be conducted on a semi-annual basis to confirm compliance with these requirements. Instrumental monitoring must also follow work on a control system that entails opening a cover or hatch on the system followed by repressurization of the system. The issue that is posed relative to Periodic Monitoring is whether semi-annual instrumental monitoring to identify leaks under the NESHAP is sufficient or more frequent inspections to identify leaks should be required. While it would seem that more frequent inspections would be better, this is not necessarily the case. For example, carefully conducted inspections every six months may actually be better at identifying leaks than hurried inspections every month.[70] As applied to identification of leaking components at the coke byproduct recovery plant at this facility, in the absence of convincing evidence to the contrary, it is appropriate to proceed based on care in or quality of inspections being more important than the

[70] One factor that USEPA has identified as important to accurately identifying leaks is the time that is available for the technician to monitor each component. With more time, the probe can be kept in better contact with the points or area of potential leaks and that area may be more carefully traversed during the monitoring of components.

quantity of inspections. In addition, there are more effective ways of increasing the effectiveness of a leak monitoring program than by increasing the frequency of inspections, such as simply lowering the concentration of organic material that defines a leaking component.[71] These other enhancements to the leak monitoring program may also be more cost-effective than increasing the frequency of inspection. However, such changes would be beyond the scope of Periodic Monitoring, as they would involve actual changes to the substantive requirements of 40 CFR 61 Subpart L.

National Emission Standards for Equipment Leaks (Fugitive Emissions) (40 CFR 61 Subpart V/ Condition 7.3.3(c)) - This NESHAP addresses valves, pumps, sampling connection, ductwork, flanges and other similar components that are also present at coke by-product recovery plants to address and prevent direct emissions to the atmosphere from leaks by these components. Monitoring with portable instruments must be conducted on a semi-annual basis to identify any leaks with action then taken to repair the component and eliminate the leak. The circumstance surrounding Periodic Monitoring for this standard are identical to those for 40 CFR Subpart L. That is, the information that would be needed to set a schedule for monitoring to identify leaking components that is more frequent than the schedule under the NESHAP is not available. Other changes to the LDAR program , which are outside the scope of Periodic Monitoring, may be more effective in enhancing the performance of the LDAR program.

National Emission Standard for Benzene Waste Operations (40 CFR 61 Subpart FF/Condition 7.3.3(d)) - Coke by-product recovery plants are also potentially of concern due to emissions from benzene contained in their wastewater, as addressed by 40 CFR 61 Subpart FF. The source has tested the wastes at this facility and determined that the total annual benzene (TAB) quantity in the facility's wastes is less than 1 Megagram (Mg) (1.1 tons). Accordingly, the source is not subject to any emission control requirements for benzene pursuant to the NESHAP for Benzene Waste Operations, 40 CFR 61 Subpart FF. The control requirements of this NESHAP would only apply if the facility's TAB increased to 10 Mg (11 tons) or more. For a source whose annual TAB is less than 1 Mg, the NESHAP requires recordkeeping related to its TAB determination and to identify any process change at the facility that could increase the source's TAB to 1 Mg or more. The occurrence of such a change at the facility would require a report to the Illinois EPA and a new determination of the facility's TAB, addressing the changes that have occurred. If the new determination shows that the facility's TAB is 1 Mg or more, determinations of the facility's TAB must then routinely be conducted on an annual basis or in the event of process changes at the facility that could increase its TAB to 10 Mg or more. The relevant compliance procedures in this NESHAP appropriately address the circumstances of this facility and need not be supplemented with additional requirements as part of Periodic Monitoring.

2. Coke Oven Gas Flare

[71] There are several dimensions to leak detection and repair programs, including the frequency of inspections, the definition for a leak, and the care with which the specified monitoring method, USEPA Method 21, is followed. When USEPA pursues "enhanced LDAR" programs in resolution of enforcement actions, the focus is on aspects of the LDAR program other than frequency of inspection. For example, for sources that are subject to the NSPS definition of a leak, 10,000 ppm, the lower NESHAP definition of a leak will be required, 500 ppm. Initial attempts at repairs may be required at levels below those are defined as a leak, e.g. 200 ppm. Periodic internal or third party audits may be required.

State Emission Standards

Opacity standard (35 IAC 212.123(a)) – This state standard limits the opacity of emissions from the COG flare to 30 percent. Periodic Monitoring is not needed to address this requirement as the CAAPP permit would prohibit visible emission from the COG flare. (See Condition 7.3.6(d).) The CAAPP permit would also establish work practices for COG flare to assure proper operation of the flare, including inspections of the each shift to confirm proper operation and annual maintenance and repair inspections. (See Condition 7.3.9(e).) Lastly, the CAAPP permit require that the source conduct observations for visible emissions of the flare on at least an annual basis (See Condition 7.3.8(c).) These requirements will serve to assure that the opacity from the flare will not exceed 30 percent, especially as visible emissions from the flare are prohibited.

SO_2 standard (35 IAC 214.301) – Periodic Monitoring is not needed for this state standard, which limits the concentration of SO_2 in the exhaust from the COG flare to no more than 2000 ppm. This standard allows SO_2 emissions from combustion of COG that are much greater than the potential SO_2 emissions. In particular, after accounting for the increase in exhaust flow from combustion air when COG is combusted, this standard would limit the sulfur content of COG to 10,000 ppm.[72] However, the sulfur content of COG is limited to about 5000 ppmv (see Condition 7.3.7(d)(i).). This difference between the SO_2 emissions allowed by 35 IAC 214.301 and potential emission is not unusual as 35 IAC 214.301 is a generic standard was not developed to specifically address SO_2 emissions of combustion of COG.

3. Coke Oven Gas Desulfurization System

Permit Limits (Construction 06070022)

Permit limits for PM_{10} and SO_2 emissions (Condition 7.3.7(e)(i)) – The construction permit for the COG Desulfurization System sets limits for PM_{10} and SO_2 emissions from the thermal oxidizer that combusts tail gas from the Claus Sulfur Recovery Unit that is part of this new system. As is generally the approach for permit limits for the amount of emissions from an emission unit, the Periodic Monitoring for these permit limits for the COG Desulfurization System would build on the Monitoring related to other applicable requirements related to COG, which entail monitoring for the sulfur content of COG and monitoring for the amount of COG that is processed by the COG Desulfurization System.[73] The initial emission testing for the thermal oxidizer, as required by the construction permit, was conducted in December 2010, and confirms compliance with these permit limits.[74] The permit would also explicitly provide for testing for emissions of PM_{10} and/or SO_2 to

[72] As combustion one scf of COG would produce about five scf of exhaust , the concentration of SO_2 in the exhaust of the flare would be one fifth the concentration of sulfur in the unburned COG. This is because the a molecule of H_2S contains only a single sulfur atom, so that combustion of a molecule of H_2S produces a single molecule of SO_2.

[73] Operational monitoring for proper operation of the thermal oxidizer is also provided as monitoring is required for temperature in the chamber of the oxidizer.

[74] During the initial testing of thermal oxidizer on December 17, 2010, the measured emission rates were as follows:

Measured Emission Rates of the Thermal Oxidizer (pounds/hour)			
PM_{10} (filterable and condensable)		SO_2	
Measured	Allowed*	Measured	Allowed*
4.03	5.6	35.7	67.3

* Based on limits in Construction Permit 06070022.

be conducted for the thermal oxidizer upon request by the Illinois EPA. Such testing would also trigger a requirement to reevaluate the adequacy of the emission factors used for the oxidizer. To specifically address the permit limits, relevant records would be required for the COG throughput of the COG Desulfurization System, the emission factors used by the Permittee to calculate emissions from the thermal oxidizer, and actual emissions for comparison to applicable limits. Records would also be required for maximum and typical hourly emission rates, with supporting documentation. This is sufficient Periodic Monitoring for these permit limits for the COG Desulfurization System. The system uses chemical process that is well-established to remove the hydrogen sulfide from the COG that it processes.

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C.4 Iron Production (Blast Furnaces) (Section 7.4 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for the blast furnaces would include the following:

- ✓ Opacity Observations
  - For the casthouse, observations on a weekly or daily basis for fugitive emissions
  - For BFG flares, annual observations for visible emissions

- Operational Monitoring

- ✓ Emission Testing
  - For baghouses, testing of emissions at least once every 5 years
  - Concurrent opacity observations

- ✓ Inspections
  - Detailed inspections of flares every 18 months

- ✓ Records of :
  - Emissions of PM/PM_{10}, SO_2, NO_x
  - Maintenance records

- ✓ Reporting Requirements :
  - ✓ Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)
  - Quarterly reports,

b. Justification for Periodic Monitoring for Iron Production (Blast Furnaces)

As necessary to provide Periodic Monitoring, the requirements imposed by the permit would go beyond and supplement the compliance procedures established by applicable rules. In this regard, however, the NESHAP standards that apply to the blast furnaces, 40 CFR 63, Subparts FFFFF, establish rigorous compliance procedures for the casthouse at the facility. Periodic Monitoring requirements would have to be established for the other operations involved in iron production.

1. Casting (Blast Furnace Casthouse)

NESHAP standards for integrated iron and steel manufacturing (40 CFR 63 Subpart FFFFF)

PM standard for control devices (Condition 7.4.3(e)(i)/40 CFR 63.7790(a) and Item 7 of Table 7) – Periodic Monitoring for this NESHAP standard, which limits PM emissions of the control devices for the blast furnace casthouse to 0.01 gr/scf, is fully addressed by the accompanying compliance procedures in this NESHAP. These procedures require operational monitoring for these control devices. For this facility, as blast furnaces emissions are controlled by baghouses, bag leak detection systems are required on both the cast house baghouse and iron spout baghouse. These systems will provide continuous information for proper functioning of these baghouses and

identify any upsets to enable corrective action to immediately be initiated.[75, 76] The compliance procedures of this NESHAP also require various work practices to support reliable operation of these baghouses, including preparation and implementation of a formal operation and maintenance plan for the control system, including these baghouses. Certain minimum requirements for this plan are specified in this NESHAP. Lastly, this NESHAP requires periodic PM emission testing at least once during the term of each Title V permit (i.e., at least once every five years).[77] The compliance procedures of this NESHAP amply serve as Periodic Monitoring for this standard to assure that controlled PM emissions of the casthouse do not exceed 0.01 gr/scf. Baghouses are generally reliable control devices when used for PM emissions from blast furnaces. The most recent emission testing for the casthouse in September 2009 confirms that these baghouses comply with this NESHAP standard with an ample of margin of compliance.[78]

Opacity standard for "secondary" or uncaptured emissions (Condition 7.4.3(e)(ii)/40 CFR 63.7790(a) and Item 7 of Table 7) - Periodic Monitoring for this NESHAP standard, which limits the opacity of uncaptured emissions from the casthouse to 20 percent, is provided by the

[75] For baghouses, bag leak detection systems are considered a more effective means than opacity monitors for verifying proper operation and identifying possible problems. This is because they better respond to the low levels of dust normally present in the exhaust of a baghouse.

[76] As applied to these baghouses, emission testing should be expected to only serve to generally confirm the ability of the baghouse to comply with applicable standards, as well as document actual levels of emissions. Emission testing is not needed because of possible upsets or interruptions in the operation of the bag leak detection systems, as these would be directly corrected by the applicable monitoring procedures. Accordingly, more frequent emission testing is not needed for the baghouses and it is sufficient for emission testing to routinely occur once per permit term.

The frequency of testing of baghouses was specifically addressed by USEPA during the public comment period for this NESHAP, where a commenter objected to "the change of requiring performance tests every 2.5 years to every 5 years for baghouses. The reasoning that bag leak detection systems are in place is not adequate justification because they may not be working properly." *See* 71 FR 39579, 39582 (July 13, 2006). USEPA responded: "A performance test provides a "snap shot" of performance, usually as the average of three 1-hour runs. However, we require continuous monitoring of the control device, and in this case, bag leak detectors provide assurance of proper operation on a continuous basis. Section 63.7831(f) of the rule provides detailed requirements for the proper installation, operation, and maintenance of bag leak detectors. Moreover, the monitoring requirements in § 63.7830(b)(4) discussed earlier include inspections and other monitoring in addition to the bag leak detection system. The combination of bag leak detectors and the extensive inspection and monitoring requirements for baghouses provide more assurance of proper operation than would more frequent snapshot performance tests. Consequently, we concluded that performance testing more frequently than once per permit term for these baghouses was not necessary. This testing frequency is consistent with many existing operating permits."

[77] The NESHAP also required initial testing following the effectiveness of the NESHAP. That testing served to verify that existing operations and control systems that were subject to the NESHAP were capable of complying with applicable standards. The initial testing also served to establish the operating limits for the operational parameters of the capture system and control devices for a casthouse that will be monitored on an ongoing basis.

[78] In the most recent emission testing for the casthouse, in September 2009, the results of which are provided below, measured PM emissions were less than half the applicable standard, for a compliance margin of over 60 percent:

Tested Emission Data for the Casthouse					
Baghouse	Observed Opacity (%)	Tested Emission Rates			Allowable Rate*
		gr/scf	lb/hr	lb/ton	lb/hr
Casthouse	1.67	0.003	7.24	0.012**	24.1
Iron Spout	1.74	0.0038	2.59	0.0068	6.8
Total	-	-	9.83	0.019	30.9

* Calculated from the tested PM emission rate, in lb/hr, by applying the ratio of the allowable PM emissions, 0.010 gr/scf, and the tested emission rate, in gr/scf.

** Calculated from production data reported for testing of the iron spout baghouse.

accompanying compliance procedures in the NESHAP. These procedures require operational monitoring for the capture system on the casthouse, which is the system of hooding, ductwork, dampers and fans, that enables compliance with this opacity standard.[79] This monitoring will verify that the capture system is operated properly on an ongoing basis. For this purpose, the NESHAP effectively defines proper operation as operation in a manner that is consistent with its operation during emissions testing in which compliance with both NESHAP standards for the casthouse was demonstrated, i.e., no more than 20 percent opacity for uncaptured emissions and no more than 0.01 gr/scf for captured and controlled emissions. The operational monitoring for the various components of the capture system will provide continuous information for proper functioning of this system as necessary to prevent the opacity of uncaptured emission from exceeding 20 percent. The operational monitoring will also identify any upsets of the capture system to enable corrective action to immediately be initiated. The compliance procedures of the NESHAP also require various work practices to support reliable operation of the capture system, including preparation and implementation of a formal operation and maintenance plan for the system. Certain minimum requirements for this plan are specified in this NESHAP. Finally, as already explained, this NESHAP requires periodic emission testing for the casthouse at least every five years, with observations for the opacity of uncaptured emissions conducted concurrently with testing of PM emissions. The compliance procedures of this NESHAP are sufficient to serve as Periodic Monitoring for this standard and assure that the opacity of the uncaptured emissions from the casthouse does not exceed 20 percent. The capture system for the casthouse is generally a reliable system, as it is made up of mechanical components that are not exposed to severe temperature and operating conditions. The greatest opacity observed from the casthouse is often less than 10 percent, confirming that the capture system for the casthouse has an ample of margin of compliance.

Operating limits for capture systems ((Condition 7.4.3(f)/40 CFR 63.7790(b)(1)) - As already discussed, this NESHAP requires the capture system for the casthouse be operated with relevant operating parameters at or above the lowest values or settings established for such parameters during performance testing. These values or settings then become applicable requirements for which Periodic Monitoring is necessary to assure compliance. That Monitoring is provided by the operational monitoring required in the compliance procedures of the NESHAP. Since operational limits for capture systems are a key part of the USEPA's regulatory approach to uncaptured emissions under this NESHAP, the provisions in this NEHAP for the accompanying operational monitoring reflect a fully developed approach to such monitoring by USEPA, building on its decades of experience with operational monitoring systems. For example, the NESHAP requires that these operational monitoring systems be operated in accordance with site-specific monitoring plans that include performance evaluations (40 CFR 63.8731(d)). The NESHAP also establishes requires that all data from such systems be appropriately collected except as precluded by interruptions in the operation of the system that are necessary for the proper operation, maintenance and repair of the systems or other sudden, infrequent not reasonable preventable

[79] The capture system for the casthouse enables compliance with this opacity standard for uncaptured emissions as it functions to collect the PM emissions released in the casthouse during tapping and direct emissions to the baghouses for the casthouse to be controlled. The effectiveness of the capture system determines the split between emissions released during tapping that are captured, i.e., directed to the baghouses to be controlled, and are uncaptured, i.e., go directly to the atmosphere, bypassing the baghouses. To comply with a 20 percent opacity standard for uncaptured emissions, this system must be designed, operated and maintained to collect enough PM emissions so that the opacity of the remaining uncaptured emissions from casting does not exceed 20 percent.

failure of the monitoring system to provide valid data (40 CFR 63.7832).

State Emission Standards

PM standard for emissions from control equipment (35 IAC 212.445(b)(1)/Condition 7.4.3(b)((ii)(A)) - This state standard, which limits PM emissions from the control equipment on the casthouse to 0.010 gr/scf, is identical to the applicable NESHAP standard pursuant to 40 CFR 63.7790(a) . Accordingly, the Periodic Monitoring for the NESHAP standard for control devices, as discussed above, also serves and is sufficient as the Monitoring for this state standard.

Opacity standard for control equipment (35 IAC 212.445(b)(2)/Condition 7.4.3(b)((ii)(B)) - This state standard, which limits the opacity of the casthouse and iron spout baghouses to no more that 10 percent, is not accompanied by a parallel NESHAP standard in 40 CFR 63 Subpart FFFFF. This standard is also not accompanied by any compliance procedures under state rule. Any Periodic Monitoring for this emission standard must be developed in the CAAPP permit for the facility. The technical issue is whether the bag leak detection systems required on these baghouses should be considered sufficient to indirectly assure compliance with this standard. While this is likely the case, the revised CAAPP permit would require quarterly observations of opacity for these baghouses to assure that their opacity does not exceed 10 percent. These observations would directly assure compliance with this standard. This requirement would also be reasonable as the source must have certified opacity observers available to conduct regular opacity observations for uncaptured emissions from the casthouse, as discussed below.

Opacity standard for uncaptured emissions (35 IAC 212.445(a)/Condition 7.4.3(b)(i)) - This state standard, which limits the opacity of the uncaptured emissions from the casthouse to 20 percent, is identical to the applicable NESHAP standard pursuant to 40 CFR 63.7790(a) . Accordingly, the Monitoring for the parallel NESHAP standard, as already discussed, also serves as Monitoring for this state standard. However, the technical issue is posed whether further Periodic Monitoring should be required to directly address this standard. The operational monitoring required by the NESHAP only indirectly addresses the opacity of uncaptured emissions from the casthouse. It is appropriate to proceed cautiously at this time given the circumstances of this facility, i.e., its location in Granite City where exceedances of the $PM_{2.5}$ NAAQS are monitored. In addition, 35 IAC 212.445(a) is a standard that was originally adopted to support attainment of the PM_{10} NAAQS in Illinois. Accordingly the revised CAAPP permit would continue to require regular opacity observations for the casthouse for uncaptured emissions. For this purpose, opacity observations would continue to be required on either a weekly basis or for at least five days out of seven operating days.[80] The timing of observations would be related to the level of opacity observed during the prior observations and the presence of a compliance margin.[81] This approach

[80] The "five day out of seven day" schedule would accommodate the practical challenges of scheduling opacity observations for the casthouse and the occurrence of weather conditions that prevent performance of scheduled opacity observations. For example, if opacity observations are required to be conducted on this schedule and the source arranges to conduct observations on a daily basis, the source would still be able to conduct all required observations if unexpected events arise that interfere with a planned observation on a day or two in a week.

[81] Weekly observations would be required if the prior observations show a significant margin of compliance, i.e., opacity is less than 18 percent. "Daily" observations would be required if the prior observation does not indicate a significant margin of compliance, i.e., opacity is 18 percent or more. Daily observations would continue to be required until five consecutive daily observations all indicate a significant margin of

to the timing of opacity observations is appropriate as a violation of 35 IAC 212.445(a) would be expected to result from gradual deterioration of the capture system or and pollution prevention measures for the cast house. Weekly opacity observations will enable the source to make timely repairs or take other appropriate actions in response to elevated levels of opacity before actual opacity would ever exceed 20 percent. Daily opacity observations would only be expected to become necessary if the source fails to act to take timely actions to maintain a margin of compliance with 35 IAC 212.445(a).[82]

SO_2 standard (35 IAC 214.301/Condition 7.4.3(c)) - Periodic Monitoring is not needed for this state standard, which limits the concentration of SO_2 in the exhaust from the casthouse to no more than 2000 ppm. This standard allows SO_2 emissions from the casthouse that are far greater than its potential emissions. For example, based on the emission testing for the casthouse in September 2009, 35 IAC 214.301would allow SO_2 emissions of over 6000 pounds per hour from the casthouse.[83] Based on the established SO_2 emission factor for the casthouse, 0.2 pounds per ton of iron, the maximum SO_2 emission of the casthouse should not exceed 100 pounds per hour.[84] This difference between the SO_2 emissions allowed by 35 IAC 214.301 and potential emission is not unusual as this emission standard was not developed to specifically address SO_2 emissions of blast furnaces. Rather 35 IAC 214.301 is one of several state standards for different pollutants that are commonly referred to as "generic" or "catch-all" standards.

Permit Limits

Limits on production and pellet usage (Condition 7.4.6(a)) – The Periodic Monitoring for these annual limits would be provided by requiring relevant records be kept (Condition 7.4.9(h)). This is sufficient as the limits apply on an annual basis and address data that is fundamental for operation of the blast furnaces by the source.

Limits for emissions of PM/PM_{10} and lead from baghouses (captured emissions) (Condition 7.4.6(b) and (f)) – The emissions of PM/PM_{10} of the baghouses are addressed through the provisions of the NESHAP that apply to the baghouses, as already discussed. In actual practice, the applicable NESHAP standard for PM emissions from these baghouses is more stringent than these permit limits, as shown by the emission testing conducted for these baghouses. This testing shows a much larger margin of compliance for the permit limits for PM emissions than for the applicable NESHAP standards.[85] The NESHAP also establishes rigorous compliance procedures

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compliance, with the greatest opacity that is observed all less than 18 percent.

[82] This approach is different from the approach in the current CAAPP permit, which did not consider the presence of a margin of compliance. Rather "daily" observations are currently only required if the greatest opacity observed during a weekly observation are at or above the applicable standard of 20 percent.

[83] The SO_2 emissions allowed by 35 IAC 214.301 are readily calculated from the exhaust flow rate of a unit. For the casthouse, the exhaust flow rate of the two baghouses during the September 2009 testing was about 20,000,000 acf/hr. (20,000,000 acf/hr ÷ 385 scf/lb-mole x 2000 ppm/1,000,000 ppm x 64 lb/lb-mole SO_2 = 6860 lbs/hr)

[84] Based on a maximum production rate of 500 tons of iron from the blast furnaces and an emission factor of 0.2 pounds per ton, the calculated SO_2 emissions of the casthouse would be at most 100 pounds per hour. (500 tons/hr x 0.2 lbs/ton = 100 lbs/hr)

[85] A comparison of compliance margins from the most recent emission testing for the casthouse baghouses in September 2009 follows:

for PM emissions, including requirements for continuous operational monitoring for proper operation of these baghouses with bag leak detection systems and requirements for periodic emission testing. As lead is a component of the PM emissions, these provisions of the NESHAP also address emissions of lead. To specifically address emissions of lead, the revised permit would require measurements for lead emissions when NESHAP testing is conducted for PM. Then, as is generally the approach for permit limits on the amount of emissions from an emission unit, the Periodic Monitoring for these permit limits for the casthouse would build on the Monitoring related to other applicable requirements for the casthouse. To specifically address the permit limits, relevant records would be required for iron throughput, the emission factors used by the Permittee to calculate captured emissions from the casthouse, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for these permit limits, particularly as PM emissions of the casthouse must be well controlled with a capture system and baghouses that are subject to appropriate Periodic Monitoring to assure that this equipment is properly operated.

SO_2, NO_x and VOM limits for baghouses (captured emissions) (Condition 7.4.6(b) and (f)) – Unlike PM emissions from the casthouse, emissions of these pollutants are not subject to "other applicable requirements" or, in the case of SO_2, to requirements that act in practice to constrain emissions. The emissions of these pollutants from the casthouse are not controlled, either by add-on control equipment or specific control practices.[86, 87] These permit limits reflect the projected emissions of SO_2, NO_x and VOM from the casthouse as provided in an application for a construction permit submitted over a decade ago. Accordingly, it is appropriate that on a routine basis compliance with these limits be directly determined using emission factors, subject to the proviso that the adequacy of such factors be verified by periodic testing. For this purpose, testing would be required in conjunction with the emission testing routinely required for the casthouse by the NESHAP. This testing must be performed every five years, which is a reasonable frequency given the nature of the permit limits that are being addressed. In other words, as is generally the approach for permit limits on the amount of emissions from emission units, the Periodic Monitoring for these permit limits for the casthouse would build on the Periodic Monitoring related to other applicable requirements for the casthouse. To specifically address the permit limits, relevant records would be required for the amount of iron produced by the blast furnaces, the emission factors for SO_2, NO_x and VOM used by the Permittee to calculate captured emissions from the casthouse, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for compliance with these permit limits given the nature of these limits.

Evaluation of Tested Emission Data for the Casthouse Baghouses						
Baghouse	Evaluation of NESHAP Rates			Evaluation of Permit Limits*		
	Measured (gr/scf)	Allowed (gr/scf)	Margin	Measured (lb/ton)	Allowed (lb/ton)	Margin
Casthouse	0.003	0.010	70 %	0.012**	0.073	83%
Iron Spout	0.0038	0.010	62 %	0.0068	0.02548	73%

[86] Baghouses function to control particulate emissions and do not remove gaseous pollutants, such as NO_x or VOM, from an exhaust stream. While control systems for SO_2 may involve a baghouse, the actual control of SO_2 is made possible by a separate system to inject sorbent material into the flue gas, to react with the SO_2. A key factor in the effectiveness of such systems is the concentration of SO_2 in the flue gas. The addition of such a system to an existing baghouse also has operational consequences for the baghouse as it increases the dust loading of the baghouse.

[87] Unlike PM emissions from the casthouse, for which there are control equipment and control practices, there are also not specific measures or work practices that have been identified at this time that could be used to minimize or moderate emissions of these pollutants from the casthouse.

Limits for uncaptured emissions of PM/PM_{10} and lead (Condition 7.4.6(b) and (f)) - The uncaptured emissions of PM/PM_{10} and lead from the casthouse are addressed through the provisions of the NESHAP that apply to the capture system for the casthouse. However, unlike the captured emissions, the uncaptured emissions of the casthouse are not amenable to direct measurement of emissions.[88] In this regard, the NESHAP addresses the performance of the capture system with a standard for opacity and with work practices. These requirements of the NESHAP are accompanied by rigorous compliance procedures, including requirements for continuous operational monitoring of the operation of the capture system. As lead is a component of the PM emissions, these provisions of the NESHAP also address emissions of lead. To specifically address emissions of lead, as already discussed, the revised permit would require measurements for lead emissions when NESHAP testing is conducted for PM. While such testing would measure captured PM/PM_{10} and lead emission of the casthouse, rather than uncaptured emissions, such testing would constitute testing of the casthouse. As such, it would trigger the requirement for the source to reevaluate the emission factors used to calculate emissions from the casthouse, both captured and uncaptured. However, unlike captured emissions, which would be measured directly, the determinations for uncaptured emissions would be derived from the measurements of captured emissions using appropriate values for the efficiency of the capture system and the performance of the control system.[89] Then, as is generally the approach for permit limits on the amount of emissions from emission units, the Periodic Monitoring for these permit limits for the casthouse would build on the Monitoring related to other applicable requirements for the casthouse. To specifically address the permit limits for PM/PM_{10} and lead, relevant records would be required for iron throughput, the emission factors used by the Permittee to calculate uncaptured emissions from the casthouse, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for these permit limits, particularly as PM emissions of the casthouse must be well controlled with a capture system that is subject to appropriate Periodic Monitoring to assure that this equipment is properly operated.

SO_2, NO_x and VOM limits for uncaptured emissions) (Condition 7.4.6(b) and (f)) - Unlike uncaptured PM emissions from the casthouse, uncaptured emissions of these pollutants are not subject to "other applicable requirements" or, in the case of SO_2, to requirements that act in practice to constrain emissions from the casthouse. The uncaptured emissions of these pollutants from the casthouse, like the captured emissions of these pollutants, are not minimized by specific control practices. Rather these permit limits reflect the projected emissions of these pollutants from the casthouse as provided in an application for a construction permit submitted over a decade ago. Accordingly, it is appropriate that on a routine basis compliance with these limits be directly determined using emission factors, subject to the proviso that the adequacy of such factors be verified by periodic testing. For this purpose, as already discussed, testing would be required in conjunction with the emission testing otherwise required for the casthouse by the NESHAP. This testing must be performed every five years, which is a reasonable frequency given the nature of the

[88] The inability to directly measure emissions is inherent with uncaptured emissions from the casthouse as such emissions are, by definition, uncaptured and do not reflect the pollutant content of process materials, so that emissions may be determined through material balance calculations.

[89] When emissions testing is conducted for the casthouse, the determinations for uncaptured emissions of PM/PM_{10} and lead would be derived from the measurements of captured emissions, using appropriate engineering values for the efficiency of the capture system and the performance of the baghouses. For example, the requirements of the NESHAP for the capture systems on casthouses are commonly considered to provide a minimum of 95 percent capture of the emissions from tapping of blast furnaces.

permit limits that are being addressed. Such testing would trigger the requirement for the source to reevaluate the emission factors used to calculate emissions of SO_2, NO_x and VOM from the casthouse, both captured and uncaptured.[90] The determinations for uncaptured emissions would be derived from the measurements of captured emissions using appropriate values for the efficiency of the capture system. In other words, as is generally the approach for permit limits on the amount of emissions from an emission unit, the Periodic Monitoring for these permit limits for the casthouse would also build on the emission testing required as Monitoring for other applicable requirements for the casthouse.[91] To specifically address the permit limits, relevant records would be required for the amount of iron produced by the blast furnaces, the emission factors for SO_2, NO_x and VOM used by the Permittee to calculate captured emissions from the casthouse, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for compliance with these permit limits given the pollutant emissions from the casthouse that are being addressed and the circumstances and nature of these limits.

Operational requirement for casting (Condition 7.4.6(j)) - This permit provision establishes an operational requirement for the casthouse for overlapping "tapping" of the furnaces, limiting the rate of casting from each furnace to 6 tons per minute. As these provisions establish requirements for a particular mode of operation of the furnace, they are appropriately addressed with recordkeeping. (See Condition 7.4.9(c)(ii)(B).)

2. Furnace Charging

State Emission Standards

Opacity standard (35 IAC 212.316(f)/Condition 7.4.3(g)) – Periodic Monitoring for this state standard, which limits the opacity from fugitive emissions to 20 percent, would be provided by requiring annual observation for visible emissions, followed by opacity observations if visible emissions are observed (Condition 7.4.8(n)(i)). This frequency of observations is appropriate as the presence of visible emissions or significant opacity from charging would be associated with leakage and deterioration of the bell systems. As this would interfere with operation of the furnaces, it should lead to repairs as part of the source's normal practices for inspection and repair of the blast furnaces.

SO_2 standard (35 IAC 214.301/Condition 7.4.3(c)) – This generic state standard, which limits SO_2 emissions from process emission units to 2000 ppm, cannot be applied as a practical matter. This is

[90] When testing is conducted for the casthouse, the determinations for uncaptured emissions of NOx, VOM and SO_2 would be derived from the measurements of captured emissions, using appropriate engineering values for the efficiency of the capture system on the casthouse. As emissions are not controlled, the derivation of uncaptured emissions would be simpler than that for PM/PM_{10} and lead, which are controlled. For example, as the NESHAP is commonly considered to provide at least 95 percent capture of tapping emissions at blast furnaces, uncaptured emissions of NOx, VOM and SO_2 from the casthouse would be one nineteenth of the captured emissions. (5 %÷ (100 % – 5 %) = 1/19)

[91] In hindsight, it also appears that these separate limits for captured and uncaptured emissions of NOx, VOM and SO_2 may be overly complex, if not dictated by the air quality analysis that accompanied the construction permit application. Limits could have been set for the combination of captured and uncaptured emissions, accompanied by provisions requiring that compliance with such limits consider both captured and uncaptured emissions. Alternatively, limits could have been set for total emissions and uncaptured emissions, as it was considered necessary to separately limit uncaptured emissions due to consideration related to the air quality analysis.

because the double bell systems for blast furnace charging do not have a stack. (Installation of stacks is not feasible given the location of these systems at the top of the furnaces and the configuration of these systems.) Accordingly, Periodic Monitoring is not relevant for this standard. Moreover, this standard does not pose compliance concerns for blast furnace charging as it involves solid materials, i.e., iron ore pellet, coke, limestone, and other flux materials, being charged to the furnaces and the bell systems function to maintain pressure in the blast furnaces as these materials are introduced into the furnaces.

Permit Limits (Construction Permit 95010001)

Limits on PM emissions (Condition 7.4.6(d)) - The Periodic Monitoring in the permit for the PM/PM_{10} emission limits for Blast Furnace Charging in Condition 7.4.6(d) would be sufficient. Emission testing is not feasible for this emission unit, which are the standard double bell systems on blast furnaces, which are located on the top of the furnace and serve to maintain pressure in the furnaces and minimize emissions from charging.[92] It is necessary to use a set emission factor for determining emissions from blast furnace charging. The set factor is the factor in the *AIRS Facility Subsystem Source Classification Codes And Emissions Factor Listing for Criteria Air Pollutants*, March 1990, EPA450/4-90-003. Using the standard approach for Monitoring for permit limits for the amount of emissions, the permit would require records for the operation of the blast furnace, i.e., the amount of pellets charged to the furnaces, as needed to calculate emissions, and records for calculated emissions, as needed for comparison to the applicable limits.

3. Slag Pits

State Emission Standards

Opacity standard (35 IAC 212.316(f)/Condition 7.4.3(g)) – Periodic Monitoring for this state standard, which limits opacity to 20 percent, would be provided by requiring monthly observation for visible emissions, followed by opacity observations if visible emissions are observed (Condition 7.4.8(m)(iii)). This frequency of observations is appropriate as the source must assure that operating personnel keep up the practices that minimize emission of particulate from the slag pits, which ensure compliance with this opacity standard.

SO_2 standard (35 IAC 214.301/Condition 7.4.3(c)) - This generic standard, which limits SO_2 emissions to 2000 ppm, cannot be implemented as a practical matter. This is because the slag pits do not have a stack. (Installation of stacks is not feasible given the area covered by the slag pits, the elevated temperature of the slag as it is deposited in the pit, and the need for ready access by personnel and heavy equipment to remove slag pits. Accordingly, conventional Periodic

[92] Because of the nature of certain emission units, which make emission testing for those units impractical or infeasible, emission units emission factors are an essential aspect of compliance determinations made for those units. The reliance on established emission factors to determine emissions from units in circumstances where it is not practical to conduct measurements for emissions has generally been accepted by USEPA. For example, *see* Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, In the Matter of East Kentucky Power Cooperative, Inc, USEPA Dec. 14, 2009 (East Kentucky Power Order, December 2009), in which USEPA did not reject the use of established emission factors for the purpose of calculating emissions from certain coal handling operations and determining compliance with an applicable state emission standard.

Monitoring is not relevant for this standard.[93]

Permit Limits (Construction Permit 95010001)

Limits on PM/PM_{10} and SO_2 emissions (Condition 7.4.6(e)) - The Periodic Monitoring in the permit for emission limits for the slag pit in Condition 7.4.6(e) would be sufficient. Emission testing is not feasible for the slag pit.[94] Using the standard approach for Monitoring for permit limits for the amount of emissions, the permit would require records for the operation of the slag pit, i.e., the amount of iron produced or slag handled, and the emission factors used by the Permittee to calculate emissions from the slag pit as needed to calculate emissions. Records would also be required for calculated emissions, as needed for comparison to the applicable limits.

4. Blast Furnace Stoves

State Emission Standards

PM standard (35 IAC 212.458(b)(7)/Condition 7.4.3(g)) - Periodic Monitoring must be established for this state standard, which limits PM_{10} emissions of the blast furnace stoves to 0.01 gr/scf or to "no visible emissions."[95] To address this standard, the revised permit would require the source to conduct regular observations for visible emissions from the stoves, to be followed by observations of opacity if visible emissions are observed. As only gaseous fuels are used in the stoves, it is sufficient that these observations be conducted on a semi-annual basis.[96] Regular testing for PM_{10} emissions is not warranted based upon the data that accompanied the most recent emission testing for use of BFG at the facility, the testing for Power Boiler #1. This testing confirms that the PM_{10} emissions from use of BFG are less than 0.01 gr/scf with an ample of margin of compliance.[97]

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[93] The concentration of SO_2 emissions at the slag pits is indirectly addressed as OSHA has set a permissible exposure level for SO_2 at 5 ppm, 8-hour average, time weighted average.

[94] Because of the nature of certain emission units, which make emission testing for those units impractical or infeasible, emission units emission factors are an essential aspect of compliance determinations made for those units. The reliance on established emission factors to determine emissions from units in circumstances where it is not practical to conduct measurements for emissions has generally been accepted by USEPA. For example, *see* Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, In the Matter of East Kentucky Power Cooperative, Inc, USEPA Dec. 14, 2009 (East Kentucky Power Order, December 2009), in which USEPA did not reject the use of established emission factors for the purpose of calculating emissions from certain coal handling operations and determining compliance with an applicable state emission standard.

[95] Regulatory compliance procedures would only accompany 35 IAC 212.458(b) if particulate control equipment were used to comply with this standard.

[96] The revised CAAPP permit would also require sampling and analysis of the BFG used at the facility on a semi-annual basis, to be conducted at the coke byproduct recovery plant (See Section 7.4 of the permit). This would provide quantitative data for the composition of BFG that would be relevant to the particulate emissions of the blast furnace stoves and the boilers, which are the units at the facility that fire BFG.

[97] Like the blast furnace stoves, Power Boiler #1 is designed to fire primarily BGF, so that testing of this boiler provides data for the PM emission from use of BFG. In the initial emission testing for Power Boiler 1, in April 2010, the results of which are provided below, measured PM emissions were less than 0.01 gr/scf, with a compliance margin of over 80 percent. During this testing, measurements were also conducted on the particulate content of BFG, which show that the particulate content of BFG fuel prior to combustion is 0.00079 gr/scf, less than 10 percent of the PM_{10} emission standard that applies to the exhaust after BFG is combusted.

Measured PM Rates for Power Boiler #1		Allowable (per 35 IAC 212.458(b)(7) in gr/scf)
lb/mmBtu	gr/scf	

Nevertheless, the revised CAAPP permit would require the source to conduct testing for PM_{10} emissions upon request by the Illinois EPA, which would provide for emission testing to be conducted to address circumstances that were not contemplated.

Opacity standard (35 IAC 212.123(a)/Condition 7.4.3(d) – Periodic Monitoring for this standard, which limits the opacity of the stoves to 30 percent, would appropriately be provided by requiring semi-annual observations of visible emissions from each stove, followed by opacity observations if visible emissions are observed. As discussed, these stoves are appropriately addressed as fuel combustion emission units that fire gaseous fuels. Accordingly, semi-annual observations are sufficient to address this standard.

SO_2 standard (35 IAC 214.301/Condition 7.4.3(c)) - Periodic Monitoring is not needed for this state standard, which limits the concentration of SO_2 in the exhaust from the blast furnace stoves to no more than 2000 ppm. This standard allows SO_2 emissions from the stoves that are much greater than their potential emissions. In particular, disregarding the increase in exhaust flow from combustion air when BFG is combusted, this standard would limit the sulfur content of BFG to 2000 ppm.[98] However, based on recent testing, the sulfur content of BFG is less than 20 ppmv.[99] This difference between the SO_2 emissions allowed by 35 IAC 214.301 and potential emission is not unusual as 35 IAC 214.301 is a generic standard, which was not developed to specifically address SO_2 emissions of blast furnace stoves.

Permit Limits

PM content of BFG (Conditions 7.4.6(k)) - This permit provision limits the PM content of BFG fuel to 0.01 gr/scf. The testing of BFG fuel that accompanied emission testing of Power Boiler #1, as already discussed, showed compliance with this limit with a substantial margin of compliance. Accordingly, the permit would require biennial sampling and analysis of BFG to verify compliance with this limit. (See Section 7.10 of the permit, Condition 7.10.8(c)(ii).)

5. BFG Flares

State Emission Standards

Opacity standard (35 IAC 212.123(a)/Condition 7.4.3(d)) – Periodic Monitoring for this standard, which limits the opacity from the flares to 30 percent, would appropriately be provided by requiring annual observations for visible emissions from each flare (Condition 7.4.7(c)). These flares dispose of surplus BFG fuel, which can be readily flared without the presence of any visible emissions. Accordingly, annual observations are sufficient to address this standard.

SO_2 standard (35 IAC 214.301/Condition 7.4.3(c)) – Periodic Monitoring is not needed for this

0.0048	0.00184	0.01

[98] This is because a molecule of H_2S contains only a single sulfur atom, so that combustion of a molecule of H_2S produces a single molecule of SO_2.

[99] During testing of Power Boiler #1 in April 2010, the measured sulfur content of BFG fuel was 12.0 ppm, or 0.016 lb/mmBtu.

state standard, which limits the concentration of SO_2 in the exhaust from the BFG flares to no more than 2000 ppm. As discussed above for the blast furnace stoves, this standard allows SO_2 emissions from combustion of BFG that are much greater than the potential SO_2 emissions.

Permit Limits

Operational requirements (Conditions 7.4.5-4(c) and 7.4.5-4(d)(i)(A)) – These permit provisions address visible emissions of the BFG, limiting the occurrence of visible emissions to a total of no more than 5 minutes in any consecutive two period. This reflects a well-established requirement for particulate matter emissions from flares (e.g., refer to 40 CFR 60.18). Annual observations of visible emissions would be required to address this standard (Condition 7.4.7(d)). This is sufficient as this requirement can generally be readily met by properly operated flares burning BFG. This is because readily combusts in a flare without the presence of any visible emissions.[100] Since BFG does not have visual emission when combusted, the once per shift verification of the pilot flame, is the more important aspect of Monitoring. These inspections will verify that the flare is operating properly, which will ensure that there are no visible emissions from the flare. In addition, the source must test the flare annually for no visible emissions. This combination of requirements is sufficient periodic monitoring for the blast furnace gas flares.[101]

Operational requirements for BFG Flare #2 (Condition 7.4.5-4(d)(i)(B))) - This permit provision requires that BFG Flare # 2 be operated with a flame present at all times. This also reflects a well-established requirement for operation of flares (e.g., refer to 40 CFR 60.18). Continuous operational monitoring for the presence of a flame would be required (Condition 7.4.8(k)(ii)). [102]

Operational requirements for BFG Flare #2 (Condition 7.4.5-4(d) (ii) and (ii)) - These permit provisions establish additional operational requirements for BFG Flare #2 that would be addressed with recordkeeping. Any BFG that is flared must be processed by the pretreatment system prior to flaring. BFG and natural gas are the only fuels that may be used in this flare. As these provisions establish general requirements for the operation of this flare, they are appropriately addressed with recordkeeping. (See Condition 7.4.9(g).)

Note: Permit requirements that apply to the combination of BFG Flare #2 and Power Boiler #1 would be addressed in Section 7.10 of the revised permit, with the boiler.

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[100] Blast furnace gas is primarily comprised of carbon monoxide and hydrogen. The flare functions as a safety device to ensure the blast furnace gas distribution system does not over pressurize, threatening the integrity of the system, with risk to personnel and equipment. Blast furnace gas readily burns in an appropriately sized flare without any visible emissions, provided that a pilot flame is present. Combustion does not need to be assisted with the introduction of steam or air at the flare burner. In this regard, flares for blast furnace gas are different from steam or air "assisted" flares that burn waste gases that may vary in their composition and contain more complex compounds.

[101] Continuous video monitoring systems would not be a useful monitoring technique for the blast furnace flares. Video monitoring is used at flares at certain refineries, where streams of waste gas are flared that may vary in their composition and heat content, as well as in the rate at which the waste gases are sent to the flare during an upset or malfunction incident. Those flares have the potential for visible emissions, and steam or air assist may need to be adjusted during a flaring incident to maintain "smokeless operation." These circumstances are not present for the blast furnace gas flares at this source, which operate to handle a single stream of material that is generated at a steady rate and is readily combusted.

[102] Daily inspections of BFG Flare #1, which is not equipped with a continuous monitoring system for the presence of a flame, would also be required (See Condition 7.4.8(k)(i)).

4. Blast Furnace Gas (BFG) Flare #2

This flare, which was constructed at the same time as Power Boiler #1 is subject to 35 IAC 214.301, which limits its emissions of SO_2 to less than 2000 ppm. Emissions of the flare are also limited for NO_x, CO, VOM, PM/PM_{10} by permit limits for the combination of the Power Boiler and the flare. Recordkeeping for fuel usage for this boiler and flare is required to verify that the limit for usage is met, as well as verifying that applicable emission limits are met. The use of only natural gas and BFG for the boiler and flare, and the required recordkeeping of fuel usage is adequate to verify that the 2000 ppm limit for SO_2 emissions is not exceeded.

C.5 Basic Oxygen Furnace (BOF) Shop (Section 7.5 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for the emission units in the BOF furnaces and other process operations in the BOF Shop would include:

- ✓ Opacity Monitoring
  - For the ESP on the BOF furnaces, continuous opacity monitoring system (COMS)

- ✓ Opacity Observations
- For the building housing the BOF, opacity observations conducted on at least 5 out of every 7 operating days
- For the ESP on the BOF, in the event of extended outage of the continuous opacity monitoring system, opacity observations conducted for at least one hour

- ✓ Operational Monitoring
  - Operation of a continuous parameter monitoring system
  - For Baghouse #2 and skimmer baghouse, operation of bag leak detection systems
  - Monitoring of pressure drop across each baghouse cell each day
  - Operational parameters for the capture system and ductwork for the BOF

- ✓ Inspections
  - Weekly inspections of the baghouses for dust removal from hoppers
  - Monthly inspections of the baghouses for bag tension
  - Monthly inspections of mechanical and electrical aspects of the ESP
  - Monthly inspections of the elements of the BOF capture system
  - Quarterly inspections to confirm the physical integrity of the baghouses and the absence of air leaks

- ✓ Emission Testing
  - For the ESP on the BOF furnaces, testing of PM emissions at least every 30 months
  - For the slag skimmer baghouse, testing of PM/PM_{10} emissions at least every 30 months
  - For BOF Shop operations with baghouses other than the slag skimmer, testing of PM/PM_{10} emissions at least every five years
  - Concurrent opacity observations during emission testing

- ✓ Recordkeeping
  - Operating time of ESP and performance parameters
  - Operating records for BOF and ESP with respect to fans
  - Records of maintenance activities
  - Records of production of molten steel

- ✓ Reporting Requirements
  - Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)
  - Semiannual compliance reports (Subpart FFFFF)

- Monthly opacity exceedance report of the BOF ESP

b. Justification of Periodic Monitoring for the BOF Shop

As necessary to provide Periodic Monitoring, the requirements imposed by the permit would go beyond and supplement the compliance procedures established by applicable rules. In this regard, however, the NESHAP standards that apply to the BOF Shop, 40 CFR 63, Subpart FFFFF, establish rigorous compliance procedures for the capture systems and control devices that control particulate emission from the BOF Shop and ancillary operations. These procedures provide a solid foundation for the required Periodic Monitoring. They require that the source conduct continuous operational monitoring for the capture system for the BOF furnaces and continuous opacity monitoring for the electrostatic precipitator (ESP) that controls emissions of the furnaces. Operational monitoring is required for the baghouses that control emissions from the desulfurization processes. Monitoring of These procedures supplement compliance procedures established in Construction Permits for the BOF Shop, notably Construction Permit 95010001 for an increase in production at the facility. Given the rigor of the established compliance procedures, it is appropriate to generally rely on those compliance procedures for the emission units and emission streams that they address, with additional elements in the Periodic Monitoring as needed to address other units and emission streams.

1. Basic Oxygen Furnaces (BOF Furnaces)

Federal Emission Standards (NESHAP, 40 CFR 63 Subpart FFFFF)

PM standard for control devices (40 CFR 63.7790(a) /Condition 7.5.5(e)(i)) – Periodic Monitoring for this NESHAP standard, which limits PM emissions of the control devices for the BOF furnaces to 0.02 gr/scf, is fully addressed by the accompanying compliance procedures in this NESHAP. These procedures require operational monitoring for these control devices. For this facility, as the BOF furnaces emissions are controlled by an ESP, continuous opacity monitoring is required. This monitoring will provide continuous information for proper functioning of the ESP and identify any upsets to enable corrective action to immediately be initiated. The compliance procedures of this NESHAP also require various work practices to support reliable operation of the ESP, including preparation and implementation of a formal operation and maintenance plan for the control system, including the ESP. Certain minimum requirements for this plan are specified in this NESHAP. Lastly, this NESHAP requires periodic PM emission testing at least twice during the term of each Title V permit (i.e., at least about every 30 months).[103] The compliance procedures of this NESHAP amply serve as Periodic Monitoring for this standard to assure that controlled PM emissions of the ESP do not exceed 0.02 gr/scf. If properly maintained and operated,[104] ESPs are

[103] The NESHAP also required initial testing following the effectiveness of the NESHAP. That testing served to verify that existing operations and control systems that were subject to the NESHAP were capable of complying with applicable standards. The initial testing also served to establish the operating limits for the operational parameters of the capture system and control devices for a casthouse that will be monitored on an ongoing basis.

[104] One important aspect of operation of an ESP is that the exhaust flow ducted into the ESP be within its design capacity and not excessive. Accordingly, the amount of exhaust ducted into an ESP to improve capture efficiency cannot be increased beyond the point at which the performance of the ESP is degraded significantly. This aspect of ESP operation is addressed by monitoring for flow rate, for which minimum levels of flow are required for proper capture of emissions and maximum levels of flow are relevant as they impact ESP performance.

reliable control devices when used for PM emissions from BOF furnaces. The most recent emission testing for the casthouse in September 2009 confirms that the ESP complies with this NESHAP standard with a large compliance margin.[105]

Opacity standard for control equipment (40 CFR 63.7790(b)(3)/ Condition 7.5.3(f)) – This opacity standard for the ESP, 10 percent opacity, hourly average, would be addressed by the continuous opacity monitoring system on this ESP required by the NESHAP. This monitoring system would directly address this standard and no further Periodic Monitoring is needed.

Opacity standard for "secondary" or uncaptured emissions (40 CFR 63.7790(a)/ Condition 7.5.3(e)(v) - Periodic Monitoring for this NESHAP standard, which limits the opacity of uncaptured emissions from the BOF furnaces (and the BOF shop generally[106]) to 20 percent, 3-minute average. Periodic Monitoring for this NESHAP standard is provided by the accompanying compliance procedures in the NESHAP. These procedures require operational monitoring for the capture system on the BOF furnaces, which is the system of hooding, ductwork, dampers and fans, that enables compliance with this opacity standard.[107] This monitoring will verify that the capture system is operated properly on an ongoing basis. For this purpose, the NESHAP effectively defines proper operation as operation in a manner that is consistent with its operation during emissions testing in which compliance with both NESHAP standards for the BOF furnaces were demonstrated, i.e., no more than 20 percent opacity for uncaptured emissions and no more than 0.02 gr/scf for captured and controlled emissions. The operational monitoring for the various components of the capture system will provide continuous information for proper functioning of this system as necessary to prevent the opacity of uncaptured emission from exceeding 20 percent. The operational monitoring will also identify any upsets of the capture system to enable corrective action to immediately be initiated. The compliance procedures of the NESHAP also require various work practices to support reliable operation of the capture system, including preparation and implementation of a formal operation and maintenance plan for the system. Certain minimum requirements for this plan are specified in this NESHAP. Finally, as already explained, this NESHAP requires periodic emission testing for the ESP at least about every 30 months, with observations for the opacity of uncaptured emissions conducted concurrently with testing of PM

[105] In the most recent emission testing for the ESP, in October 2009, the results of which are provided below, measured PM emissions were less than one sixth of the applicable standard, for a compliance margin of over 80 percent:

Tested Emission Data for the BOF ESP			
Maximum Opacity at the Roof Monitor (%, 3-minute average)	Tested Emission Rates		
	gr/scf	lb/hr	lb/ton
3.6 ave. (by run 6.2, 2.9 & 1.7)	0.0031	10.5	0.053*

* Calculated from a nominal production rate of 200 tons per hour.

[106] The BOF furnaces are the principal source of uncaptured emissions from the BOF shop. Any contribution to secondary emissions and opacity from other emission units in the BOF shop would be addressed with the monitoring conducted for uncaptured emissions of the BOF furnaces.

[107] The capture system for the BOF furnace enables compliance with this opacity standard for uncaptured emissions as it functions to collect the PM emissions released during the operation of the furnaces and directs those emissions to the ESP to be controlled. The effectiveness of the capture system determines the split between emissions released from the BOF furnaces that are captured, i.e., directed to the ESP to be controlled, and are uncaptured, i.e., go directly to the atmosphere, bypassing the baghouses. To comply with a 20 percent opacity standard for uncaptured emissions, this system must be designed, operated and maintained to collect enough PM emissions so that the opacity of the remaining uncaptured emissions from the BOF furnaces does not exceed 20 percent.

emissions. The compliance procedures of this NESHAP should be sufficient to serve as Periodic Monitoring for this standard and assure that the opacity of the uncaptured emissions from the BOF does not exceed 20 percent.

State Emission Standards

PM limit for control device (35 IAC 212.458(b)(ii)/Condition 7.5.3(b)(ii) and 35 IAC 212.446(a)/Conditions 7.5.3(a)(i)) – 35. 35 IAC 212.458(b)(ii) was specifically adopted to address PM emissions of the BOF furnaces at this facility. It limits the PM emissions of the BOF furnaces to 60 lbs/hr or 0.225 lbs/ton, whichever is more stringent. This standard is more stringent than 35 IAC 212.446(a), an older state rule, that refers back to the generic process weight rule, 35 IAC 212.321.[108] However, 35 IAC 212.458(b)(ii) is now also "outdated," as its requirements for the BOF furnaces are less stringent than the applicable NESHAP standard, 40 CFR 63.7790(a).[109] Accordingly, the Periodic Monitoring for the parallel NESHAP standard is sufficient to address these standards.

Opacity standard for uncaptured emissions (35 IAC 212.446(c)/Condition 7.4.3(a)(iii)) - This state standard for the opacity of the uncaptured emissions from the BOF shop, i.e., 20 percent, is identical to the applicable NESHAP standard pursuant to 40 CFR 63.7790(a) . Accordingly, the Monitoring for the parallel NESHAP standard, as already discussed, also serves as Monitoring for this state standard. However, the technical issue is posed whether further Periodic Monitoring should be required to directly address this standard. The operational monitoring required by the NESHAP only indirectly addresses the opacity of uncaptured emissions from the BOF. As discussed for the casthouse at the blast furnaces, it is appropriate to proceed cautiously at this time given the circumstances of this facility, i.e., its location in Granite City where exceedances of the $PM_{2.5}$ NAAQS are monitored.[110, 111 and 112] Accordingly the revised CAAPP permit would require

[108] At an emission rate of 0.225 pound PM per ton of steel from the BOF furnaces, production of 266.7 tons of steel per hour would be equivalent to emissions of 60 pounds per hour. Using a process weight rate of 266.7 tons per hour for the furnaces, disregarding oxygen and the other process materials involved in the operation of the BOF furnaces, 35 IAC 212.321 would allow PM emissions of 61.6 pounds per hour.

[109] Based on the recent emission testing for the BOF conducted in October 2009, the BOF furnaces would have been allowed by the NESHAP to emit 34.1 pounds of PM per hour. This is equivalent to an emission rate of 0.136 pounds of PM per ton of steel based on a nominal production rate of 250 tons of steel per hour.

[110] While ambient monitoring conducted by the Illinois EPA now shows that air quality in the area complies with the NAAQS for $PM_{2.5}$, the area has not yet been redesignated to attainment. In addition, USEPA is currently engaged in rulemaking that would set a more stringent NAAQS for $PM_{2.5}$.

[111] In the past, the source has also been subject to violation notices and enforcement actions for the BOF furnaces related to compliance of with 35 IAC 212.446(c). Deterioration of capture hooding and ductwork given the operating conditions to which they are subjected, together with the inability to perform maintenance and repair while the BOF furnaces are operational, potentially contributed to the alleged violations.

[112] The BOF furnaces are also subject to a voluntary Memorandum of Understanding negotiated between the source and the Illinois EPA. The Agreement sets out a schedule for various enhancements that the source would make to its practices for control of emissions of the BOF shop and for the capture system and control equipment for BOF. A key enhancement would be improved control of emissions from tapping the BOF furnaces, with construction of additional hooding served by a new baghouse. The Agreement would also require the baghouses controlling ancillary operations at the BOF shop to comply with a more stringent limit, 0.005 gr/scf, which more closely approaches actual emission rates of these baghouse. The actions under this Agreement are still ongoing and are not scheduled to be completed until March 31, 2013. This Agreement, which derives from the Illinois EPA's general administrative authority of the Act, also is not yet memorialized in a federally enforceable permit.

regular opacity observations for the BOF for uncaptured emissions, pending upgrades to the control equipment for the BOF that are planned to address emissions from tapping of the furnaces.. For this purpose, opacity observations would be required for at least five days out of seven operating days.[113, 114] After the planned upgrade for control system for the BOF is completed, which will increase the compliance margin, opacity observations would be required on a weekly or "daily" schedule. The scheduling of observations would be related to the level of opacity observed during the prior observations and the extent of the compliance margin.[115] This approach to the timing of opacity observations is appropriate after upgrade to the control system as a violation of 35 IAC 212.446(c) would be expected to result from gradual deterioration of the capture system for the BOF. Weekly opacity observations would enable the source to make timely repairs or take other appropriate actions in response to elevated levels of opacity before actual opacity would ever exceed 20 percent. Daily opacity observations would only be expected to become necessary if the source fails to act to take timely actions to maintain a margin of compliance with 35 IAC 212.446(c).

Limit for SO_2 (35 IAC 214.301/Condition 7.5.3(g)) – This standard, which generally limits the emissions of SO_2 from process emission units to no more than 2000 ppm, would allow more SO_2 emissions from the units in the BOF shop than their potential emissions.[116] This is readily explained as desulfurization agents must be added to the iron to removed dissolved sulfur from the iron in the Hot Metal Desulfurization Process. In this process, these agents chemically reactive and bind with the sulfur transferring the sulfur into the slag. Accordingly, Periodic Monitoring is not needed to address this generic state standard.

Permit Limits

Limit on production (Condition 7.5.6(a)) – The Periodic Monitoring for this annual limit would be provided by requiring relevant records be kept (Condition 7.5.10(b)(v)). This is sufficient as the limit applies on a monthly basis and addresses data that is fundamental for operation of the BOF furnaces by the source.

Limits for emissions of PM/PM_{10} and other pollutants from the ESP (captured emissions) (Condition 7.5.6(c)) – The emissions of PM/PM_{10} of the ESP are addressed through the provisions of the NESHAP that apply to the ESP, as already discussed. The NESHAP also establishes rigorous compliance procedures for PM emissions, including requirements for continuous opacity

[113] The "five day out of seven day" schedule would accommodate the practical challenges of scheduling opacity observations for the BOF and the occurrence of weather conditions that prevent performance of scheduled opacity observations. For example, if opacity observations are required to be conducted on this schedule and the source arranges to conduct observations on a daily basis, the source would still be able to conduct all required observations if unexpected events arise that interfere with a planned observation on a day or two in a week.

[114] This schedule for opacity observations for uncaptured emissions in the building housing the BOF furnaces is also required under the Agreement.

[115] Weekly observations would be required if the prior observations show a significant margin of compliance, i.e., opacity is less than 18 percent. "Daily" observations would be required if the prior observation does not indicate a significant margin of compliance, i.e., opacity is 18 percent or more. Daily observations would continue to be required until five consecutive daily observations all indicate a significant margin of compliance, with the greatest opacity that is observed all less than 18 percent.

[116] For example, based on emission testing conducted in October 2009, 35 IAC 214.301 would allow SO2 emissions of over 7,000 pounds per hour, from the BOF furnace.

monitoring for proper operation of the ESP, work practice requirements and requirements for periodic emission testing every 30 months. As lead is a component of the PM emissions, these provisions of the NESHAP also address emissions of lead. To specifically address emissions of lead, the revised permit would require measurements for lead emissions when NESHAP testing is conducted for PM. The revised permit would also require testing for emissions of other pollutants to accompany every other NESHAP test. To specifically address the permit limits, relevant records would be required for steel throughput, the emission factors used by the Permittee to calculate captured emissions from the ESP, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for these permit limits, particularly as PM emissions of the ESP must be well controlled with an ESP that is subject to appropriate Periodic Monitoring to assure that this equipment is properly operated.

Limits for uncaptured emissions of PM/PM_{10} and lead from the BOF shop (Condition 7.5.6(d)) - The uncaptured emissions of PM/PM_{10} and lead from the BOF shop are addressed through the provisions of the NESHAP that apply to the capture system for the BOF furnaces. However, unlike the captured emissions, the uncaptured emissions of the BOF furnaces are not amenable to direct measurement of emissions.[117] In this regard, the NESHAP addresses the performance of the capture system with a standard for opacity and with work practices. These requirements of the NESHAP are accompanied by rigorous compliance procedures, including requirements for continuous operational monitoring of the operation of the capture system. As lead is a component of the PM emissions, these provisions of the NESHAP also address emissions of lead. To specifically address emissions of lead, as already discussed, the revised permit would require measurements for lead emissions when NESHAP testing is conducted for PM. While such testing would measure captured PM/PM_{10} and lead emission of the casthouse, rather than uncaptured emissions, such testing would serve as testing of uncaptured emissions. As such, it would trigger the requirement for the source to reevaluate the emission factors used to calculate emissions from the BOF furnaces, both captured and uncaptured. However, unlike captured emissions, which would be measured directly, the determinations for uncaptured emissions would be derived from the measurements of captured emissions using appropriate values for the efficiency of the capture system and the performance of the ESP.[118] To specifically address the permit limits for PM/PM_{10} and lead, relevant records would be required for steel throughput, the emission factors used by the Permittee to calculate uncaptured emissions from the BOF shop and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for these permit limits, particularly as PM emissions of the BOF furnaces must be well controlled with a capture system that is subject to appropriate Periodic Monitoring to assure that this equipment is properly operated.

Limit on overall annual emissions of the BOF shop (Condition 7.5.6(b)) – Periodic Monitoring for

[117] The inability to directly measure emissions is inherent with uncaptured emissions from the roof monitor on the BOF shop as such emissions are, by definition, uncaptured and do not reflect the pollutant content of process materials, so that emissions may be determined through material balance calculations.

[118] When emissions testing is conducted for the BOF furnaces, the determinations for uncaptured emissions of PM/PM_{10} and lead would be derived from the measurements of captured emissions, using appropriate engineering values for the efficiency of the capture system and the performance of the ESP. For example, the requirements of the NESHAP for the capture systems on BOF furnaces are commonly considered to provide a minimum of 95 percent capture of the emissions from the furnaces.

this limits would be provided by requiring records for the summation of emissions from the various emission units and emission streams in the BOF shop.

2. Ancillary Operations

Federal Emission Standards

PM limit for control devices or captured emissions (Condition 7.5.3(e)(ii) and (iii)/40 CFR 63.7790(a)) – This standard, which limits PM emissions to 0.01 gr/scf, is readily met by the baghouses installed on these operations.[119, 120] The NESHAP also requires operational monitoring with bag leak detection systems for the baghouses for the slag skimmer for hot metal desulfurization and ladle metallurgy. For the baghouse for reladling/desulfurization for hot metal, which is an existing positive pressure baghouse, operational monitoring is required for pressure drop across each cell of the baghouse.[121] The NESHAP also mandates work practices for these baghouses, including regular inspections of the various component and systems of the baghouses. Finally, the NESHAP requires that emission testing be repeated at renewal of the CAAPP permit, i.e., about every 5 years. These provisions are sufficient as Periodic Monitoring because the baghouse can comply with the applicable standard with a substantial compliance margin when properly maintained. The required operational monitoring would identify any lapses in maintenance practices by the source or other failure or upset in the operation of the baghouses.

State Emission Standards

PM standard for emissions from control equipment (35 IAC 212.448(b)(7)/Condition 7.5.3(b)((iii)) - This state standard, which limits PM emissions from the control equipment on ancillary operations to 0.010 gr/scf is identical to the applicable NESHAP standard pursuant to 40 CFR 63.7790(a) . Accordingly, the Periodic Monitoring for the NESHAP standard for control devices, as discussed above, also serves and is sufficient as the Monitoring for this state standard.

Permit Limits

Limits for emissions of PM/PM_{10} and other pollutants (captured emissions) (Condition 7.5.6(e), (f) and (f)) – The emissions of PM/PM_{10} of these ancillary operations are addressed through the

[119] For example, compared to the standard of 0.01 gr/scf, the measured PM emissions of the "Soda Ash Baghouse" for Reladling and Desulfurization during recent testing in October 2009 was 0.004 gr/scf, The measured PM emissions of "Baghouse 2" for the ladle metallurgy operations during testing in October 2009 was 0.00091 gr/scf.

[120] In the most recent emission testing for the BOF slag skimmer baghouse, in September and October 2009, the results of which are provided below, measured PM emissions were less than half the applicable standard, for a compliance margin of over 60 percent:

Tested Emission Rates			Allowable Rate*
gr/scf	lb/hr	lb/ton	lbs/hr
0.001	0.67	0.0027**	6.7

* Calculated from the tested PM emission rate, in lb/hr, by applying the ratio of the allowable PM emissions, 0.010 gr/scf, and the tested emission rate, in gr/scf.

** Calculated from a nominal production rate of 250 tons per hour

[121] Positive pressure baghouses normally exhaust through openings that are not equipped with stacks. As a result, they are not readily amenable to use of bag leak detection systems or performance of opacity monitoring.

provisions of the NESHAP that apply to these units, as already discussed. The NESHAP also establishes rigorous compliance procedures for PM emissions, including requirements for continuous operational monitoring for proper operation of these baghouses, work practices requirements, and requirements for periodic emission testing. As lead is a component of the PM emissions, these provisions of the NESHAP also address emissions of lead. To specifically address emissions of lead, the revised permit would require measurements for lead emissions when NESHAP testing is conducted for PM. Then, as is generally the approach for permit limits on the amount of emissions from an emission unit, the Periodic Monitoring for these permit limits for the ancillary operations in the shop would build on the Monitoring related to other applicable requirements for these units. To specifically address the permit limits, relevant records would be required for steel throughput, the emission factors used by the Permittee to calculate emissions from these units, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for these permit limits, particularly as PM emissions of these units must be well controlled with baghouses that are subject to appropriate Periodic Monitoring to assure that this equipment is properly operated.

3. Ladle Drying/Preheating

While these operations in the BOF shop are considered “process emission units” by rule, they are appropriately approached as if they were fuel combustion emission units. This is because the emissions of the units are determined by the quality of the byproduct fuels that are burned. Accordingly, compliance with the applicable state standards is indirectly addressed as Periodic Monitoring is established for other emission units firing these byproduct fuels, including the BOF stoves, slab reheat, furnaces and boilers (Sections 7.4, 7.7 and 7.10 of this permit, respectively).

C.6 Continuous Casting (Section 7.6 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for Continuous Casting would include the following:

- ✓ Opacity Observations
  - For each spray chamber stack, observations of for visible emissions on a weekly basis
- ✓ Inspections
  - Monthly inspections of mechanical shrouds
- ✓ Recordkeeping
  - Amount of steel cast
  - Inspection and maintenance records
  -
- ✓ Reporting
  - Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)

b. Justification of Periodic Monitoring for Continuous Casting

Emissions from the various operations in the continuous casting process, including the molds, spray chambers, and slab cut-off and ripping, are minimized by the nature of this process and by mechanical shrouds, as specifically addressed by 35 IAC 212.450.

1. Continuous casters and spray chambers

State Emission Standards and Control Requirements

Opacity (35 IAC 212.458(b)(8)/Condition 7.6.3(b)(ii)) – This state standard, which addresses the actual continuous casters themselves rather than the associated cutting and ripping of the steel strand from the caster into slabs, limits opacity to 5 percent. Periodic Monitoring for this standard would be provided by requiring monthly observation for the presence of visible emission, with follow-up observations for opacity if visible emissions are observed. Semi-annual observations for opacity would also specifically be required to confirm compliance with this standard, given the low value at which the standard is set. These observations would be sufficient to address continuous castings given the nature of continuous casting, in which emissions are minimized by features that are integral to the casting process.

Use of mechanical shrouds (35 IAC 212.450/Condition 7.6.5) - Weekly inspections of the mechanical shrouds would be required to verify their integrity. These shrouds are an integral feature of the casting process for worker comfort and safety. Formal weekly observations would identify deterioration in the condition of the shrouds and enable appropriate repairs to be made.

PM Emission Standard (35 IAC 212.458(b)(7) and (c)/Condition 7.8.3(b)) – Periodic Monitoring for this state standard, which limits PM_{10} emissions to 0.01 gr/scf if visible emissions are present, is generally provided by the requirements for regular observations for visible emissions and

opacity from the casters. To specifically provide Periodic Monitoring for this standard, the permit would require the source to conduct opacity observations within five days of a written request from the Illinois EPA. The permit would also explicitly provide for testing for PM emissions to be conducted upon request by the Illinois EPA. These requirements would serve to address any unforeseen future circumstances for a continuous caster for which additional opacity observations or testing for PM emissions would be appropriate. This is sufficient Periodic Monitoring for this standard given the nature of the continuous casting process.

Opacity (35 IAC 212.316(f)/Condition 7.6.3(c) - This state standard addresses the emissions from cutting and ripping of the steel strands from the casters to form steel slabs. It limits the opacity of the emissions from these operations, which are considered fugitive particulate matter under state rules, to 20 percent. Periodic Monitoring for this standard would also be provided by the required monthly observation of caster operations for the presence of visible emission, with follow-up observations for opacity if visible emissions are observed. Semi-annual observations for opacity would also specifically be required to confirm compliance with this standard. These observations would be sufficient to address the cutting operations that are part of the continuous casting process given their nature. In particular, emissions from cutting the strand are minimized as cutting is performed by automated equipment while the strand is still hot.

Permit Limits

Limits for emissions of PM/PM_{10} (captured emissions) (Condition 7.4.6(a)* and (c)) –As is generally the approach for permit limits for the amount of emissions from an emission unit, the Periodic Monitoring for these permit limits for PM /PM_{10} emissions of these operations at the continuous casters, which are captured and exhausted through stacks, would build on the Monitoring related to other applicable requirements for the operations. If testing for PM emissions of either subject operations is conducted, the Permittee would have to reevaluate the adequacy of the emission factor that it is using for these operations. Testing specifically for the purpose of verifying emission factors is not warranted given the small amounts of emissions. In particular, each continuous caster is projected to have annual emissions of less than 10 tons from the spray chambers. To specifically address the permit limits, relevant records would be required for the steel throughput of the casters, the emission factors used by the Permittee to calculate emissions from casthouse, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for these permit limits, given the nature of continuous casting.

* Condition 7.6.6(a) addresses emissions from Baghouse #1, which controls both a material handling operation and slag skimming at the continuous casters, which is a process operation.

Limits for uncaptured PM/PM_{10} emissions* (Condition 7.6.6(b), (d) and (e)) - As is generally the approach for permit limits for the amount of emissions from an emission unit, the Periodic Monitoring for these permit limits for various operations on the continuous casters would build on the Monitoring related to other applicable requirements for the casters, which requirements serve to assure proper operation as related to generation of PM emissions. As these operations do not have stacks, this Monitoring would not include testing for PM/PM_{10} emissions upon request. To specifically address the permit limits for PM/PM_{10}, relevant records would be required for steel throughput, the emission factors used by the Permittee to calculate emissions from these operations

at the casters, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for these permit limits, as minimization of PM emissions is generally integral to continuous casting and appropriate Periodic Monitoring is required to confirm that the casters are properly operated to minimize PM emissions.

NO_x limits for uncaptured emissions (Condition 7.6.6(b)) - Condition 7.6.6(b) also addresses emissions of NO_x from the caster molds on the continuous casters. Unlike PM emissions from the caster molds, NO_x emissions are not subject to "other applicable requirements." The uncaptured NO_x emissions of NO_x from the caster molds are not minimized by specific control practices. Rather the permit limits for NO_x emissions reflect the projected emissions of NO_x from the caster molds as provided in an application for a construction permit submitted over a decade ago. Accordingly, it is both appropriate and necessary for compliance with these limits to be directly determined using emission factors. To specifically address these permit limits, relevant records would be required for the amount of steel that is cast, the NO_x emission factor used by the Permittee to calculate emissions from the caster molds, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for compliance with these permit limits given the automated nature of continuous casting and absence of specific practices for control of NO_x emissions.

C.7 Reheat Furnaces (Section 7.7 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for the reheat furnaces includes the following:

- ✓ Opacity Observations
  - Opacity observations for each furnace on a semi-annual basis
- ✓ Operational Monitoring
  - For coke oven gas (COG), monitoring of H_2S content, conducted at the desulfurization unit
- ✓ Inspections
  - Inspections of low-NO_x burners on an annual basis
- ✓ Recordkeeping
  - Records for PM/PM_{10}, SO_2, and NO_x emissions
- ✓ Reporting
  - Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)

b. Justification for Periodic Monitoring on Reheat Furnaces

1. Reheat Furnaces

The Periodic Monitoring for these reheat furnace is appropriately approached as if these furnaces were fuel combustion units fired with gaseous fuel. These furnaces do not emit "process-related" emissions of particulate like the blast furnaces and furnaces in the BOF shop, which handle molten metal. The function of the reheat furnaces is to heat steel slabs to prepare them for hot rolling. The slabs are heated to temperatures at which they can be readily worked in the rolling mill but below the temperature at which the slabs would start to melt since melting of the slabs would interfere with hot rolling. The emissions of particulate from the reheat furnaces are "combustion related" from the fuel fired in the furnaces, with emissions of particulate minimized as the furnaces are fired with gaseous fuels. In this regard, these furnaces also do not have add-on control equipment for NO_x, instead being equipped with low- NO_x burners on certain zones in the furnace for control of emissions, as more commonly used on boilers and process heaters. As such, notwithstanding their regulatory status under Illinois regulations as "process emission units," the Periodic Monitoring for these furnaces is appropriately approached as if they were gas-fired fuel combustion units.

State standards

PM_{10} standard (35 IAC 212.458(b)(10)/Condition 7.7.3(b)) - Periodic Monitoring must be established for this state standard, which limits PM_{10} emissions of the reheat furnaces to 0.09 lb/mmBtu of heat input or to "no visible emissions."[122] To address this standard, the revised permit

[122] Regulatory compliance procedures would only accompany 35 IAC 212.458(b) if particulate control equipment were

would require the source to conduct regular observations for visible emissions from the reheat furnaces, to be followed by observations of opacity if visible emissions are observed. As only gaseous fuels are used in the reheat furnaces, it is sufficient that these observations be conducted on a semi-annual basis.[123] Regular testing for PM_{10} emissions is not warranted based upon the most recent emission testing for the reheat furnaces, the testing for Reheat Furnace 4, which confirms that the PM_{10} emissions are less than 0.09 lb/mmBtu0.01 gr/scf with an ample of margin of compliance.[124] Nevertheless, the revised CAAPP permit would require the source to conduct testing for PM_{10} emissions upon request by the Illinois EPA, which would provide for emission testing to be conducted to address circumstances that were not contemplated.

PM_{10} standard (35 IAC 212.458(b)(7)/Condition 7.7.3(g)) - Periodic Monitoring must be established for this state standard, which limits PM_{10} emissions of the blast furnace stoves to 0.01 gr/scf or to "no visible emissions."[125] To address this standard, as with 35 IAC 212.458, as discussed above, the revised permit would require the source to conduct semi-annual observations for visible emissions from the furnaces, to be followed by observations of opacity if visible emissions are observed. The revised CAAPP permit would also require sampling and analysis of the undesulfurized and desulfurized COG used at the facility on an annual basis, to be conducted at the coke byproduct recovery plant (See Section 7.3 of the permit). Regular testing of the reheat furnaces for PM_{10} emissions is not warranted based upon the most recent emission testing for the reheat furnaces, the testing for Reheat Furnace 4. This testing also confirmed that its PM_{10} emissions are less than 0.01 gr/scf with a compliance margin of over 35 percent. However, as discussed, the revised CAAPP permit would require the source to conduct testing of the reheat furnaces for PM_{10} emissions upon request by the Illinois EPA, which would provide for such testing to be conducted to address circumstances that were not contemplated.

PM standard (35 IAC 212.321/Condition 7.7.3(e) and 35 IAC 212.322/Condition 7.7.3(d)) -These standards, which limit the PM emissions of the reheat furnaces relative to their process weight rate, allow greater emissions than allowed by 35 IAC 212.458(b)(10). For example, for Reheat Furnace

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used to comply with this standard.

[123] The revised CAAPP permit would also require sampling and analysis of the COG used at the facility on an annual basis, to be conducted at the coke byproduct recovery plant (See Section 7.3 of the permit). This would provide quantitative data for the composition of COG that would be relevant to the non-sulfate particulate emissions of the reheat furnaces and other emission units that use COG.

[124] In the most recent emission testing for Reheat Furnace 4, in August 2010, the results of which are provided below, measured PM emissions were less a fraction of the applicable standards, for a compliance margin of over 90 percent.

PM Emission Data							
Measured PM Rates				Allowable PM Rates (lb/hr)		Calculated PM Rates	
lb/mmBtu[a]	lb/ton steel[b]	gr/scf	lb/hr	212.321[b]	212.458(b)(10) [c]	lb/mmBtu[d]	
						COG	COG adjusted
0.0086	0.0174	0.0058	2.76	37.9	29.0	0.0284	0.026

a. Calculated from the average heat input rate, 322.7 mmBtu/hour, reported for the period of emission testing.
b. Calculated from the average process rate, 158.6 tons/hour, reported for the period of emission testing.
c. Calculated from the tested PM emission rate, in lb/mmBtu, by applying the ratio of the allowable PM emissions, 0.09 lb/mmBtu, and the tested emission rate, in lb/mmBtu/scf.
d. Calculated from the average heat input from COG reported for the period of testing, i.e., 96.9 mmBtu/hr. The adjusted factor calculates a PM emission rate for COG from the measured emission rate based on a PM emission rate of 0.0095 lb/mmBtu from firing natural gas, i.e., half the standard USEPA emission factor, 0.0019 lb/mmBtu.

[125] Regulatory compliance procedures would only accompany 35 IAC 212.458(b) if particulate control equipment were used to comply with this standard.

4 when operated at capacity, 35 IAC 212.458(b)(10) would limit PM/PM_{10} emissions to 44.6 pounds per hour, whereas 35 IAC 212.321 would allow PM emissions of 47.0 pounds per hour.[126] This difference would be greater when this furnace operates below its capacity due to the non-linear relationship between the allowed emission rate and the process weight rate in 35 IAC 212.321 and 212.322.[127] The difference would also be greater for Reheat Furnaces 1, 2 and 3, which are subject to 35 IAC 212.322 since they are existing emission units for purposes of 35 IAC Part 212.[128] Because 35 IAC 212.458(b)(10) is a more stringent standard for PM emissions from the reheat furnaces than 35 IAC 212.321 or 212.322, Periodic Monitoring is not needed to address these generic state standards that also apply to the reheat furnaces.

Opacity standard (35 IAC 212.123(a)/Condition 7.7.3(f)) - Periodic Monitoring for this standard, which limits the opacity of the reheat furnaces to 30 percent, would appropriately be provided by requiring semi-annual observations of visible emissions from each furnace, followed by opacity observations if visible emissions are observed. As discussed, these furnaces are appropriately addressed as fuel combustion emission units that fire gaseous fuels. Accordingly, semi-annual observations are sufficient to address this standard.

SO_2 standard (35 IAC 214.301/Condition 7.7.3(e)) - This standard, which limits the concentration of SO_2 in the exhaust from the reheat furnaces to no more than 2000 ppm, allows SO_2 emissions that are much greater than the SO_2 emissions allowed by the applicable limits on the sulfur content of COG. In particular, Condition 7.3.7(d) limits the sulfur content of COG that has not undergone desulfurization to 500 grains of H_2S per 100 scf.[129] A comparison of the SO_2 emissions allowed by this limit and 35 IAC 214.301 can be made using data for exhaust flow rate and fuel usage collected for Reheat Furnace 4 during the emission testing in August 2010. Based on this data for the period of testing, 35 IAC 214.301would have allowed SO_2 emissions of over 1860 pounds per hour from Reheat Furnace 4.[130] The hourly SO_2 emission of this furnace would actually have been restricted to about 260 pounds by the limit on the sulfur content of COG without desulfurization.[131]

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[126] The PM/PM_{10} emission allowed by 35 IAC 212.458(b)(10), i.e., 44.6 pounds per hour, may be directly calculated from the rated heat input of Reheat Furnace 4, i.e., 495 mmBtu/hr. (495 mmBtu/hr x 0.09 lb/mmBtu = 44.6 lb/hr)
The PM emission allowed by 35 IAC 212.321, i.e., 47.0 pounds per hour, may be calculated using the rated heat input of Reheat Furnace 4, and the maximum heat rate of the furnace, mmBtu per ton of steel processed. (495 mmBtu/hr x 0.09 lb/mmBtu = 44.6 lb/hr)

[127] 35 IAC 212.321 allows relatively more PM emissions from an emission unit at a lower process rate than at a higher rate. For example, when operating at half capacity, 35 IAC 212.458(b)(10) would limit hourly PM/PM_{10} emissions of Reheat Furnace 4 to 22.3 pounds whereas 35 IAC 212.321 would allow PM emissions of 32.4 pounds.

[128] 35 IAC 212.322, which applies to existing emission units, allows greater PM emissions from an existing emission unit than allowed by 35 IAC 212.321 for a new emission unit. For example, based on a process weight rate of 200 tons per hour, 35 IAC 212.322 would allow hourly PM emissions of 58.6 pounds from an existing emission unit, whereas 35 IAC 212.321 would limit emissions to 43.6 pounds.

[129] Based on a low value for the heat content of COG (500 Btu/scf), the limit for the sulfur content of undesulfurized COG (500 grains/100 scf, as H_2S) restricts SO_2 emissions from combustion of COG to about 2.7 pounds per million Btu. (500 gr/100 scf ÷ 7000 gr/lb ÷ 500 Btu/scf x 64 lb SO_2/34 lb H_2S = 2.69 lbs/mmBtu.

[130] The SO_2 emissions allowed by 35 IAC 214.301 are readily calculated from the exhaust flow rate of a unit. For Reheat Furnace 4, the exhaust flow rate of the furnace during the August 2010 testing was about 5,600,000 scf/hr. (5,600,000 acf/hr ÷ 385 scf/lb-mole x 2000 ppm/1,000,000 ppm x 64 lb/lb-mole SO_2 = 1860 lbs/hr)

[131] The SO_2 emissions allowed by the limit on the sulfur content of COG are readily calculated from the amount of fuel fired or heat input to this furnace. As already explained, the limit on the sulfur content of undesulfurized COG is equivalent to an SO_2 emissions limit of about 2.7 lbs/mmBtu . During the period of testing, the firing rates of the furnace were 96.9 and 322.7 mmBtu/hr, respectively, for COG only and the combination of COG and natural gas. This

If only undesulfurized COG had been fired in the furnace during this period, the hourly SO_2 emissions of the furnace would still have been restricted to only about 870 pounds. This difference between the SO_2 emissions allowed by 35 IAC 214.301 and other requirements is not unusual as 35 IAC 214.301 is one of Illinois' "catch-all" standards. Because other requirements are more stringent that 35 IAC 214.301, Periodic Monitoring is not needed to address this state standard.

Permit Limits

Limits on fuel usage (Condition 7.7.7(a) - Periodic Monitoring for these monthly and annual limits would be provided by recordkeeping for fuel usage. This is both appropriate and sufficient as reliable data for usage of different fuels is also important to the source. Instrumental monitoring is not necessary or appropriate because records can readily provide reliable data to verify compliance with these limits.

Limits on NO_x emission rates (Condition 7.7.7(c)) – Periodic Monitoring must be established for these permit limits, which address the NO_x emission rates of individual reheat furnaces in lbs/mmBtu. As these limits address emission units for which NO_x emissions are controlled by combustion practices, including low- NO_x burners, rather than add-on control equipment, it is appropriate that the CAAPP permit establish work practices to facilitate proper operation and maintenance of the burners in the reheat furnaces as related to their NO_x emissions.[132] As gas burners, including low- NO_x burners, are stable and reliable devices, it is sufficient that these inspections be performed on a semi-annual basis.[133] The Periodic Monitoring for the reheat furnaces would require that these inspections include measurements of the concentration of NO_x in the flue gases of the furnaces both before and after the inspection. The measurements for NO_x concentration before the inspections would provide analytical verification of the NO_x emission rates of the burners relative to the applicable limits.[134] To support this approach to Periodic Monitoring, the revised CAAPP permit would also require additional testing of the NO_x emissions for each reheat furnace to confirm that they comply with the NO_x limits and to establish the concentration of NO_x in the exhaust that accompanies compliance. While recent testing of the NO_x emissions of these Reheat Furnaces 1, 2 and 3 has shown compliance with the applicable limits

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yields an hourly allowable SO_2 emission rate of 260 pounds for Reheat Furnace 4 during the period of testing. (96.9 mmBtu/hr x 2.7 lbs SO_2/mmBtu = 262 lbs/hr). Even if all fuel had been COG, the hourly allowable SO_2 emission rate would only have been about 870 pounds. (322.7 mmBtu/hr x 2.7 lbs SO_2/mmBtu = 871 lbs/hr) If desulfurized COG was fired during the period of testing, the allowable SO_2 emissions would likely have been a fraction of the emissions allowed for undesulfurized COG. For example, based on the monthly limit for desulfurized COG, 25 gr/100 scf, the actual hourly allowable SO_2 emissions would have been only 13 pounds.

[132] This work practice would also address Condition 7.7.6(a) of the permit, which requires the the low-NOx burners installed on certain zones of the reheat furnaces be operated and maintained in good air pollution control practices.

[133] For example, in its NESHAP for boilers and process heaters, 40 CFR 63 Subpart DDDDD as signed by USEPA Administrator Lisa Jackson on February 21, 2011, combustion tune-ups to address CO emissions are required to be conducted on an annual basis for larger units firing natural gas and a biennial basis for smaller units.

I[134] The revised CAAPP permit would also allow annual performance testing or continuous monitoring for NOx emissions to serve as an alternative to periodic measurements of NOx emissions in conjunction semi-annual inspections of the burners in the reheat furnaces. This would address the regulatory compliance procedures under 35 AC Part 217, Subpart D, that would potentially apply to the reheat furnaces in the future if and when they become applicable. These compliance procedures, which are more rigorous than the procedures that would be required by the CAAPP permit, would also be appropriate at that time as the furnaces would also become subject to more stringent NOx emission standards pursuant to 35 IAC Part 217 Subpart I.

with a substantial margin of compliance,[135] this testing was conducted while they were only being fired with natural gas.[136] Further testing of furnaces while firing a maximum level of COG is also needed to identify the margin of compliance, hopefully, with the NO_x limits under the normal operating configuration of the furnaces, to determine whether testing for NO_x emissions should be repeated on a regular schedule. Accordingly, the revised CAAPP permit would also provide for the source to conduct further testing for NO_x emissions upon request by the Illinois EPA, which would accommodate regular testing for emissions of NO_x if needed because of the compliance margin shown during the additional testing for the normal operating configuration. This would also provide for further testing for emissions of NO_x to address circumstances that were not contemplated.

Limits on NO_x emissions (Condition 7.7.7(b)) – Periodic Monitoring must be established for these permit limits, which address the combined NO_x emissions of the furnaces on a monthly and annual basis. As these limits address monthly and annual emissions, like other permit limits for monthly and annual emissions of emission units, appropriate records would be required for the slab reheat furnaces, NO_x emission factors, operating data (i.e., fuel usage) and calculated NO_x emissions to serve as the Monitoring to address these limits.

[135] In the most recent emission testing for the Reheat Furnaces 1, 2 and 3, in January 2010, the results of which are provided below, measured NOx emissions when firing only natural gas are well within applicable limits, with a compliance margin of over 50 percent.

NOx Emission Data for Reheat Furnaces			
Furnace	Measured Rates		Allowable Rate
	lb/hr	lb/mmBtu	lb/mmBtu
1	10.8	0.044	0.150
2	15.6	0.064	0.150
2	16.4	0.068	0.264

[136] This emission testing was conducted during the recent period when the coke batteries were not operating, so that COG was not available to be fired in the reheat furnaces.

C.8 Finishing Operations (Section 7.8 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for the Finishing Operations would include:

- ✓ Operational Monitoring
  - For the scrubbers for pickling, continuous monitoring of the makeup water flow rate

- ✓ Inspections and Evaluations
  - For HCl storage tanks, semi-annual inspections
  - For furnaces and process heaters, annual combustion evaluations

- ✓ Emissions Testing:
  - For pickling operations, testing of HCl emissions every two years
  - For galvanizing units, testing upon request

- ✓ Recordkeeping
  - Records related to the operation and emissions of Line #8
  - For the coating operations, VOM content and usage of organic coatings

- ✓ Reporting
  - Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)
  - Quarterly reports

b. Justification for Periodic Monitoring for Finishing Operations

The Finishing Operations include pickling, natural gas-fired furnaces and heaters used in the galvanizing process, and coating operations. Periodic Monitoring for these emission units would include emissions testing and combustion evaluations of the furnaces, and emission testing and continuous monitoring of scrubbers for the control of HCl emissions.

1. Justification for Periodic Monitoring for the Pickling Operation

Pickling prepares steel for finishing by cleaning with an acid solution. When hydrochloric acid is used for pickling, the process emits gaseous hydrogen chloride (HCl). These emissions are readily controlled by water scrubbing. The Periodic Monitoring for the pickling operation would focus upon proper operation of the scrubbers, [137] as addressed by continuous operational monitoring of the scrubber used for control of HCl emissions and periodic testing of the scrubbers.

Federal Emission Standards (NESHAP for Steel Pickling, 40 CFR Part 63 Subpart CCC

[137] Although the pickling operation has two scrubbers, only scrubber is operated at a time except for transitions between scrubbers. As a result, the operation of the pickling line is not interrupted by the need to take a scrubber out of service for maintenance. At any time, one scrubber is operational and the other is either out of service for maintenance or on reserve.

HCl standard for pickling (40 CFR 63.1157(a)/Condition 7.8.5) – This NESHAP requires HCl emissions from pickling lines either to not exceed 18 ppmv or to be controlled by at least 97 percent. The compliance procedures of the NESHAP require appropriate continuous operational monitoring for scrubbers on pickling operations, with monitoring for makeup water flow rate and, if scrubbant is recirculated, recirculation rate, with recording of this data at least once per shift. The NESHAP also requires a source to initiate prescribed corrective actions if minimum flow rates established during emissions testing are not met. Periodic emission testing is also required, with the permitting authority able to approve a testing schedule with up to 30 months between tests.[138] For this purpose, based past testing of the scrubbers, which demonstrated compliance margins greater than 95 percent,[139] the Illinois EPA had previously approved testing every two years. The compliance procedures of the NESHAP for these units reasonably addresses the applicable NESHAP standard, with appropriate operational monitoring for the scrubbers that would ensure that corrective actions are taken in the event of an upset of the scrubber. Based on the testing conducted for the scrubbers on the pickling line, the Periodic Monitoring appropriately focuses on the operational monitoring for the scrubbers rather than on testing. Accordingly, the Illinois EPA will not alter the schedule on emission testing is required. However, the source would be required to record monitored operational data for the scrubbers at least twice per shift. This is reasonable as this data is must be measured and more frequent recording of data would improve the Monitoring for the scrubbers.

Operational requirements for hydrochloric acid storage tanks (40 CFR 63.1159(b)/Condition 7.8.6(a)) - Semiannual inspections of the HCl storage tanks associated with the pickling operation would be required to verify that the closed vent systems and enclosed loading and unloading line are present and operating properly. This Periodic Monitoring is sufficient as the NESHAP sets an equipment standard for these tanks that would only not be met due to an accident, which would be readily apparent, or gradual deterioration, which would be identifiable during a semi-annual inspection.

2. Justification for Periodic Monitoring for Galvanizing Lines

The Galvanizing Lines involve three categories of emission units, natural gas-fired fuel combustion units, process emission units without control equipment and new process emission units with control equipment, on new Galvanizing Line 8. As a general matter, none of these units have been identified as being of particular concern for emissions. Since the melting point of zinc is less than 1000 ˚F,[140] galvanizing is a comparatively low-temperature process. It is performed as a

[138] 40 CFR 63.112 provides that "Performance tests shall be conducted either annually or according to an alternative schedule that is approved by the applicable permitting authority, but no less frequently than every 21/2 years or twice per title V permit term. If any performance test shows that the HCl emission limitation is being exceeded, then the owner or operator is in violation of the emission limit."

[139] The results of the most recent emission testing for the pickling scrubbers in July 2010 follows:

Test Results for the Scrubbers for Pickling				
Scrubber	Measured		Allowed (ppmv)	Compliance Margin (%)
	lb/hr	ppmv		
South (No. 1)	0.022	0.20	18	98.9
North (No. 2)	0.058	0.52	18	97.1

[140] The melting point of zinc is approximately 790 ˚F. Its boiling point is about 1660 ˚F.

continuous process by passing heated strips of steel that have been processed on the pickling line through a bath of molten zinc, using rollers to submerge the strip in the bath.

State Emission Standards

PM Emission Standard (35 IAC 212.458(b)(7) and (c)/Condition 7.8.3(b)) – Given the nature of the galvanizing process, operational monitoring is not needed to verify compliance with this state standard, which limits PM_{10} emissions to 0.01 gr/scf if visible emissions are present. Periodic Monitoring for this standard is appropriately provided by requiring the source to conduct opacity observations upon written request from the Illinois EPA. The permit would also explicitly require the source to conduct testing for PM emissions upon request by the Illinois EPA. These requirements would serve to address any unforeseen future circumstances for the process units on the lines for which such observations or emission testing would be appropriate. This is sufficient Periodic Monitoring for this standard given the nature of the galvanizing process.

PM Emission Standards (35 IAC 212.322/Condition 7.8.3(c) and 35 IAC 212.321/Condition 7.8.3(d)) – As already discussed, these state "process weight rate" rules do not actually constrain the PM emissions of many process emission units as a practical matter. The emissions of the units on the galvanizing line are also not constrained by these rules. The smallest allowable emission rate for PM set by these rules for an emission unit or group of similar units ducted to a common control system is 0.55 pounds per hour.

Opacity Standard (35 IAC 212.123(a)/Condition 7.8.3(g)) – Given the nature of the galvanizing process, routine opacity observations are not needed to verify compliance with this generic state standard, which limits the opacity of emissions to 30 percent. Periodic Monitoring for this standard is appropriately provided by requiring the source to conduct opacity observations upon written request from the Illinois EPA. This would serve to address any future circumstances for the units for which such observations would be appropriate.

3. Galvanizing Line 8 (Construction Permit 95010005)

Limits on the design firing rates of units production (Conditions 7.8.7(a)(i), (ii) and (iii)) - Records of the design heat firing rates of units must be kept to address these design requirements for Line 8.

Limits on usage of fuel and production (Conditions 7.8.7(a)(iv) and (v)) - Records of the actual fuel usage and production must be kept to address these operational limits.

Limits on emissions of the furnace,* heaters and oven (Condition 7.8.7(b)) - The Periodic Monitoring for these permit limits for emissions from units in Line 8 that are associated with combustion of natural gas would rely on standard USEPA emission factors for combustion of natural gas, as published by USEPA in its Compilation of Air Pollutant Emission Factors, AP-42. To specifically address the permit limits, relevant records would be required for the use of natural gas and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for compliance with these permit limits, particularly as they involve emissions from combustion of natural gas.

* Excluding emissions of NO_x.

Limits on NO_x emissions of the furnace on Line 8 (Condition 7.8.7(b)(i)(A)) - The Periodic Monitoring for the permit limits for NO_x emissions from the furnace on Line 8 would generally be consistent with the standard approach for Monitoring for permit limits for the amounts of emissions. That is, to specifically address the permit limits for annual emissions, relevant records would be required for throughput, the emission factors used by the source to calculate emissions from the unit, and actual emissions for comparison to applicable limits. Records would also be required for maximum and typical hourly emission rates, with supporting documentation. However, to support this approach for this furnace, Periodic Monitoring would also be required for the catalytic converter system, which is present on the furnace on the line and controls NO_x emissions. This Monitoring would verify proper operation of this system. The instrumentation installed on this system, for operational temperature and NO_x concentration in the exhaust, would become required Monitoring. Recordkeeping would also be required for the operation of the system, including detailed records for upsets. Recordkeeping would also be required for the inspection and maintenance of this system. Finally, the permit would also explicitly provide for testing for NO_x emissions to be conducted upon request by the Illinois EPA. This is sufficient Periodic Monitoring for these permit limits given the nature of the furnace and associated control system and the NO_x emission rate measured during the initial emission testing of this furnace,[141] which shows that the unit readily complies with these permit limits.

Limits on PM emissions of the melting kettle and cleaner section (Condition 7.8.7(b)(v) and (vi)) - The Periodic Monitoring for these permit limits for process emissions from units in Line 8 would generally be consistent with the standard approach for Monitoring for permit limits for the amounts of emissions. That is, to specifically address the permit limits, relevant records would be required for throughput, the emission factors used by the source to calculate captured emissions from the units, and actual emissions for comparison to applicable limits. However, to support this approach, operational monitoring would also be required for the scrubber, which is present on the cleaner section of the line to control any alkaline mist from this unit. This Monitoring would verify proper operation of the scrubber. The permit would also explicitly provide for testing for PM emissions to be conducted upon request by the Illinois EPA. This is sufficient Periodic Monitoring for these permit limits given the nature of the galvanizing process.

4. Justification for Periodic Monitoring for Coating Operations

State Emission Standards

Standard for VOM (35 IAC 219.204/Condition 7.8.3(e)) - The coating operations are subject to a state standard limiting the VOM content of the organic coatings that are used, 35 IAC 219.204. The coating operations apply protective oil coatings, which readily comply with this limit, to the

[141] The results of the initial testing of the furnace in August 1996 follows:

Test Results for Furnace on Galvanizing Line 8			
Measured		Allowed	Compliance Margin
ppmv	lb/hr	(lb/hr)	(%)
3.7	0.7	2.07	66

finished steel strip. The Periodic Monitoring would consist of recordkeeping for the VOM content of the coatings and the usage of coatings. When coating operations do not have add-on control equipment and coatings are not thinned with organic solvent at a facility before application, recordkeeping for the VOM content of coating materials is routinely relied upon to verify compliance with the applicable standard. This is because compliance with applicable standards may be ensured by only purchasing compliant materials.

C.9 Wastewater Treatment Systems (Section 7.9 of the revised permit)

a. Periodic Monitoring Requirements for Wastewater Treatment Systems

The wastewater treatment systems are not currently subject to substantive requirements for control of emissions. They would potentially become subject to such requirements only if the applicability criteria of the Benzene Wastewater NESHAP, 40 CFR 61 Subpart FF, were met. The Periodic Monitoring for the wastewater treatment systems would include appropriate requirements in the revised CAAPP permit to address these applicability criteria.

The Periodic Monitoring for the wastewater treatment systems was not specifically addressed in the Order. However, in response to the Order, the applicable requirements in the current permit for the wastewater treatment systems were reviewed by the Illinois EPA as related to the sufficiency of Periodic Monitoring. Certain applicable requirements would be relocated in the revised permit to facilitate implementation of appropriate Monitoring. Additional Monitoring requirements would also be included in the revised permit to address relevant applicability criteria as necessary to assure compliance with the related substantive requirements. In particular, the various applicability criteria for the control requirements in the Benzene Wastewater NESHAP, 40 CFR 61 Subpart FF, are addressed in the conditions of the CAAPP permit for the coke by-product recovery plant, in Section 7.3 of the permit. This is appropriate as the coke by-product recovery plant would be the principal source of benzene wastewater at the facility. It is also likely that if the control requirements of this NESHAP were triggered, appropriate control measures would be directly implemented at the by-product recovery plant rather than downstream at the wastewater treatment systems. As such, applicable requirements related to applicability of this NESHAP are properly addressed in Section 7.3 of the CAAPP permit. They would not be duplicated in the provisions for the wastewater treatment systems in Section 7.9 of the revised CAAPP permit. This also avoids the need for any Periodic Monitoring in Section 7.9 of the revised permit related to the applicability of this NESHAP, as it would now be fully addressed in Section 7.3 of the revised permit.

C.10 Boilers and Associated Ancillary Emission Units (Section 7.10 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for the boilers at the facility and the associated cooling tower would include the following:

- ✓ For all boilers, annual opacity observations

- ✓ For all boilers, annual combustion tune-ups, including measurements of CO emissions

- ✓ Emission testing
  - For Power Boiler #1, testing every five years
  - For Boilers #11 and #12, testing upon request

- ✓ For the cooling tower, sampling and analysis of the circulated water for its solids content

- ✓ Recordkeeping
  - Fuel usage for each boiler
  - Maintenance and repair logs
  - For Power Boiler #1, records related to emissions

- ✓ Reporting
  - Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)
  - Quarterly reports

b. Justification for Periodic Monitoring for the Boilers and Ancillary Operations

The boilers fire primarily BFG, supplemented with natural gas and COG (only Boilers #11 and #12). The Periodic Monitoring for the boilers is a combination of opacity observations, sampling and analysis of BFG, emissions testing, and appropriate recordkeeping. This Periodic Monitoring would be appropriate given the nature of these units and applicable substantive requirements. In particular, the boilers at the facility only fire gaseous fuels, i.e., blast furnace gas (BFG), coke oven gas (COG) and natural gas. Natural gas is a commercial fuel whose use readily complies with applicable emission standards. BFG and COG are by-product fuels resulting from coke production and operation of the blast furnaces at the facility. The raw gas is processed at the facility to remove entrained particulate prior to use as fuel and the facility is not set up to use "raw" COG or BFG as fuel in boilers or other emission units without it having undergone such processing. COG is processed at the coke by-product recovery plant where removal of entrained particulate is inherent in effective recovery of by-products from the raw gas. BFG is processed in equipment specifically designed to remove entrained particulate as is needed for effective and reliable operation of the blast furnace gas stoves. While COG is now normally processed in the COG Desulfurization System to remove sulfur, the emission standards and limits for Boilers #11 and #12, which fire COG, do not depend upon use of desulfurized COG. Accordingly, while operational monitoring is required for the sulfur content of COG, it has a secondary role in the Periodic Monitoring for the

boilers.[142]

The revised CAAPP permit would not include Periodic Monitoring for Boilers 1 through 10. These boilers have now been permanently removed from service and would not be addressed by the revised permit. At the same time, the revised CAAPP permit must now address Periodic Monitoring for Power Boiler #1 and associated cooling tower, as mentioned above. This is because USEPA has directed that new emission units constructed at the facility must be included in the revised CAAPP permit (See Order, Section I). Similarly, the revised permit must address the relevant compliance procedures of the NESHAP, 40 CFR 63, Subpart DDDDD, as these new requirements must now also be part of the Periodic Monitoring for the boilers.

1. All Boilers (Power Boiler #1 and Older Boilers #11 and #12)

Federal Emission Standards

Boiler NESHAP (40 CFR 63 Subpart DDDD/Condition 7.10.3(b)) – The revised permit would address applicable emission limits and control requirements from this NESHAP, which was adopted by USEPA on February 21, 2011. These boilers and the source would also be subject to the compliance procedures of this NESHAP that would be applicable based on the compliance strategy that is ultimately selected by the source to comply with this NESHAP. The relevant procedures of this NESHAP would appropriately serve as the Periodic Monitoring for the applicable requirements of this NESHAP. This is because the specific requirements of this NESHAP that would apply to these boilers will not be definitively established until after the compliance date of this NESHAP, which is several years in the future.[143]

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[142] The continuous monitoring for the sulfur content of COG is important as the source has relied upon a reduction in the annual SO_2 emissions of the facility. The requirement is addressed in Condition 5.6.2(b) and other conditions in Section 5 of the permit.

[143] Based on the mix of gaseous fuels that is currently allowed to be fired in Power Boilers #1, this boiler would not be subject to the substantive requirements of 40 CFR 63 Subpart DDDDD. This is because it would qualify as a blast furnace gas fuel-fired boiler, as defined at 40 CFR 63.7575.

Based on the mix of gaseous fuels that is currently fired in Boilers #11 and #12, these boilers would be subject to the requirements of 40 CFR 63 Subpart DDDDD for units with a rated heat input capacity less than 250 mmBtu/hr firing "Gas 2" fuels, i.e., gaseous fuels other than natural gas, refinery fuel gas or other equivalent gaseous fuels. However, since these boilers are existing units for purposes of this NESHAP, these boilers and other subject emission units at this facility are subject to a future compliance date. The source has over three years to evaluate the emissions of Boilers #11 and #12 as compared to the applicable standards of this NESHAP and make any changes at these boilers or the facility that are needed to comply with this NESHAP. One approach to compliance for the source would be to shift use of COG from Boilers #11 and #12 to other units at the facility that are not subject to this NESHAP. This shift in the use of COG could be permanent or temporary, pending installation of additional systems to control emissions from Boilers #11 and #12. This could result in these boilers, at least temporarily, also being considered blast furnace gas fired boilers like Power Boiler #1, so as to not be subject to any emission standards pursuant to this NESHAP. Accordingly, when addressing this NESHAP, the revised CAAPP permit would accommodate possible changes in the mix of fuels fired in Boilers # 11 and #12, as would be an acceptable compliance strategy under this NESHAP. The source would have to notify the Illinois EPA of the compliance strategy it selects with its Notification of Compliance Status report, which 40 CFR 63.7545(e) does not require to be submitted until after the applicable compliance date. As the revised CAAPP permit would allow the source time to develop its compliance strategy for this NESHAP, it also means that the permit might accommodate changes to this NESHAP that might be made by USEPA before its compliance date. Such changes might occur because the USEPA also announced, as part of its adoption of this NESHAP, that it would be initiating a proceeding to formally reconsider the emission standards that were adopted.

State Emissions Standards

Opacity standards (35 IAC 212.122(a) /Condition 7.10.3(g) and 35 IAC 212.123(a)/Condition 7.10.3(h)) – These state standards limit the opacity of emissions from Power Boiler # 1 and Boilers #11 and #12, respectively, to 20 and 30 percent.[144] As with their PM emissions, the opacity of the emissions from the boilers is addressed as the boilers are fired on gaseous fuels so that their fuel does not contain ash, as present with solid fuel or heavy fuel oil. Monthly opacity observations would be required for the boilers to directly confirm compliance with the applicable opacity standards. Additional opacity observations must be conducted upon request by the Illinois EPA. These observations will also provide information about the normal opacity levels from the boilers, which will enable upsets in the operation of the boilers to be readily identified, with event-specific observations then conducted for opacity, as well implementation of corrective action for the upsets. The monthly and event-specific opacity observations will also serve to address compliance with the applicable PM standards.

CO standard (35 IAC 216.121/Condition 7.10.3(f)) – This state standard limits the CO emissions of boilers to 200 ppm. This standard was adopted in the early 1970s and was considered to be an emission rate that was achievable with the normal practices at that time for operation of boilers and other fuel combustion emission units. The standard did not contemplate that any additional "effort" would be required to comply with this standard. Accordingly, the permit would establish a formal work practice to address this standard, requiring annual combustion tune ups of the boilers, to maintain efficient combustion. (This is similar to the approach that USEPA has taken for natural gas fired boilers in its recent adoption of 40 CFR 63 Subpart DDDDD.) As part of these tune-ups, measurements of the CO in the exhaust of a boiler, both before and after the tune up would be required. In addition, as emission testing is conducted for a boiler to address emissions of other pollutants, measurements of CO may also be required. This is sufficient as Periodic Monitoring for this state standard as the standard should be readily achievable with the normal operational inherent in proper operation of an industrial boiler.

NO_x standards (35 IAC 217 Subparts D and E/Condition 7.10.14) - The revised permit would include applicable emission limits and control requirements from these new state rules, which were recently adopted to apply Reasonably Available Control Technology (RACT) for emissions of NO_x.[145] These boilers and the source would also be subject to the associated compliance

[144] Power Boiler #1 is the only unit at this facility is subject to 35 IAC 212.122(a,) as it is the only fuel combustion emission unit, as defined by at 35 IAC 211.2470, that is new as defined by 35 IAC 201.102, and has a rated heat input capacity of more than 250 mmBtu/hr). Under state regulation, all other emission units at the facility are subject to the "generic" opacity standard of 35 IAC 212.123(a), 30 percent pursuant. For a number of units at this facility, more stringent standards apply either pursuant to federal rule, state rule or both.

[145] All three boilers will be subject to the requirements of 35 IAC 217 Subparts D and E as they are state rules, even though these rules are not yet part of Illinois' State Implementation Plan (SIP). (While these rules were submitted to USEPA as a proposed revision to Illinois' SIP, USEPA will not be acting on that submittal at this time.)

For Boilers #11 and #12, the requirements of these rules are also applicable to Boilers #11 and #12 as the source applied for and has been issued a construction permit to install flue gas recirculation systems on these boilers (Construction Permit 10080022). These flue gas recirculation systems would be installed on these on these boilers to reduce their NOx emissions to comply with the more stringent limits set by these new state rules. As these systems would be installed to facilitate compliance with these state rules, the requirement of these rules are addressed in the conditions of this construction permit.

procedures of these rules that would be applicable based on the compliance strategy that is ultimately selected by the source to comply with these standards. The relevant procedures of these rules would appropriately serve as the Periodic Monitoring for the applicable requirements of these rules. This is because the specific requirements of these rules that will apply to these boilers will not be definitively established until the compliance date of these rules, which will be several years in the future.

2. Boilers #11 and #12

State Emission Standards

PM/PM_{10} standard (35 IAC 212.458(b)(9)/Condition 7.10.3(b)) – This standard, which limits the PM/PM_{10} emissions from burning of COG to no more than 0.075 lbs/mmBtu, was established at a level to accommodate the PM_{10} emissions from COG that has undergone processing in a coke by-product recovery plant. Accordingly, use of COG that has been processed through the by-products plant at this facility, accompanied by monthly and event specific opacity observations would also serve to address this standard. Sampling and analysis of COG for its PM content would also be required on a semi-annual basis, similar to the sampling and analysis required for BFG. Finally, testing of PM/PM_{10} emissions would also be required at least every five years to confirm that opacity can be used to address the applicable standard, as well as to document the PM/PM_{10}* emission rates from the boilers.

* As a general matter, 35 IAC 212.108(a) provides that emissions of PM_{10} shall be determined as filterable particulate only. For purposes of testing emissions, emissions of PM_{10} may be measured by an applicable USEPA test methods for measurements of PM_{10} emissions or by the applicable USEPA test method for measurement of PM emissions, provided all particulate measured by such method shall be considered to be PM_{10}.

SO_2 (35 IAC 214.421/Condition 7.10.3(e)) – This standard does not actually restrict the SO_2 emissions of Boilers #11 and #12.[146] This is because these boilers only burn gaseous fuels, i.e., natural gas and by-product gaseous fuels. Under this standard, the SO_2 emission rate, in lbs/mmBtu, used for calculating the hourly emission rate from firing of by-product gaseous fuels is the maximum historical emission rate of such fuels in the period from March 29, 1982 through March 28, 1983. Accordingly, Periodic Monitoring is not needed to accompany this standard.

3. Power Boiler #1

Federal Emission Standards

Exemption criteria of the NSPS for SO_2 (Condition 7.10.5(b)/40 CFR 60.42b(k)(2)) – Power Boiler #1 is not subject to the SO_2 standards of the NSPS, 40 CFR 60 Subpart Db, because of the sulfur content of the fuel fired in this boiler. In particular, the NSPS does not set standards for units that fire a mixture of gaseous or oil fuel with a potential SO_2 emissions rate that is no more than 0.32 lb/mmBtu (equivalent to a fuel sulfur of 0.16 lb/mmBtu. The potential SO_2 emissions of the fuel fired in this boiler are well below this rate. In particular, the sulfur content of BFG fired in

[146] This standard only applies to existing boilers at the facility and not to Power Boiler #1 because it is a new boiler.

this boiler during emissions testing in April 2010, as reported by the source, was only 0.016 lb/mmBtu. Periodic Monitoring for this criterion would be provided by requiring sampling and analysis of BFG for its sulfur content on a quarterly basis (Condition 7.10.7-1(c)(i)). This frequency for sampling and analysis is sufficient as the pre-treatment of BFG does not include processing for removal of sulfur nor would such processing be expected to be effective given the low concentration of sulfur in the BFG.

Exemption criteria of the NSPS for NO_x (Condition 7.10.5(c)(iv)/40 CFR 60.42b(k)(2)) – Power Boiler #1 is not subject to the NO_x standards of the NSPS, 40 CFR 60 Subpart Db because its annual capacity factor for use of natural gas does not exceed 10 percent. Periodic Monitoring for this criteria would be provided for by recordkeeping for the natural gas usage of this boiler (Condition 7.10.9(a)(iii)).

Construction Permit Requirements (Permit 06070023)

Design Requirements (Conditions 7.10.6(a)(i) and (ii)) - These conditions set design requirements for the Power Boiler #1 for its total heat input capacity and its heat input capacity from natural gas. As design requirements are addressed, relevant records for the design of the boiler would be required to be kept (Condition 7.10.9(a)(i)).

Limits on Fuel Usage (Conditions 7.10.6(a)(iii)) - These condition sets limits on the annual fuel usage of Power Boiler #1. Periodic Monitoring would be provided by recordkeeping for fuel usage (Condition 7.10.9(a)(iii)).

Limit for PM Emission Rate (Condition 7.10.6(a)(iv) and (a)(v)(A) and (B)) – This condition limits PM emissions from Power Boiler #1 to 0.03 lb/mmBtu.* Use of gaseous fuels, accompanied by monthly and event specific opacity observations will also serve to address this limit. Testing of emissions of PM (and other pollutants) is also required at least every five years to confirm that opacity can be used to address this limit, as well as to document the PM emission rate from Power Boiler #1.[147]

* This limit applies to filterable emissions of particulate matter, as would be measured by USEPA Method 5.

Limits on Emission of SO_2 (Condition 7.10.6(a)(v)(A) and (B)) - The Periodic Monitoring for the SO_2 content of BFG, in conjunction with the records that would be required for usage of fuel, will address these limits on the SO_2 emissions of Power Boiler #1. Records would also be required for monthly and annual SO_2 emissions to allow direct comparison to the applicable limit (Condition 7.10.9(a) (iv)(A)).

Limits on Emission of Pollutants Other than PM and SO_2 (Condition 7.10.6(a)(v)(A) and (B)) – As is generally the approach for permit limits for the amount of emissions from an emission unit, the Periodic Monitoring for these permit limits for this boiler would build on the Monitoring related to other applicable requirements for the boiler and its fuel supply, which requirements serve to assure

[147] In the initial emission testing for Power Boiler 1, in April 2010, the measured particulate emission rate was 0.0048 lb/mmBtu, with a compliance margin of over 80 percent.

proper operation as related to emissions. When testing for the boiler is conducted in the future, the Permittee would have to reevaluate the adequacy of the emission factors that it is using for this boiler. Testing specifically for the purpose of verifying emission factors is not warranted given the small amounts of emissions compared to applicable limits as indicated by the initial emissions testing conducted for this boiler.[148] Likewise, continuous emissions monitoring is not warranted as the initial testing shows that both NO_x and CO emissions are less than 10 percent of the applicable permit limits.[149] However, testing is otherwise required every five years to verify compliance with PM limits, as already discussed. Accordingly, testing for other pollutants would reasonably be conducted in conjunction with such testing. To specifically address the permit limits, relevant records would be required for fuel usage, the emission factors used by the Permittee to calculate captured emissions from the boiler, and actual emissions for comparison to applicable limits. This is sufficient Periodic Monitoring for these permit limits, given the fuels that it fires and the results of the initial emission testing of the boiler.

4. Power Boiler #1 and BFG Flare #2

Construction Permit Requirements (Permit 06070023)

Limits on Emission of SO_2 (Condition 7.10.6(a)(v)(C) and (D)) - The Periodic Monitoring for the SO_2 content of BFG, in conjunction with the records that would be required for usage of fuel by Power Boiler #1 and BFG Flare #2, will address these limits for combined SO_2 emissions of these units. Records would also be required for monthly and annual SO_2 emissions of these units to allow for direct comparison to the applicable SO_2 limits (Condition 7.10.9(a) (iv)(B)). Records would also be required for monthly and annual SO_2 emissions of these units to allow for direct comparison to the applicable SO_2 limit (Condition 7.10.9(a) (iv)(B)).

5. Cooling Tower

Federal Emission Standards and Requirements

Prohibition on use of chromium-based water treatment chemicals in the cooling tower (Condition 7.10.5(c)/40 CFR 63.402) - The NESHAP for Industrial Process Cooling Towers, 40 CFR 63 Subpart Q, prohibits use of chromium-based water treatment chemicals in the cooling tower.

[148] The results of the initial testing of the Power Boiler #1 in April 2010 follows:

Test Results for Power Boiler #1				
Pollutant	Measured		Allowed (lb/mmBtu)	Compliance Margin (%)
	lb/hr*	lb/mmBtu		
PM (filterable)	2.4	0.0048	0.03	84
PM (total)	7.25	0.0145	0.101	85
SO_2	41.5	0.083	0.20	58
NOx	3.0	0.006	0.05	88
CO	<0.7	<0.0013	0.15	>99

* Calculated based on a nominal heat input of 500 mmBtu/hr.

[149] The construction permit for Power Boiler #1 provided that NO_x and CO continuous monitoring system(s) would be required on this boiler unless testing demonstrated that the boiler normally complies with the permit limits for NO_x and CO by a margin of at least 5 percent (Condition 3.1.8-1 of Construction Permit 06070023). The compliance margin shown during the initial emission testing clearly exceeds this criterion so that continuous monitoring for NOx and CO is not required pursuant to this construction permit..

Periodic Monitoring for this requirement would be provided by appropriate recordkeeping. As use of chromium-based water treatment chemicals in cooling towers is now generally prohibited and their use at this tower would be an intentional action by the source, records should be more than sufficient to address this requirement. However, the permit would also require that, upon request by the Illinois EPA, the source would have to promptly sample and analyze the water circulating in the tower in accordance with the applicable procedures of 40 CFR 63.404(a) and (b) for the presence of hexavalent chromium.

Construction Permit Requirements (Permit 06070023)

Operating limit on the dissolved solids content of the water circulating in the cooling tower (Condition 7.10.6(b)(i)) - This limit, which applies on a monthly basis, was set at a level to accommodate the normal range of solids in the cooling water. The Periodic Monitoring for this limit would include monthly sampling and analysis of cooling water for its dissolved solids content (Condition 7.10.8-1(b)). This would be sufficient to address the substantive permit requirements that apply to this cooling tower given the nature of the limit and the simple and stable operation of non-contact cooling towers used in conjunction with boilers.

Limits for PM/PM_{10} emissions (Condition 7.10.9(b)(ii)) - The Periodic Monitoring for these limits would include recordkeeping for PM/PM_{10} emissions from the cooling tower, with supporting calculations and data. This data would be the results of required sampling of cooling water and operating records for the volume of water circulated in the cooling tower. This would be sufficient to address these limits for emissions of the cooling tower given the simple and stable operation of the cooling towers.

C.11 Emergency Engine (Section 7.11 of the revised permit)

a. Periodic Monitoring Requirements for the Emergency Engine

The Periodic Monitoring for the emergency engine would include the following:

- ✓ Opacity Observations
  - Annual opacity observations
  - Monthly opacity observations if the engine operates for 500 hours or more in a year
- ✓ Sulfur content of fuel
  - Data for sulfur content of fuel by sampling and analysis or by supplier certification
- ✓ Emission Testing
  - Emission testing upon request
  -
- ✓ Recordkeeping
  - Fuel consumption
  - Records related to emissions
- ✓ Reporting
  - Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)

b. Justification for Periodic Monitoring for the Emergency Engine

The emergency engine is used to generate electricity during power outages. Emergency engines are stock pieces of equipment that are normally subject to routine inspection and maintenance as part of a source's normal operating practices, to ensure availability and proper functioning of an engine when needed for emergency purposes. This engine would fire commercial diesel fuel. The startup, operation and shutdown of this engine are automated, as is commonly the case for emergency engines. Finally, this engine is not equipped with add-on air pollution control equipment. Accordingly, the operation and emissions of the engine should be very consistent over time, such that emissions of PM, NO_x and CO of the engines are appropriately determined from engine-specific emission factors for the particular model of engine provided by the manufacturer.[150] The Periodic Monitoring for this engine would include sampling and analysis of fuel for its sulfur content if the sulfur content of the fuel is not certified by the supplier and annual opacity observations (Conditions 7.11.8(a) and (b), respectively). It would also include recordkeeping for relevant information (Condition 7.11.10). Provision is also included for testing for emissions of PM, CO and NO_x to be conducted upon request by the Illinois EPA (Condition 7.11.7) .

The Monitoring requirements in the revised CAAPP permit would be more extensive than in the current permit. The enhancements respond to the Order, in which the USEPA directed the Illinois EPA to explain why the Monitoring for the engine was sufficient (Order, Section II, Item J). As a

[150] This is the approach generally taken by USEPA in its NSPS and NESHAP standards for engines, which rely on certification testing conducted for a model of engine by the manufacturer. Unit-specific emission testing of certified engines is only required upon specific request by the USEPA or a regulatory authority.

consequence of further consideration of Periodic Monitoring for the engine, the Illinois EPA concluded that enhancements to Monitoring requirements are appropriate. In particular, the revised CAAPP permit would require use of particular emission factors (i.e., manufacturer's emissions factors or data except as they are found to understate emissions) to determine PM, CO and NO_x emissions of the engines. Testing of PM, CO and NO_x emissions would be required upon request by the Illinois EPA rather than upon operation for more than 500 hours in a year, a trigger for testing that would likely never occur. These Monitoring requirements would be sufficient to address the various substantive limitations that apply to the engine.

1. State Emission Standards

PM (35 IAC 212.458(b)(7)/Condition 7.11.3(b)) - This "generic" standard for process emission units in certain areas limits PM emissions of this engine to 0.01 gr/scf. Because add-on control equipment is not present on the engine, this standard is not accompanied by regulatory compliance procedures and the CAAPP Permit must establish all Periodic Monitoring for this standard. Given the nature of stationary engines, and this engine and its general circumstance in particular, as discussed above, PM emissions in gr/scf are appropriately calculated from engine-specific PM emission rates and operating data for the particular model of engine provided by the manufacturer. With emissions determined from manufacturer's data, variation in operation and PM emissions of the engine should not be anticipated that would result in PM emissions greater than this standard. Accordingly, the Monitoring for this standard would require relevant recordkeeping for the manufacturers' data for PM emissions and exhaust flow rate of the engine and calculations for PM emissions of the engine in gr/scf for comparison to the standard. A provision requiring testing of PM emissions upon request would also be included to address the possibility of situations or circumstances in the future, which are not currently foreseen, that would indicate that the manufacturer's emission data for PM might understate actual emissions of the engine.

Opacity (35 IAC 212.123(a)/Condition 7.11.3(c)) - This "generic" standard limits the opacity of the exhaust of the engine to no more than 30 percent on a six-minute average, determined in accordance with 35 IAC 212.109 (i.e., USEPA Method 9).[151] Because this opacity standard is not accompanied by regulatory compliance procedures, the CAAPP Permit must establish all Periodic Monitoring for this standard. Given the nature of stationary engines and this engine and its general circumstance in particular, as discussed above, it is not expected that opacity of the exhaust from this engine, on a 6-minute average, consistent with Method 9, would ever exceed this standard. However, to confirm compliance with 35 IAC 212.123(a), the permit would require the source to conduct opacity observations for this engine on annual basis. This is a reasonable Monitoring requirement for this engine as the source must conduct frequent opacity observations for certain other emission units at this facility.

SO_2 (35 IAC 214.301and 214.304 & 214.122/Conditions 7.11.2(d)) – These "generic" standards

[151] The exception to 35 IAC 212.123(a) in 35 IAC 212.123(b) need not be addressed since it is not available as a practical matter. For the exception to be available to an emission unit, all other subject emission units at a facility that are within 1000 feet of the unit for which the exception is claimed must be compliance with 35 IAC 212.123(a). This effectively limits this exception to only one unit at this facility per hour. To avail itself of the exception for a particular emission unit in a particular hour, the source would have to demonstrate that the opacities of all other subject units at this facility are no more than 30 percent during such hour.

limit the SO_2 emissions of the engine to no more than 2000 ppm and 0.3 lb/mmBtu, respectively. Because these standards are not accompanied by regulatory compliance procedures, the CAAPP Permit must establish all Periodic Monitoring for these standards. The SO_2 emissions of the engine are a direct product of the sulfur contained in the fuel fired in the engine. As the engine fires commercial fuel, the sulfur content of each delivery from a supplier of fuel for the engine should be consistent. Given the current federal regulations for sulfur content of commercial diesel fuel, as fired in the engine, it is not expected that the SO_2 emissions of the engine would ever exceed these standards. However, the permit would require Monitoring for the sulfur content of fuel to confirm that its sulfur content does not exceed the level needed for compliance. This Monitoring would involve either obtaining a certification for fuel sulfur content from each supplier of fuel for the engine or sampling and analysis of fuel for its sulfur content on an annual basis, to determine sulfur content in lbs/mmBtu, the terms needed for comparison with the limit in 35 IAC 214.122.[152] Appropriate records would also be required for manufacturer's data for the exhaust flow rate and fuel consumption of the engine and engineering calculations to identify the sulfur content in the fuel that must not be maintained so that the concentration of SO_2 in the exhaust from the engine does not exceed 2000 ppm. This further Monitoring would provide the necessary information needed to assure SO_2 emissions of the engine do not exceed 2000 ppm. These Monitoring requirements are also reasonable since the source has not proposed to restrict the fuel for the engine to ultra-low sulfur diesel, which restriction would otherwise serve to assure compliance with 35 IAC 214.122 and 214.301.

2. Requirements from the Construction Permit for the Engine (Permit 00060003)

Limit on annual hours of operation (Condition 7.11.5) - Record keeping would be required to for this limit, which limits the operation of the engine to 500 hours per year. Given that the engine is as an emergency engine and only operated as needed for this purpose, recordkeeping is sufficient to address this limit. Instrumental monitoring is not necessary or appropriate because records can readily provide reliable data to verify compliance with this annual limit.

Limits on emissions of PM, CO and NO_x (Condition 7.11.6) - The Periodic Monitoring for these limits must supplement requirements in the construction permit, which does not fully address or delineate how compliance with these limits is to be determined. Given the nature of this emergency engine, a stock piece of equipment that fires a commercial fuel and whose operation is automated, significant variation in emissions of PM, CO and NO_x should be expected. As such, it is particularly appropriate to use emission factors to determine compliance with permit limits for the engine for emissions of PM, CO and NO_x. Engine-specific emission factors or data for the particular model of engine provided by the manufacturer should be used for this purpose in the absence of information indicating that such factors would understate emissions. The emissions and operational data provided by engine manufacturers is generally considered reliable, as it reflects data for a particular model of engine, and is a representation of performance made between an equipment vendor and purchaser. The Monitoring for these limits would involve appropriate recordkeeping for the manufacturer's emission factors or rates for the engine. It would also involve relevant records for the actual operation of the engine, including fuel usage, operating hours and number of startups, as necessary to calculate emissions from the applicable emission factors and

[152] The SO_2 emissions in lbs/mmBtu from firing of fuel oil in the engine, based on the stoichiometry for complete combustion, would be twice the sulfur content of fuel in lbs/mmBtu.

rates. Records would also be required for emissions of the engine as needed to compare to the applicable limits. In particular, records would be required for monthly and annual emissions of PM, CO, and NO_x for direct comparison to the annual limits on emissions of these pollutants.

Limits on emissions of SO_2 (Condition 7.11.6) - The Periodic Monitoring for these permit limits for SO_2 emissions must supplement requirements in the construction permit, which does not fully address or delineate how compliance with these limits is to be determined. While SO_2 emissions of the engine may be readily calculated from its fuel usage and the sulfur content of the fuel, the construction permit did not address the sulfur content of fuel used in the engine. The needed data for sulfur content of fuel would be provided by the Monitoring for sulfur content of fuel to address 35 IAC 214.301 and 214.122, as discussed above. Fuel usage by the engine, the other data needed to calculate SO_2 emissions from the engine, would be provided by the records for operating data required for the emission limits for PM, CO and NO_x, as also discussed above. Together these records would provide the needed data to calculate SO_2 emissions of the engine. Records would also be required for SO_2 emissions of the engine for comparison to the applicable limits, including records for monthly and annual emissions of SO_2.

C.12 Gasoline Storage Tanks (Section 7.12 of the revised permit)

a. Periodic Monitoring Requirements

The Periodic Monitoring for the gasoline storage tanks would include the following:

- Operational Testing Requirements
  - Annual and post-repair testing on vapor collection systems
  - Relief valves if a vapor collection system is modified

- Inspection Requirements
  - Semi-annual inspection of tanks and dispensing operations
  - Annual inspection of the wastewater tank and dispensing operation

- Recordkeeping
  - Gasoline throughput
  - Maintenance records
  - Operating and maintenance procedures
  - Reid vapor pressure of gasoline during the regulatory control period
  - Supplier certifications for delivery vessels

- Reporting
  - Standard Reports (Deviations Reports, Monitoring Reports and Annual Reports)

b. Justification for Periodic Monitoring for the Gasoline Storage Operations

The gasoline storage operations at the facility are subject to requirements of state rules that act to reduce VOM emissions. The Periodic Monitoring for these storage tanks would include instrumentation and operational testing for the emissions control systems, periodic inspections, and appropriate recordkeeping. This Periodic Monitoring would be sufficient the applicable rules require use of standardized systems and equipment to minimize emissions. This equipment is reliable when properly operated and maintained. Illinois' requirements for use of leak-tight tank trucks for transport of gasoline apply throughout the Metro-East area. Illinois' standards for the vapor pressure of gasoline also apply to all gasoline distributed in the Metro-East area and are directly applicable to the companies that supply gasoline to sources, as well as to sources.

<u>State Emission Standards And Requirements</u>
Requirement for submerged loading (35 IAC 219.122(b)/Condition 7.12.3(b) and 35 IAC 219.583(a)(1)/Condition 7.12.3(c)(i)) - Annual inspections of all gasoline storage tanks would be required to verify submerged loading is present. Annual inspections would be sufficient to verify and document the presence of submerged loading. The absence of submerged loading would involve an intentional action by the source. Improper operation of submerged loading would be readily apparent as it would interfere with normal receipt of gasoline.

Requirements for vapor recovery systems (35 IAC 219.583(a)(2)/Condition 7.12.3(c)(ii) and (iii)) - Vapor collection systems must be used during filling of the large gasoline tanks and operated in accordance with 35 IAC 219.583(c) and (d)(4) (Conditions 7.12.5(a) and (b)). These systems

collect the organic vapors displaced during the filling of tanks and duct them back to the delivery vessel, to transport them back to the gasoline terminal where the vapors would recovered or controlled. Given the standardized nature of these systems and the simplicity and ease of their operation, the compliance procedures specified by the applicable rules are generally sufficient to serve as Periodic Monitoring for these systems. The rules require written maintenance procedures. Annual operational testing and post-repair operational testing of these systems is required, as well as operational testing of any system or the relief valves on any system that has been modified. The permit would supplement these requirements by also requiring semi-annual inspections of storage operations by the source as well as observation of tank filling operations by source personnel, as these activities might routinely be performed by the driver of the delivery vessels.

Standard for the vapor pressure of gasoline (35 IAC 219.585(a)/Condition 7.12.3(d)) – Periodic Monitoring for this standard would be provided by appropriate recordkeeping. Recordkeeping is sufficient since this standard generally limits the vapor pressure of gasoline distributed throughout the Metro-East area during the regulatory control period, i.e., June 1 through September 15 of each year. The standard is applicable to individuals who sell or transport gasoline, in addition to sources, so compliance with this standard should be readily verifiable. Monitoring would be provided by requiring copies of invoices or other documentation for the Reid vapor pressure of the gasoline that is received be kept, accompanied by copies of certification for compliance from gasoline supplier(s).

Requirements for tank trucks delivering gasoline to the facility (35 IAC 219.584(a)/Condition 7.12.5(c)) - As stated above, semi-annual inspection of the storage tank operations must include observations of the filling of a tank. The permit also includes the provision that all gasoline delivery vessels be in compliance with all the requirements of Condition 7.12.5(c). These requirements include: delivery vessels being equipped with vapor tight vapor space fittings; vessels keeping all hatches closed unless a vapor recovery system is employed on them; vessels not exceeding a gauge pressure internally of more than 18 inches of water; and vessels being designed and maintained to be vapor tight during operations. Further, these delivery vessels must comply with all applicable requirements for refilling in accordance with 35 IAC 219.581(b), and display a sticker verifying that testing has been performed. The required semi-annual inspection/observation of tank filling would also verify that these applicable requirements are met.

C.13 Fugitive Dust (Section 7.13 of the revised permit)

a. Justification for Periodic Monitoring for "Fugitive Dust"

Roadways, open areas, storage piles and other similar operations at the facility potentially emit "fugitive dust." These emissions are controlled by preventative measures to prevent generation of dust. Dust that would result from vehicle traffic on roadways at the facility is controlled by a road cleaning or sweeping program. The road cleaning program collects the dust or silt that is deposited on roadways to prevent it from being subject to attrition and being re-entrained into the atmosphere due to vehicle traffic. The source's road cleaning program extends to various public roadways serving the facility. This is because the source has relied upon emission decreases from cleaning of these roadways in permitting construction projects at or associated with the facility, e.g., Gateway Energy. Emissions of fugitive dust from storage piles at the facility are controlled by the quality and moisture content of materials as received and application of dust suppressants if needed to prevent emissions. These activities to control fugitive dust are subject to an Operating Program, in which the source sets forth the various measures it will use to control fugitive dust. Periodic Monitoring for these operations would include recordkeeping to verify that the source is implementing its Operating Program. It would also include periodic inspections to confirm implementation of control measures and observations for visible emissions and/or opacity from operations as they are subject to standards for the opacity of emissions.

1. State Emission Standards and Requirements

Fugitive dust control program (35 IAC 212.309(a)/Conditions 5.3.2 and 7.13.3(b)) – This standard requires that emissions of fugitive normal traffic pattern roads, storage piles and other "fugitive dust" emission units at the facility be controlled in accordance with a "Operating Program" prepared by the source that is designed to significantly reduce fugitive particulate matter emissions from the facility. Among other things, this Operating Program must identify the practices that the source is using to control emissions of fugitive dust from roadways, storage piles and other sources of fugitive dust at the facility. Pursuant to 35 IAC 212.310(e), the Program must include a detailed description of the "…management practices utilized to achieve compliance with this Subpart [35 IAC Part 212, Subpart K] including an engineering specification of particulate collection equipment, application systems for water, oil, chemicals and dust suppressants utilized and equivalent methods utilized." Pursuant to 35 IAC 212.316(g)(1) and (2), the source must keep records documenting implementation of its Operating Program. Pursuant to 35 IAC 212.316(g)(5), the source must report deviations from this Program on a quarterly basis. As detailed recordkeeping is required for implementation of the Program, as well as lapses in implementation, the Periodic Monitoring for this requirement is sufficient.

Limits for opacity (35 IAC 212.316(b)/ Condition 7.13.3(d)) – Compliance with these standards is generally addressed by the Operating Program, which addresses the implementation of control measures for the subject operations. The permit would also require the source to conduct periodic inspections, with formal observations for visible emissions and/or opacity for these operations. These inspections will provide further verification that these operations are being properly operated and associated control measures are being properly implemented. These inspections will also provide direct verification of compliance with applicable emission standards that are expressed in

terms of opacity, as well as verify that the provisions in the Operating Program ensure compliance with these standards. To address compliance with applicable opacity standards, these inspections would include formal observations for visible emissions conducted in accordance with Method 22, which would generally be required to be conducted on a quarterly basis. If visible emissions are observed from unit(s) and cannot be readily corrected, the source must conduct formal observations for opacity in accordance with Method 9 for those unit(s) to provide a direct verification of compliance with the applicable emission standards. Observations of opacity would be required on an annual basis. This combination of requirements is sufficient as Periodic Monitoring as the quarterly and annual requirements are accompanied by requirements under the Operating Program that apply on a day-by-day basis.

Work practice requirements for control of PM (35 IAC 212.304(a) and 212.305(a)/Conditions 7.13.3(c) and (d)) –These state rules require certain work practices for large storage piles, measured in terms of their potential emissions, and any associated mechanical systems for loading materials onto such materials. Both applicability of these requirements to the storage piles facility at the implementation of the required work practices would be addressed in the required Operating Program for fugitive dust. As such the Periodic Monitoring for the Operating Program would address these requirements.

2. Permit Limits

Control practices from Construction Permits (Conditions 7.13.5 (a) and (c)) – Two underlying Title I permits, Construction Permits 95010001 and 0607008, specify that particular control practices shall be implemented on particular segments of roadways at the facility and on particular segments of public roads serving the facility. These requirements are accompanied by recordkeeping requirements to confirm that the specified practices are implemented (Conditions 7.13.9(b)(i) and (f)(i), respectively). The control practices required by these programs are readily addressed by records, as the programs specify that particular control practices must be used on particular road segments at specified frequencies. For example, "all gate areas leading from the iron making area must be swept or flushed at least five times per week" and cleaning of subject segments of public roadways shall be using "vacuum cleaning equipment (such as Enviro Whirl)." Given the nature of these requirements, their implementation is readily verified by recordkeeping, so that the required recordkeeping provides sufficient Periodic Monitoring.

Limits of PM/PM_{10} emissions from roadways at the facility (Condition 7.13.6) - Construction Permits 95010001 also limits the annual PM/PM_{10} emissions from roadways at the facility. Recordkeeping for actual emissions is required to verify compliance with this limit (Condition 7.13(b)(ii). As emissions for fugitive dust cannot be directly measured, the recordkeeping provision requires actual emissions to be determined using established emission factors and emission determination methodology developed by USEPA.[153] As emissions would be determined from the combination of information for the actual implementation of the road dust control program, as addressed above, and established USEPA methodology for calculation of emissions, it is implicit that Periodic Monitoring for this limit also be provided by recordkeeping.

[153] Refer to Section 13.2, Introduction to Fugitive Dust Sources, in USEPA's *Compilation of Air Pollutant Emission Factors*, AP-42.

Requirements for Emission Reductions from Road Cleaning Program (Condition 5.5) – Similarly Construction Permit 06070008 also requires that the control program that it requires provide an emission reduction of 236.03 tons per year. Recordkeeping for the reduction in actual emissions is required to verify compliance with this limit (Condition 7.13(f)(ii). This recordkeeping provision requires the reduction in actual emissions to be determined using established emission factors and emission determination methodology developed by USEPA. As emissions would be determined from operating records and established USEPA methodology for calculation of emissions, it is also implicit that Periodic Monitoring for this limit also be provided by recordkeeping.

C.14 Plantwide Requirements from Existing Permits (Section 5.6 of the Revised Permit)

Permit for Production Increase (Construction Permit 950100010)

Construction Permit 95010001addressed an increase in production of the facility ("1995 production increase") that was a modification for purposes of NSR as it entailed changes in the method of operation that would potentially accompanied by increases in emissions of the facility. As this permit addressed an increase in the production of the facility, this permit set certain limits that apply to the overall operation of the facility and are appropriately included in Section 5 of the CAAPP permit. This includes operational limits on the overall production of iron and steel by the facility. It also includes limits on the usage of natural gas, BFG, and fuel oil by certain emission units at the facility and the emissions associated with use of these fuels.[154] It also includes limits on the emissions associated with use of fuels by these units. For the purpose of these emission limits, SO_2 emissions may be readily determined by the actual usage of fuels and their sulfur content. Emissions of other pollutants must be determined from operation, i.e., the usage of fuel, and appropriate emission factors for the various units that are addressed. Because of the different combustion characteristics of these units, the appropriateness of emission factors must be separately considered for each unit or group of similar units.

Production Limits (Condition 5.6.2(a)(i)) - Periodic Monitoring for these monthly and annual limits would be provided by recordkeeping for the iron and steel production by the facility. This is both appropriate and sufficient as reliable production data is also important to the source. Instrumental monitoring is not necessary or appropriate because records can readily provide reliable data to verify compliance with these limits.

Fuel usage limits (Condition 5.6.2(a)(ii)) - Periodic Monitoring for these monthly and annual limits would be provided by recordkeeping for fuel usage. This is both appropriate and sufficient as reliable data for usage of different fuels is also important to the source. Instrumental monitoring is not necessary or appropriate because records can readily provide reliable data to verify compliance with these limits.

Limits on emissions from combustion of individual fuels (Condition 5.6.2(a)(iii)(B)) - Periodic Monitoring for these limits, which address emissions from combustion of natural gas, BFG and fuel oil at the facility, would be provided by appropriate recordkeeping. For pollutants other than SO_2,[155] the revised permit would require appropriate records to support the emission factors for combustion of these fuels at different emission units at the facility, which will provide a solid basis to determine emissions. The Permittee must appropriately review and update these records, and the

[154] The 1995 production increase was accompanied by increases in the use of natural gas and BFG, and possibly use of oil by certain emission units at the facility. The increase in BFG usage was a direct consequence of increased iron production, with increased generation of BFG that would be used in the blast furnace stoves and the boilers or flared. The increase in natural gas was due to the additional steam needed to support increased iron and steel production, with additional usage of natural gas in boilers and in the ladle drying preheaters in the BOF shop. The increase in fuel oil accommodated the possibility of an increase in the incidental use of fuel oil at these emission units to support increased iron and steel production at the facility.

[155] For SO_2, rather than use emission factors, emissions from BFG and fuel oil would be calculated from actual data for the sulfur content of the fuel as determined from the required sampling and analysis of these fuels. For natural gas, USEPA's standard emission factor, 0.6 lbs per million scf, is appropriate to determine to SO_2 emissions.

emission factors it uses to determine emissions, as necessary to ensure that the factors for different emission units do not understate their actual emissions.[156] Together with the required records for use of fuel, these emission factors will provide solid data as needed to determine annual emissions from combustion of fuels as needed for comparison with the applicable emission limits. Finally, the Permittee must also calculate the average annual emission factor for different fuels, for comparison with the factors in the permit, by dividing the total annual emissions from combustion of fuels in the subject units with the actual overall usage of each fuel.

Limits on combined annual emissions from fuel combustion (Condition 5.6.2(a)(iii)(A)) - Periodic Monitoring for these annual limits would be provided by recordkeeping for the combined emissions of the emissions from combustion of individual fuels, as discussed above.

Permit for Emission Reductions (Construction Permit 06070022) - This construction permit addressed certain changes at the facility that reduced its emissions and were relied upon for the issuance of the construction permits for the Cogeneration Boiler (Power Boiler 1) and the Gateway Energy facility. These changes included installation of the COG Desulfurization System that began operation at the facility in 2010. This system has greatly reduced the emissions of SO_2 associated with combustion or use of COG at the facility as well as also reducing PM_{10} emissions.[157] A portion of these reductions was made enforceable, with limits set on future emissions of SO_2 and PM_{10} associated with use of COG at the facility. As these limits generally apply to the overall emissions of SO_2 and PM_{10} from use of COG at the facility, these limits would now be included in Section 5.6 of the revised CAAPP permit, which contains "Source-Wide Production and Emission Limitations." Other related limits from Permit 06070022 would be included in Section 7.3.7 of the revised CAAPP permit, as those limits apply or relate to the operation of the COG Desulfurization System itself. Both those operational limits and the emissions limits related to COG and the COG Desulfurization System were developed to accommodate maintenance and upsets of this system.[158] For this purpose, limits were set to address overall emissions and operation, including both periods when the system is operating and when it is not. Limits were also set to specifically address only those periods when the system is not operating, when the facility would be operating as it did before this system was installed.

Limits for SO_2 emissions (Condition 5.6.2(b)) - The revised CAAPP permit would include Periodic Monitoring to address these annual limits for SO_2 emissions. These requirements would include continuous operational monitoring for the flow rates of COG and the sulfur content of COG. Construction Permit 06070022 required monitoring for the flow rate and sulfur content of

[156] For example, the Permittee must review its established emission factors when emission testing is conducted for subject emission units and appropriately update the factors that it uses to calculate emissions if the testing shows a higher emission factor is appropriate.

[157] The COG Desulfurization System has acted to reduce both the filterable and condensable fraction of PM_{10} emissions, with an annual reduction of 31.74 tons of PM_{10} relied upon due to the installation of this system. Filterable particulate is reduced as the COG is further scrubbed with amine solution during the desulfurization process. Condensable particulate is reduced as the sulfur content of the COG is reduced.

[158] During periods of maintenance or upsets of the COG Desulfurization System, the facility would operate as it has historically operated, with COG only being processed by the coke byproduct recovery plant before being used as fuel. Accommodating outage of the Desulfurization System was necessary because it is not practical to interrupt the operation of the coke oven batteries and generation of coke oven gas during such periods and routine preventative maintenance and repair is essential for reliable and effective operation of the system and the coke oven batteries. Likewise, upsets of gas desulfurization systems must be anticipated and appropriately accommodated.

COG following processing by the COG Desulfurization System as reasonable to monitor the operation of this system. Another permit, FESOP 94120017, already required monitoring for the flow rate and sulfur content of COG from the Coke Byproduct Recovery Plant. Continuous monitoring is appropriate given the magnitude of SO_2 emissions associated with combustion of COG at the facility, the fact that the COG Desulfurization System functions as a control device for SO_2 emissions, and the magnitude of the reduction in SO_2 emissions that has been relied upon from the operation of the Desulfurization System. Monitoring for the actual sulfur content of COG as H_2S was required as the methodology for continuous monitoring of the H_2S content of fuel gases has been well developed with monitoring of fuel gas at petroleum refineries. This existing monitoring will provide a solid basis to calculate SO_2 emissions associated with combustion of COG. The revised CAAPP permit would require relevant records for monitored data and data for SO_2 emissions, prepared from the monitored data, for direct comparison to the applicable emission limits. The revised CAAPP permit would expand upon the records required by the construction permit to explicitly require recordkeeping for the underlying data needed to calculate SO_2 emissions from combustion of COG at the facility, as well as for records for the annual of emissions of SO_2.

Limits for PM_{10} emissions (Condition 5.6.2(b)) - The revised CAAPP permit would include Periodic Monitoring to address these annual limits for PM_{10} emissions. These requirements would include continuous operational monitoring for the flow rates of COG, as already discussed. Continuous monitoring for the PM_{10} content of COG is not feasible. Even if feasible, monitoring would not be appropriate as the COG Desulfurization System is not a control device for particulate. It would also not be reasonable, given the relatively small reduction in PM_{10} emissions that has been relied upon from the operation of the COG Desulfurization System. This existing monitoring, accompanied by appropriate records to support the PM_{10} emission factors associated with combustion of COG at the facility, will provide a solid basis to determine PM_{10} emissions associated with combustion of COG. The revised CAAPP permit would require relevant records for monitored flow rate data, records to support the PM_{10} emission factors used to calculate PM_{10} emissions, and data for PM_{10} emissions, prepared from the monitored data, for direct comparison to the applicable limits. The revised CAAPP permit would expand upon the records required by the construction permit to also require recordkeeping for the underlying data necessary to calculate PM_{10} emissions, as well as for records for annual of emissions of PM_{10}.

Permit for "SO_2 Emission Units" (Federally Enforceable State Operating Permit 94120017) - This Federally Enforceable State Operating Permit (FESOP) was issued in the mid-1990s as part of Illinois' plan for attainment of the historic National Ambient Air Quality Standards (NAAQS) for SO_2.[159] The FESOP sets limits for the SO_2 emissions of certain emission units at the facility to ensure that its emissions do not exceed levels that were determined to be necessary to protect ambient air quality relative to the historic SO_2 NAAQS.[160] These limits now apply to the two blast

[159] These SO_2 NAAQS include standards on a 3-hour average (0.5 ppm), 24-hour average (0.14 ppm) and annual average (0.03 ppm).

[160] The limits in the FESOP should be considered adequate for the purpose for which the FESOP it was issued. However, the USEPA recently adopted an SO_2 NAAQS that applies on a 1-hour average. The Illinois EPA has begun the process of evaluating whether current rules and requirements related to SO_2 emissions are adequate to assure compliance with this new NAAQS. Additional emission standards and requirements may eventually need to be established to ensure that Illinois' State Implementation is protective of the 1-hour NAAQS for SO_2. If this occurs, it is possible that these new requirements could make the requirements of the FESOP wholly obsolete.

furnace stoves, the Casthouse Baghouse, the Iron Spout Baghouse, the ladle drying preheaters, Reheat Furnaces 1, 2 and 3 (the three existing slab reheat furnaces), Reheat Furnace 4 (the "new" slab reheat furnace), and Boilers 11 and 12.[161] The limits no longer extend to Boilers 1 through 10, as they were removed from service following the initial startup of the new Power Boiler 1.

Limits for SO_2 emissions (Condition 5.6.2(c)) - The revised CAAPP permit would include Periodic Monitoring to address the limits for SO_2 emissions set by the FESOP. These requirements would generally reflect provisions in this FESOP, including the detailed procedures in the FESOP for the determining compliance with the limits in the FESOP. This is appropriate as the procedures in the FESOP were specifically developed to address the SO_2 limits that were set for various groups of emission units, including the compliance time periods associated with those limits. Because the FESOP was issued in 1995, before the COG Desulfurization System was installed, the revised CAAPP permit now addresses the presence of this system. It would provide that as desulfurized COG is being combusted, data for the flow rate and sulfur content of desulfurized COG may now appropriately be used when determining compliance with the limits in the FESOP. When undesulfurized COG is being combusted, the flow rate and sulfur content of COG must be determined in accordance with the "original" procedures in the FESOP.

[161] The limits of the FESOP were also develop to account for or "build in" emission of SO_2 attributable to use of "low-sulfur" fuels, i.e., natural gas and BFG in the subject emission units. As such, the associated compliance procedures in the FESOP appropriately only address emissions of SO_2 from combustion of COG and oil in the subject units and not from combustion of natural gas and BFG.

Attachment D: Illinois EPA's Planned Response to the USEPA's Order Granting Petition for Objection

In its "Order Granting in Part and Denying in Part Petition for Objection to Permit" ("Order"), issued January 31, 2011, USEPA addressed the various issues raised by the Petitioner. It granted the petition on some issues raised and denied the petition on others. The following is the Illinois EPA's response to the issues in the Petition that were granted by USEPA, explaining how they would be addressed in the revised CAAPP permit or in this associated Statement of Basis.

The Order states the Petitioner's claims in general:

> "Petitioner alleges that (1) the permit fails to include all applicable permits and permit requirements; (2) the permit fails to provide periodic monitoring sufficient to assure compliance; (3) the permit lacks compliance schedules to remedy all current violations; (4) the permit unlawfully exempts emissions during startup, shutdown, and malfunctions (SSM); (5) the permit fails to include compliance assurance monitoring (CAM) requirements; and (6) numerous permit provisions are not practically enforceable."

These allegations and the findings of USEPA in its Order are d0etailed below, along with the actions Illinois EPA would take in the planned issuance of a revised CAAPP permit.

D.1. Petitioner Alleges that the Permit Fails to Include All Applicable Permits and Permit Requirements (Section I of the Order)

The Petitioner alleged that the CAAPP permit issued to US Steel for its Granite City Works did not include all applicable requirements. The Petitioner specifically points to the emission reduction credits in construction permits for the coke plant and conveyance system projects that were under construction at the time the Petition was submitted.

USEPA found that Illinois EPA did not provide legal justification for its position that the CAAPP permit only needed to reflect current operations, and did not dispute that the PSD permits contained applicable requirements.

USEPA has directed Illinois EPA to include the requirements for the emission reduction credits in a revised CAAPP permit, as well as other requirements of the construction permits cited by the Petitioner.

In response to the Order, Illinois EPA has included in the planned revised CAAPP permit the requirements from all relevant construction permits. More specifically, not only did Illinois EPA include applicable requirements from the construction permits identified in the Petition, Illinois EPA also incorporated all construction permits issued as of the date of this Statement of Basis. In this regard, Illinois EPA has appropriately followed the guidance provided in Petition No. V-2009-01 (June 28, 2010) at 3-5 for Wisconsin Public Service JP Pulliam Power Plant. A discussion of Title I terms and conditions and a list of associated permits are provided in Section III of this Statement of Basis.

D.2. Petitioner Alleges that the Permit Fails to Provide Periodic Monitoring Sufficient to Assure Compliance (Section II of the Order)

The Petitioner asserts that the CAAPP permit issued to US Steel contains numerous conditions that establish emission limits but lack Periodic Monitoring requirements sufficient to assure compliance with the limits. The Petitioner also asserts that the Project Summary contains conclusive statements about the monitoring requirements but no justifications for Illinois EPA's monitoring choices and that Illinois EPA must satisfy the monitoring requirements and provide a rationale for the monitoring as required by Part 70. Finally the Petitioner alleges that Illinois EPA failed to respond to its significant comments regarding the adequacy of Periodic Monitoring in the CAAPP permit issued to US Steel.

USEPA responded that under 40 CFR 70.6(a)(3)(i)(A) permitting authorities must ensure that monitoring requirements contained in applicable requirements are properly incorporated into a Title V permit. USEPA also responded that if an applicable requirement contains no Periodic Monitoring , permitting authorities must add "periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit. (40 CFR 70.6(a)(3)(i)(B). USEPA further responded that if there is Periodic Monitoring in the applicable requirement, but that monitoring is not sufficient to assure compliance with the permit terms and conditions, the permitting authority must supplement monitoring to assure such compliance.

In addition to these three findings above, USEPA goes on to state in the Order that the rationale for the monitoring requirements selected by a permitting authority must be clear and documented in the permit record. USEPA also confirms Illinois EPA's obligation to respond adequately to significant comments on a draft CAAPP permit.

USEPA's Order observes that there are approximately 50 instances in the CAAPP permit that the Petitioner claims that Illinois EPA failed to include sufficient monitoring to assure compliance or where Illinois EPA has failed to justify the required monitoring.

USEPA's Order, in the cases where the petition has been granted, directs Illinois EPA to ensure that it has: (1) satisfied the monitoring requirements of 40 CFR 70.6 (a)(3)(i)(A) and (B) and (c)(1); (2) provided a rationale for the monitoring requirements placed in the permit; and (3) responded to significant comments.

USEPA's Order goes on to detail, in Sections II(A) through (K) of the Order, the specific allegations of the Petitioner in regard to the various operations at the US Steel facility that the Petitioner alleges lack sufficient monitoring or justification in the permit.

In response to the USEPA's findings regarding the insufficient explanation of Periodic Monitoring requirements in the earlier Statement of Basis and Responsiveness Summary, a detailed explanation and justification has been prepared for the Periodic Monitoring that would be required by the revised CAAPP permit. This explanation is provided in Attachment C of this Statement of Basis. In this attachment, the Illinois EPA discusses at length its justification for the Periodic Monitoring that would be required with revised CAAPP permit that the Illinois EPA

plans to issue in response to the Order. The Illinois EPA has taken this action, which was highly resource intensive, in response to the Order, not only to be fully responsive to the Order, but also to better address the emissions of this facility given the magnitude and the nature of these emissions, the location of the facility[162], and the facility's compliance history.

Illinois EPA has addressed the specific issues with respect to Periodic Monitoring in the Order where the Petition has been granted. The following generally discusses the manner in which these issues would be addressed with the issuance of a revised permit, as planned by the Illinois EPA. The specific location(s) in the revised permit that the Illinois EPA plans to issue or in this Statement of Basis where the issues have been addressed are also identified. In a number of instances, the revised CAAPP permit would enhance the Periodic Monitoring that would be required. For example, additional emissions testing would be required to verify emission factors that were determined to not have been adequately explained. In response to all allegations, the Illinois EPA has provided the detailed explanation of Periodic Monitoring requirements in Attachment C.

a. Section II(A) of the Order: Coal Handling Operations

The Petitioner alleges that the permit does not include Periodic Monitoring sufficient to assure compliance with the emission limit for PM_{10} in Condition 7.1.3(f) of the permit.

USEPA's Order states that Illinois EPA's response to the Petitioner's comment was silent on how Conditions 7.1.10(b) and (d) and 5.9.3(d) and the inspection requirements of Condition 7.1.8 are sufficient to assure compliance with the related emissions requirements.

In response to the Order, the revised permit would provide Periodic Monitoring that is sufficient to assure compliance with the terms and conditions of the permit. The revisions would include additional testing in Condition 7.1.7, additional inspection requirements in Condition 7.1.8 and additional control requirements and work practices in Condition 7.1.5(b). The Illinois EPA has also provided a detailed justification of the Periodic Monitoring requirements for coal handling operations in Section C.1 of Attachment C of this Statement of Basis.

b. Section II(B) of the Order: Coke Production

1. Coke Oven Charging Leaks from Doors, Leaks from Lids, and Leaks from Offtakes

The Petitioner alleges that the permit does not include Periodic Monitoring sufficient to assure compliance with visible emission (VE) limits found in Conditions 7.2.3 – 1(a) and (c), 7.2.3 – 2(a) and (b), and 7.2.3-4(a) and (b) of the permit.

The Petitioner further claims that Condition 7.2.14 provides monitoring methods but does not require the Permittee to monitor for compliance with the VE limits.

[162] The facility is located in an area of poor air quality, which is currently designated nonattainment for $PM_{2.5}$ and lead. The facility's emissions contribute to ozone air quality in the greater Metropolitan St. Louis Area, which is designated nonattainment for ozone. Lastly, under Illinois policy, the facility is located in a potential environmental justice area.

USEPA found that Illinois EPA did not provide an analysis to demonstrate how the monitoring requirements in the permit are sufficient to assure compliance with the VE limits, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit. Further USEPA found that Illinois EPA's response to the Petitioner's comment simply recited the monitoring requirements and was silent on how the monitoring requirements of 40 CFR Part 63, Subpart L are related to the emission requirements in the permit.

In response to the Order, the revised permit would provide Periodic Monitoring that is sufficient to assure compliance with the terms and conditions of the permit. These revisions would include: additional testing in Conditions 7.2.7-1(b) and 7.2.7-3 and additional monitoring requirements in Condition 7.2.8-1.In particular, the permit would require daily observations for charging and leaks from various components of the coke oven batteries to address state standards that apply to individual sets of observations, rather than on a 30 day average of multiple observations. The Illinois EPA has also provided a more complete justification of the monitoring requirements for coke production at the source in Section C.2 of Attachment C of this Statement of Basis.

2. Combustion (Battery) Stack

The Petitioner alleges that the permit does not include Periodic Monitoring sufficient to assure compliance with the PM emission limits found in Condition 7.2.3 – 7(a)(i) and (c) of the permit.

USEPA found that Illinois EPA did not provide in its Responsive Summary an analysis to demonstrate how the monitoring requirements in Condition 7.2.7(d) of the permit are sufficient to assure compliance with the terms and conditions of the permit or are sufficient to yield reliable data from the relevant time period that is representative of compliance.

The Petitioner also asserted that CEMS should be the means of compliance with the Part 70 Periodic Monitoring requirements. USEPA denied the petition on this issue.

In response to the Order, the revised permit would to include additional testing for PM emissions of the combustion stack in Condition 7.2.7-3. The Illinois EPA has also provided a more complete justification of the monitoring requirements for the combustion stacks in Section C.2 of Attachment C of this Statement of Basis.

3. Bypass/Bleeder Stack Flare

The Petitioner alleges that the permit does not include Periodic Monitoring sufficient to assure compliance with the VE limit found in Condition 7.2.3 – 8(b) of the permit.

USEPA finds in its Order that Illinois EPA did not explain how the monitoring requirements in the permit are sufficient to assure compliance with the associated permit terms and conditions. Further, USEPA states that the fact that 40 CFR 63.309(h) does not specify a monitoring frequency does not end the analysis. USEPA also states that the permitting authority must determine whether monitoring included in a regulation is sufficient to assure compliance with the permit conditions, and if it is not sufficient the permitting authority must supplement the monitoring for those conditions.

In response to the Order, the Illinois EPA has also provided a more complete justification of the monitoring requirements for these flares in Section C.2 of Attachment C of this Statement of Basis. In particular, sufficient Periodic Monitoring for these emergency flares on the coke oven batteries is provided for by the NESHAP.

c. Section II(C) of the Order: Coke By-Products Recovery Plant

The Petitioner alleges the permit's annual opacity reading requirement for the coke by-product recovery plant flare is not frequent enough to assure compliance with the VE limit found in Condition 7.3.10(a)(i) of the permit, and further asserts that daily or more frequent monitoring would be reasonable to assure compliance with these limits.. The Petitioner also claims that Illinois EPA's rationale for the monitoring associated this condition is unclear.

USEPA finds in its Order that, while Illinois EPA discussed why video monitoring of the flare is not appropriate, it did not provide an analysis to demonstrate how the annual opacity reading or the monthly ignition system inspections are sufficient to demonstrate compliance with the VE limit or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit conditions.

The revised permit would include additional monitoring requirements in Condition 7.3.9(e),. The Illinois EPA has also a more complete justification of the monitoring requirements for the by-products recovery plant in Section C.3 of Attachment C of this Statement of Basis.

d. Section II(D) of the Order: Blast Furnace

1. Control Equipment

The Petitioner alleges that the permit does not include Periodic Monitoring sufficient to assure compliance with the PM emission limit found in Condition 7.4.3 – 1(a)(ii)(A) of the permit, and asserts that a one-time performance test during the permit term does not constitute Periodic Monitoring. The Petitioner further asserts that Illinois EPA's rationale for the monitoring requirements associated with this condition is inadequate.

USEPA granted the Petition on this issue and finds that Illinois EPA's Responsiveness Summary did not provide an analysis to demonstrate how the aforementioned performance test is sufficient to assure compliance with the permit conditions, or is sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit conditions.

In response to the Order, the revised permit would include additional monitoring requirements in Condition 7.4.8 and revised testing requirements in Condition 7.4.7 that are specific to this allegation. The Illinois EPA has also provided a detailed justification of the monitoring requirements for the blast furnace control equipment in Section C.4 of Attachment C of this Statement of Basis.

2. Opacity

The Petitioner alleges that the weekly opacity readings required in the permit are not sufficient to assure compliance with opacity limit in Condition 7.4.3 - 1(d)(ii) of the permit. The Petitioner also states that Illinois EPA's response confuses matters as it refers to a once-a-permit-term monitoring based on a MACT standard, and suggests that daily or more frequent opacity monitoring including the use of video monitoring may be appropriate.

USEPA grants the petition on this issue in the Order and finds that Illinois EPA's Responsive Summary did not include an analysis to demonstrate how the monitoring requirements in the permit are sufficient to assure compliance with the permit conditions, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit conditions.

In response to the Order, the revised permit would include additional monitoring requirements in Condition 7.4.8. The Illinois EPA has also provided a detailed justification of the monitoring requirements for the blast furnace operations in Section C.4 of Attachment C of this Statement of Basis.

3. Excess Gas Flare

The Petitioner alleges that the annual opacity observations and monthly inspections of the flare ignition system required in the permit are not sufficient to assure compliance with the VE limit in Condition 7.4.5 – 4(e) of the permit, which applies on a continuous basis. The Petitioner suggests that daily or more frequent opacity monitoring including the use of video monitoring may be appropriate.

USEPA grants the petition on this issue in the Order and finds that Illinois EPA's Responsive Summary did not include an analysis to demonstrate how the monitoring requirements in the permit are sufficient to assure compliance with the permit conditions, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit conditions.

In response to the Order, the revised permit would include additional monitoring requirements specific to the flare in Condition 7.4.8(k). The Illinois EPA has also provided a detailed justification of the monitoring requirements for the blast furnace flare in Section C.4 of Attachment C of this Statement of Basis.

4. Production and Emission Limits

The Petitioner alleges that the permit does not include Periodic Monitoring sufficient to assure compliance with the emission limits in Conditions 7.4.6(b)-(g) for the blast furnaces and related operations. Additionally, the Petitioner alleges that compliance with these conditions is demonstrated through records and emission factors established in PSD permit 95010001, and that neither the CAAPP permit nor the PSD permit identifies the source of the emission factors. Further, the Petitioner asserts that the Project Summary and the Responsiveness Summary did not provide evidence that the emission factors are representative of emissions at the source.

The Petitioner asserts that Illinois EPA must provide additional information about the source of the data used to calculate the emission factors and must explain how the use of the emission factors is sufficient to assure compliance with the associated emission limits. The specific allegations regarding each emission limit are discussed in the following sections.

Casthouse Baghouse (Furnace Tapping) Captured Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the PM_{10} emission limit found in Condition 7.4.6(b) of the permit as it relies on an emission factor from an unspecified source. The Petitioner further disagrees with Illinois EPA's explanation that, in addition to the use of emission factors, testing requirements based on NESHAP regulations will be used to assure compliance with the limit in Condition 7.4.6(b), stating the testing requirements are based on federal MACT regulations which do not apply to this condition. The Petitioner also asserts that the Illinois EPA must provide additional information to justify this monitoring condition.

USEPA responds in its Order that Illinois EPA did not provide an analysis to demonstrate how the monitoring requirements in the CAAPP permit are sufficient to assure compliance with the limits or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit in it Projects Summary or in its response to the Petitioners comments.

USEPA's Order also states that the permit action record does not specify the origin of the emission factors, and has failed to provide an explanation why use of the emission factors is adequate to assure compliance.

USEPA directs Illinois EPA to either justify in the record why these emission factors are representative of the source's operations, and provide sufficient evidence to demonstrate that the emissions will not vary by a degree that would cause an exceedance of the standards, or Illinois EPA must determine and adequately support another mechanism to assure compliance with the limits in the underlying construction permit.

Further USEPA suggests that if Illinois EPA can justify the use of the emission factors, it should require the source to confirm the appropriateness of the factors such as through the use of stack testing on a periodic basis.

The Petitioner further alleges that the permit record does not provide a clear rationale for the monitoring requirements for the SO_2 limit in Condition 7.4.6(b) as it also relies on an emission factor from an unspecified source.

USEPA concurs and directs the Illinois EPA to provide an explanation why use of the emission factors is adequate assure compliance.

The Petitioner further alleges that the permit record does not provide a clear rationale for the monitoring requirements for the NO_x limit in Condition 7.4.6(b) as it also relies on an emission factor from an unspecified source. The Petitioner also asserts that Illinois EPA has not provided

further information on the initial testing data referenced in its Responsiveness Summary, and asserts that a margin of compliance is not a sufficient basis for determination that emissions will not change over the life of the permit. The petitioner also claims that Illinois EPA's rationale for the monitoring requirements is far to general.

USEPA agreed in its Order that the permit record does not specify the origin of the emission factors for NO_x emissions, and that it is not clear that the emission factors reflect emissions at the source. USEPA also finds that Illinois EPA has failed to provide an explanation why the use of emission factors is adequate to assure compliance.

The petitioner further alleges that the permit record does not provide a clear rationale for the monitoring requirements for the VOM emission limit in Condition 7.4.6(b) of the permit, as it also relies on an emission factor from an unspecified source.

USEPA also agreed in its Order that the permit record does not specify the origin of the emission factors for VOM emissions, and that it is not clear that the emission factors reflect emissions at the source. USEPA also finds that Illinois EPA has failed to provide an explanation why the use of emission factors is adequate to assure compliance.

In response to the Order, the revised permit would require additional emissions testing for the Casthouse Baghouse in Condition 7.4.7(c) and additional monitoring requirements in Conditions 7.4.8(b), (c), and (i),. The Illinois EPA has also provided a detailed discussion of the monitoring for the Casthouse Baghouse in Section C.4 of Attachment C of this Statement of Basis. In particular, the revised permit would require that emission factors that are used to routinely determine emissions for comparison to permit limits be reevaluated when new data becomes available to assure that the factors that it uses are adequate, i.e., they do not understate emissions. For this purpose, measurements for emissions of additional pollutants would be required as part of the testing that is required to address applicable regulatory requirements.

Blast Furnace Uncaptured Fugitive Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the SO_2 limit in Condition 7.4.6(c) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional information to justify this monitoring condition.

USEPA finds in its Order that Illinois EPA's response did not provide and an analysis to demonstrate how the opacity monitoring requirements in the CAAPP permit are sufficient to assure compliance with the permit condition, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit. USEPA further states that the Illinois EPA has failed to provide and explanation of the origin of the emission factors, or an explanation of why use of the emission factors is adequate to assure compliance.

The Petitioner also alleges that the permit record does not provide a clear rationale for the monitoring requirements for the NO_x emission limit in Condition 7.4.6(c) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide

additional information to justify this monitoring condition.

USEPA finds in its Order that Illinois EPA's response did not provide and an analysis to demonstrate how the opacity monitoring requirements in the CAAPP permit are sufficient to assure compliance with the permit condition, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit. USEPA further states that the Illinois EPA has failed to provide and explanation of the origin of the emission factors, or an explanation of why use of the emission factors is adequate to assure compliance.

The Illinois EPA has addressed these issues by providing a detailed justification of the Periodic Monitoring requirements for these limits in Section C.4 of Attachment C of this Statement of Basis. In particular, the revised permit would require that emission factors that are used to routinely determine emissions for comparison to permit limits be reevaluated when new data becomes available to assure that the factors that it uses are adequate, i.e., they do not understate emissions. For this purpose, measurements for emissions of additional pollutants would be required as part of the testing that is required to address applicable regulatory requirements. These requirements also apply to uncaptured emissions, as emission rates for uncaptured emissions may be derived from testing for captured emissions.

Blast Furnace Charging Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the PM_{10} emission limit in Condition 7.4.6(d) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional information to justify this monitoring condition.

USEPA finds in its Order that Illinois EPA's response did not provide and an analysis to demonstrate how the opacity monitoring requirements in the CAAPP permit are sufficient to assure compliance with the permit condition, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit. USEPA further states that the Illinois EPA has failed to provide and explanation of the origin of the emission factors, or an explanation of why use of the emission factors is adequate to assure compliance.

In response to the Order, Illinois EPA has provided a detailed discussion of the Periodic Monitoring required for blast furnace charging emissions in Section C.4 of Attachment C of this Statement of Basis.

Slag Pits Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the PM_{10} emission limit in Condition 7.4.6(e) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional information to justify this monitoring condition.

USEPA finds in its Order that Illinois EPA's response did not provide and an analysis to demonstrate how the opacity monitoring requirements in the CAAPP permit are sufficient to assure

compliance with the permit condition, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit. USEPA further states that the Illinois EPA has failed to provide and explanation of the origin of the emission factors, or an explanation of why use of the emission factors is adequate to assure compliance.

Illinois EPA has provided a more complete discussion of the required Periodic Monitoring in Section C.4 of Attachment C of this Statement of Basis.

The Petitioner also alleges that the permit record does not provide a clear rationale for the monitoring requirements for the SO_2 emission limit in Condition 7.4.6(e) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional information to justify this monitoring condition.

USEPA finds in its Order that Illinois EPA's response did not provide and an analysis to demonstrate how the opacity monitoring requirements in the CAAPP permit are sufficient to assure compliance with the permit condition, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit. USEPA further states that the Illinois EPA has failed to provide and explanation of the origin of the emission factors, or an explanation of why use of the emission factors is adequate to assure compliance.

Illinois EPA has addressed this issue by providing a more complete justification of the Periodic Monitoring requirements for these limits in Condition C.4 of Attachment C of this Statement of Basis.

Iron Spout Baghouse Captured Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the PM_{10} emission limit in Condition 7.4.6(f) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional information to justify this monitoring condition.

The Petitioner further claims that Illinois EPA's Responsiveness Summary is confusing regarding the monitoring requirement because it suggests that testing requirements from federal NESHAP requirements will be used to assure compliance with the limit in 7.4.6(f), and asserts Illinois EPA must provide additional information to justify the condition.

USEPA finds in its Order that Illinois EPA's response did not provide and an analysis to demonstrate how the opacity monitoring requirements in the CAAPP permit are sufficient to assure compliance with the permit condition, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit. USEPA further states that the Illinois EPA has failed to provide and explanation of the origin of the emission factors, or an explanation of why use of the emission factors is adequate to assure compliance.

USEPA also finds in its Order that the permitting record does not specify the origin of the emission factors, and that it is not clear whether the emission factors are indicative of emissions at the source.

The Petitioner also alleges that the permit record does not provide a clear rationale for the monitoring requirements for the SO_2 emission limit in Condition 7.4.6(f) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional information to justify this monitoring condition.

USEPA finds in its Order that Illinois EPA's response did not provide and an analysis to demonstrate how the opacity monitoring requirements in the CAAPP permit are sufficient to assure compliance with the permit condition, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit. USEPA further states that the Illinois EPA has failed to provide and explanation of the origin of the emission factors, or an explanation of why use of the emission factors are adequate to assure compliance.

In response to the Order, the revised permit would require additional Periodic Monitoring requirements in Conditions 7.4.8(b), (c), and (i),. The Illinois EPA has also a more complete discussion of the monitoring in Section C.4 of Attachment C of this Statement of Basis. In this regard, the Iron Spout Baghouse and Casthouse Baghouse must be considered together as they both control a portion of the emissions from the casthouse. As such, testing of these baghouses must be concurrently, both to address applicable regulatory requirements and to provide accurate date to reevaluate the emission rates for uncaptured emissions.

Iron Pellet Screen Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the PM_{10} emission limit in Condition 7.4.6(g) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional information to justify this monitoring condition.

USEPA finds in its Order that Illinois EPA's response did not provide and an analysis to demonstrate how the opacity monitoring requirements in the CAAPP permit are sufficient to assure compliance with the permit condition, or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit. USEPA further states that the Illinois EPA has failed to provide and explanation of the origin of the emission factors, or an explanation of why use of the emission factors is adequate to assure compliance.

The revised permit would include the iron pellet screen emissions in the Material Handling and Processing Operations in Condition 7.1 of the permit, making these emissions subject to the Monitoring requirements of that section, consistent with other material handling operations. The Illinois EPA has provided a detailed discussion of the Periodic Monitoring requirements in Section C.1 of Attachment C of this Statement of Basis.

e. Section II(E) of the Order: Basic Oxygen Furnaces (BOF)

1. Opacity

Petitioner alleges that the permit record does not provide a clear rationale for the frequency of the

monitoring requirements for the opacity limit found in Condition 7.5.3 -1(c)(iv) of the permit. Petitioner also alleges that daily opacity observations are supported by USEPA's April 18,1997, Region *7 Policy on Periodic Monitoring for Opacity* guidance document for Title V permits; suggests the permit be revised to require daily observations; and asserts that Illinois EPA must provide additional information to justify the monitoring frequency in the permit.

USEPA agrees in their Order that Illinois EPA's response did not provide an analysis to demonstrate how the frequency of the observations is sufficient to assure compliance with the permit conditions or is sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit conditions.

However, USEPA states that the Region 7 document referenced does not contain any requirements, and that Illinois EPA does not have to use that guidance document, but does need to provide a better explanation of the bases and adequacy of its choice of monitoring.

The Petitioner also alleges that the permit lacks Periodic Monitoring requirements sufficient to assure compliance with the opacity limit in Condition 7.5.3 – 1(f) of the permit and asserts that the Illinois EPA must provide additional information to justify this monitoring requirement.

USEPA in its order found that Illinois EPA did not provide an analysis to demonstrate how the monitoring requirements are sufficient to demonstrate compliance with the VE limit or are sufficient to yield reliable data from the relevant time period that is representative of compliance with the permit conditions.

In response to the Order, the revised permit would require additional observations for opacity in Condition 7.5.7(c) and additional observation for opacity in Condition 7.5.8(d)(v). A detailed justification of the Periodic Monitoring requirements for operations at the BOF is provided in Section C.5 of Attachment C of this Statement of Basis. In particular, for "daily" opacity observations not to be required for the roof monitor on the BOF shop, the source must first install a baghouse to enhance control of the tapping emissions from the furnaces. It must then operate the capture and control system to provide a 10 percent compliance margin with the applicable opacity standard for the roof monitor. If this compliance margin is not present, it must resume "daily" observation, by conducting observations of the opacity of the emissions from the roof monitor on five out of every seven operating days.

2. Production and Emission Limits

The Petitioner alleges that the permit does not include Periodic Monitoring sufficient to assure compliance with the emission limits in Conditions 7.5.6(c)-(i) for the basic oxygen furnaces and related operations. Additionally, the Petitioner alleges that compliance with these conditions is demonstrated through records and emission factors established in PSD Permit 95010001, and that neither the CAAPP permit nor the PSD permit identifies the source of the emission factors. Further, the Petitioner asserts that the Project Summary and the Responsiveness Summary did not provide evidence that the emission factors are representative of emissions at the source.

The Petitioner asserts that Illinois EPA must provide additional information about the source of the

data used to calculate the emission factors and must explain how the use of the emission factors is sufficient to assure compliance with the associated emission limits. The specific allegations regarding each emission limit are discussed in the following sections.

In response to the Order, the revised permit would provide for verification and reevaluation of emission factors and require additional testing for the pollutants subject to limits in Conditions 7.5.6(c) and 7.5.7(b) to. The revised permit would also include additional monitoring requirements in Condition 7.5.8. The Illinois EPA has provided a detailed explanation and justification of the Periodic Monitoring requirements for operations at the BOF in Section C.5 of Attachment C of this Statement of Basis.

BOF Electrostatic Precipitator (ESP) Stack Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the NO_x limit in Condition 7.5.6(c) of the permit, and alleges that Illinois EPA has failed to include information necessary to justify the use of the NO_x emission factor to assure compliance with the limit. The Petitioner asserts that Illinois EPA must provide additional information to justify these monitoring conditions.

USEPA finds in its Order that Illinois EPA has not made clear how the emission factors are indicative of the emissions at the source. USEPA also finds that Illinois EPA has failed to explain how the use of the emission factors in conjunction with the production records is adequate to assure compliance.

The Petitioner also alleges that the permit record does not provide a clear rationale for the monitoring requirements for the VOM limit in Condition 7.5.6(c) of the permit, and alleges that Illinois EPA has failed to include information necessary to justify the use of the VOM emission factor to assure compliance with the limit. The Petitioner asserts that Illinois EPA must provide additional information to justify these monitoring conditions.

USEPA finds in its Order that Illinois EPA has not made clear how the emission factors are indicative of the emissions at the source. USEPA also finds that Illinois EPA has failed to explain how the use of the emission factors in conjunction with the production records is adequate to assure compliance.

The Petitioner also alleges that the permit record does not provide a clear rationale for the monitoring requirements for the CO limit in Condition 7.5.6(c) of the permit, and alleges that Illinois EPA has failed to include information necessary to justify the use of the CO emission factor to assure compliance with the limit. The Petitioner asserts that Illinois EPA must provide additional information to justify these monitoring conditions.

USEPA finds in its Order that Illinois EPA has not made clear how the emission factors are indicative of the emissions at the source. USEPA also finds that Illinois EPA has failed to explain how the use of the emission factors in conjunction with the production records is adequate to assure compliance. Additionally, USEPA finds that while Illinois EPA states that there is a large margin for compliance, it failed to provide any information which addresses the variability in

emissions.

The Petitioner also alleges that the permit record does not provide a clear rationale for the monitoring requirements for the lead limit in Condition 7.5.6(c) of the permit, and alleges that Illinois EPA has failed to include information necessary to justify the use of the lead emission factor to assure compliance with the limit. The Petitioner is also concerned that the lead emission limit is much higher than necessary given the emission factor cited by the permit. The Petitioner asserts that Illinois EPA must provide additional information to justify these monitoring conditions.

USEPA finds in its Order that Illinois EPA has not made clear how the emission factors are indicative of the emissions at the source. USEPA also finds that Illinois EPA has failed to explain how the use of the emission factors in conjunction with the production records is adequate to assure compliance. Additionally, USEPA finds that Illinois EPA has failed to provide an explanation of why use of the emission factors is adequate to assure compliance.

In response to the Order, the revised permit would include additional testing for the pollutants whose emissions are limited by Conditions 7.5.6(c) and 7.5.7(b) of the permit to verify emission factors. The revised permit would also require additional monitoring in Condition 7.5.8. The Illinois EPA has provided a more complete justification of the Periodic Monitoring requirements for operations at the BOF shop in Section C.5 of Attachment C of this Statement of Basis.

BOF Roof Monitor Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the lead emission limit in Condition 7.5.6(d) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional information to justify this monitoring condition.

USEPA finds in its Order that Illinois EPA has not made clear how the emission factors are indicative of the emissions at the source, nor has it explained the origin of the emission factors. USEPA also finds that Illinois EPA has failed to explain how the use of the emission factors in conjunction with the production records is adequate to assure compliance. Additionally, USEPA finds that Illinois EPA has failed to provide an explanation of why use of the emission factors is adequate to assure compliance.

In response to the Order, the revised permit would include additional testing for emissions lead in Condition 7.5.7(c) to verify emission factors used by the Permittee. Illinois EPA has also provided and explanation in Section III and Section C.5 of Attachment C of this Statement of Basis for how emission factors used to determine compliance with Title I conditions are to be approached.

Desulfurization and Reladling (Hot Metal Transfer) Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the VOM emission limit in Condition 7.5.6(e) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional

information to justify this monitoring condition. The Petitioner also alleges that Illinois EPA does not explain what "engineering estimates" were used to develop the emission limit and how those estimates are representative of emissions from these operations at the source.

USEPA finds in its Order that Illinois EPA has not made clear how the emission factors are indicative of the emissions at the source, nor has it explained the origin of the emission factors. USEPA also finds that Illinois EPA has failed to explain how the use of the emission factors in conjunction with the production records is adequate to assure compliance.

The Petitioner further alleges that the permit record does not provide a clear rationale for the monitoring requirements for the lead emission limit in Condition 7.5.6(e) of the permit, as it relies on an emission factor from an unspecified source, and asserts that Illinois EPA must provide additional information to justify this monitoring condition. The Petitioner also asserts that if Illinois EPA cannot provide sufficient justification for the monitoring requirements, the permit must be revised to include additional Periodic Monitoring, such as an annual stack test, to assure compliance with the lead limit.

USEPA finds in its Order that Illinois EPA has not made clear the origin of the emission factors or how the emission factors are indicative of the emissions at the source. USEPA also finds that Illinois EPA has failed to explain how the use of the emission factors is adequate to assure compliance. Additionally, USEPA finds that Illinois EPA must explain how the margin of compliance is adequate, and why variability in emissions will not result in an exceedance of the limits.

In response to the Order, the revised permit would include additional testing for emissions of lead and VOM from units subject to limits in Condition 7.5.7(c) of the permit to verify emission factors. The Illinois EPA has also provided additional analysis to explain and how the emission factors are used to assure compliance with the terms and conditions of the permit in Section III and Section C.5 of Attachment C of this Statement of Basis.

BOF Additive System Emissions

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the PM_{10} emission limit in Condition 7.5.6(f) of the permit, stating that Illinois EPA has failed to include information necessary to justify the use of the emission factors to assure compliance with the limit, and asserts that Illinois EPA must provide additional information to justify this monitoring condition.

USEPA finds in its Order that Illinois EPA has not made clear how the emission factors are indicative of the emissions at the source, nor has it explained the origin of the emission factors. USEPA also finds that Illinois EPA has failed to explain how the use of the emission factors in conjunction with the production records is adequate to assure compliance.

The revised permit would include the BOF additive system in the Material Handling and Processing Operations in Section 7.1 of the permit, making this system subject to the Periodic Monitoring requirements of that section, consistent with other material handling operations. The

Illinois EPA has provided a detailed discussion of the Periodic Monitoring requirements in Section C.1 of Attachment C of this Statement of Basis.

f. Section II(F) of the Order: Continuous Casting

1. Opacity

The Petitioner alleges that the permit record does not provide a clear rationale for the monitoring requirements for the opacity limit in Conditions 7.6.3 – 1(b)(ii) of the permit. The Petitioner asserts that Illinois EPA has not provided a rationale that this demonstrates that this monitoring is sufficient to yield reliable data from the relevant time period that are representative of compliance, and that the Illinois EPA must revise the permit to require at least daily opacity observations to assure compliance with the limit.

USEPA finds in its Order that Illinois EPA's response did not provide an analysis to demonstrate how the weekly (and potentially daily) observations are adequate to assure compliance with the limit or are sufficient to yield reliable data from the relevant time period that are representative of compliance with the permit.

In response to the Order, the revised permit would include additional Periodic Monitoring requirements in Condition 7.6.8(a)(ii). The Illinois EPA has provided a detailed justification of the monitoring requirements for continuous casting operations in Section C.6 of Attachment C of this Statement of Basis.

2. Production and Emission Limits

The Petitioner asserts that the permit does not include Periodic Monitoring sufficient to assure compliance with the PM_{10} and NO_x limits in Conditions 7.6.7(a) through (e) of the permit. Additionally, the Petitioner alleges that compliance with these conditions is demonstrated through records and emission factors established in PSD permit 95010001, and that neither the CAAPP permit nor the PSD permit identifies the source of the emission factors. Further, the Petitioner asserts that the Project Summary and the Responsiveness Summary did not provide evidence that the emission factors are representative of emissions at the source. The Petitioner concludes that Illinois EPA must provide additional information about the source of the data used to calculate the emission factors and must clearly explain how the use of emission factors is sufficient to assure compliance with the limits.

USEPA finds in its Order that Illinois EPA has not made clear how the emission factors are indicative of the emissions at the source, nor has it explained the origin of the emission factors. USEPA also finds that Illinois EPA has failed to explain how the use of the emission factors in conjunction with the production records is adequate to assure compliance.

In response to the Order, the revised permit would require additional Periodic Monitoring for opacity in Condition 7.6.8(a)(ii).. The Illinois EPA has also provided a detailed justification of the Periodic Monitoring requirements for PM_{10} and NO_x emissions from continuous casting operations in Section C.6 of Attachment 6 to this Statement of Basis.

g. Section II(G) of the Order: Hot Strip Mill

1. Slab Reheat Furnaces

The Petitioner alleges that the permit does not include Periodic Monitoring sufficient to assure compliance with the PM_{10} limit in Condition 7.7.3 - 1 of the permit. The petition asserts that the permit must require additional monitoring, such as a PM CEMS to assure compliance with the limit because the current requirement to test once in five years is not sufficient to assure compliance with a limit that the source must comply with continually.

USEPA finds in its Order that Illinois EPA did not provide an analysis to demonstrate how the testing frequency is adequate to assure compliance with the PM_{10} limit, or is sufficient to yield reliable data from the relevant time period that are representative of compliance with the permit. However, USEPA also finds that the Petitioner has not identified an applicable requirement that compels the use of CEMS, nor has the Petitioner demonstrated that a CEMS is the only monitoring that can assure compliance. So, the USEPA has ordered the Illinois EPA to explain how the permit provides sufficient monitoring or to modify the permit to achieve this, but has denied the petition regarding the issue of CEMS.

In response to the Order, , the revised permit would include additional emissions testing in Conditions 7.7.8(a) and (b), and to additional monitoring requirements in Condition 7.7.9(a) and (b). The Illinois EPA has also provided in Section C.7 of Attachment C of this Statement of Basis a detailed explanation for why the Periodic Monitoring requirements for the reheat furnaces are sufficient to assure compliance with the PM_{10} limit for the furnaces It should be noted that this limit is found in the revised permit in Condition 7.7.3(b).

As part of this further consideration of Periodic Monitoring for the reheat furnaces , the Illinois EPA has also determined that several Title I limitations for the reheat furnaces in the current permit should not be retained in the revised permit as those limitations are "obsolete," as explained in Section III of this Statement of Basis. Accordingly, the revised CAAPP permit does not need Periodic Monitoring for those limitations.

2. Production and Emission Limits

The Petitioner asserts that the permit does not include Periodic Monitoring sufficient to assure compliance with the PM_{10} limit in Condition 7.7.7(b) of the permit. The Petitioner asserts that the permit must contain an hourly fuel usage recordkeeping requirement to assure compliance with the maximum hourly heat input limit.

USEPA in its order finds that Illinois EPA did not provide an analysis to demonstrate how the new heat input limit is adequate to assure compliance with the PM_{10} limit, nor did it explain why the monthly fuel log is sufficient to assure compliance with the permit terms or yield reliable data from the relevant time period that are representative of compliance with the permit.

In response to the Order, the revised permit would include additional emissions testing in

Conditions 7.7.8(a) and (b) and additional monitoring requirements in Conditions 7.7.9(a) and (b). The Illinois EPA has also provided, in Section C.7 of Attachment C of this Statement of Basis, an explanation for why the Periodic Monitoring requirements for the reheat furnaces along with monthly fuel logs are sufficient to assure compliance with the PM_{10} limit for the reheat furnaces.

h. Section II(H) of the Order: Finishing Operations

The Petitioner claims that the permit does not include Periodic Monitoring sufficient to assure compliance with the hydrochloride (HCl) limits in Condition 7.8.5(a) of the permit. The Petitioner states that it is unclear why the permit provides for an alternative testing schedule in Condition 7.8.8(a)(iii). The Petitioner asserts that, if the permitting authority approved an alternate testing schedule, the public would not know what testing frequency was required. The Petitioner further asserts that the permit must be revised to require HCl performance testing on at least an annual basis.

USEPA finds in its Order that Illinois EPA did not provide an analysis to demonstrate how the new time interval is adequate to assure compliance with the HCl limit, nor did it explain why the monitoring is sufficient to yield reliable data from the relevant time period that are representative of compliance with the permit.

A detailed justification for the Periodic Monitoring requirements for finishing operations is provided in Section C.8 of Attachment C of this Statement of Basis.

i. Section II(I) of the Order: Boilers

1. PM_{10} Emission Limit

The Petitioner claims that the permit does not include Periodic Monitoring sufficient to assure compliance with the PM_{10} limit in Condition 7.10.3(b)(ii) of the permit. The Petitioner asserts that a one-time test does not constitute Periodic Monitoring and is not sufficient to assure compliance. The Petitioner further argues that the permit must be revised to require additional Periodic Monitoring such as a PM CEMS.

USEPA found in its Order that Illinois EPA failed to provide any support for its conclusion that the applicable limit will not be exceeded because the boilers will burn only gaseous fuels. USEPA also states that it is unclear why Illinois EPA believes that 40 CFR 63.1162 is not applicable if boilers are limited to burning gaseous fuels.

However, USEPA also finds that the Petitioner has not demonstrated that a CEMS is the only monitoring method that can assure compliance. So, the USEPA has ordered the Illinois EPA to explain how the permit provides sufficient monitoring or to modify the permit to achieve this, but has denied the petition regarding the issue of CEMS.

In response to the Order, the revised permit would include additional emissions testing, monitoring requirements, and work practices for the boilers. In the case that these boilers are not subject to the additional requirements, Illinois EPA has provided a more complete explanation of the

Periodic Monitoring for PM_{10} for these boilers, and an analysis of how the monitoring requirements including fuel usage and fuel analysis assure compliance with the applicable conditions in the permit. These discussions are provided in Section C.10 of Attachment C of this Statement of Basis.

2. CO Emission Limit

The Petitioner claims that the permit does not include Periodic Monitoring sufficient to assure compliance with the PM_{10} limit in Condition 7.10.3(e) of the permit. The Petitioner also claims that Illinois EPA has not provided a clear rationale supporting the monitoring requirements associated with the limit.

USEPA, in its Order, references Illinois EPA's response referring to a permit that it has not issued yet, and notes that the terms in that permit are not yet effective. USEPA has thus ordered that Illinois EPA explain what monitoring is required by the CAAPP permit, and how the monitoring is sufficient to assure compliance with the permit condition or yields reliable data from the relevant time period that are representative of compliance with the permit.

In response to the Order, the revised permit would include additional emissions testing, monitoring requirements, and work practices for the boilers. The Illinois EPA has provided a detailed explanation of the Periodic Monitoring for CO for these boilers, and an analysis of how the Periodic Monitoring requirements assure compliance with the applicable conditions in the permit. These discussions are provided in Section C.10 of Attachment C of this Statement of Basis.

j. Section II(J) of the Order: Internal Combustion Engines

The Petitioner claims that the permit requires the source to demonstrate compliance with Condition 7.11.7(b) for PM, CO, NO_x, and SO_2 emission limits for the emergency generator through the use of emergency generator operation record and emission factors identified in the permit. The Petitioner alleges asserts that, while the permit indicates the emission factors were established in permit 000600003, the source of the emission factors was not identified. The Petitioner asserts Illinois EPA must provide additional information to justify the monitoring requirements.

USEPA finds in its Order that Illinois EPA failed to address the Petitioner's comments that the limits in permit 000600003, and that the emission factors were of an unknown origin. USEPA has ordered Illinois EPA to provide an adequate explanation of whether the monitoring in the permit, including the use of emission factors, is sufficient to assure compliance with the CO limit.

In response to the Order, the revised permit would include additional emissions testing requirements in Condition 7.11.7 to verify emission factors and additional recordkeeping requirements in Condition 7.11. 9. The Illinois EPA has also provided a detailed justification of the monitoring requirements in Section C.11 of Attachment C of this Statement of Basis.

It should be noted that the PM, CO, NO_x, and SO_2 limits referred to in the Order are now in Condition 7.11.6(a) of the revised permit.

k. Section II(K) of the Order: Gasoline Storage and Dispensing

The Petitioner claims that the permit fails to include adequate Periodic Monitoring to assure compliance with the hourly discharge limit on organic material in Condition 7.12.3(b)(ii). The Petitioner further asserts that Illinois EPA has failed to adequately justify how the use of the TANKS program and monthly throughput information is sufficient to assure compliance with the hourly discharge limit. The Petitioner also asserts that monthly gasoline throughput records do not appear to constitute reliable data from the relevant time period that are representative of compliance with the permit, concludes that Illinois EPA must provide additional information to justify the monitoring requirements.

USEPA finds in its Order that Illinois EPA failed to provide an analysis to demonstrate how the TANKS program and information on monthly gasoline throughput is adequate to assure compliance with the hourly discharge limit, or why these requirements yield reliable data from the relevant time period that are representative of compliance with the permit.

In response to the Order, the revised permit would include additional control requirements and work practices in Conditions 7.12.5(b)(v) and (c) to ensure adequate Periodic Monitoring for the Gasoline Storage and Dispensing operations. The Illinois EPA has provided an explanation of how the Periodic Monitoring requirements are sufficient to assure compliance with the terms and conditions of the permit In Section C.12 of Attachment C of this Statement of Basis,.

D.3. Petitioner Alleges that the Permit Lacks Compliance Schedules to Remedy All Current Violations (Section III of the Order)

The Petitioner raised two issues regarding compliance schedules. First, the Petitioner alleges that the permit forgoes a required enforceable compliance schedule in favor of an unacceptable "under review" compliance provision. Second, the Petitioner alleges that there are 21 additional instances of current noncompliance given by two notices of violations, one given in January 2009 and the other in March 2009.

USEPA denied the petition on the second issue regarding notices of violation.

In the first allegation, the Petitioner alleges that the permit and Responsiveness Summary show that US Steel had not submitted an approvable schedule at the time of permit issuance.

USEPA's Order directed Illinois EPA to issue a permit that assures compliance with the December 18, 2007 consent order.

In response to the Order, Illinois EPA, as explained in Section II of this document, has updated the compliance schedule for the BOF that appeared in the earlier CAAPP permit. As more fully explained in the Responsiveness Summary for the earlier permit, the schedule in the earlier CAAPP permit was a placeholder pending further developments in the enforcement action regarding the BOF. The updated schedule that would appear in the planned revised permit includes a compliance schedule with an enforceable sequence of actions with milestones leading to compliance. It should be noted, however, that there is now only one milestone remaining in the

schedule contained in the planned permit given the progress the source has made toward compliance. It should be further noted that given the schedule for achieving this milestone, the revised permit when issued may appropriately contain no schedule.

D.4 Petitioner Alleges that the Permit Unlawfully Exempts Emissions During Startup, Shutdown, and Malfunctions (SSM) (Section IV of the Order)

In Section IV.A. of the Order, USEPA refers to the Petitioner's allegations that numerous provisions in the permit unlawfully exempt the source from otherwise-applicable NESHAP standards during periods of SSM.

USEPA notes in the Order that Illinois EPA explained in its initial response to this issue that the mandate in this case had not yet been issued, and thus no changes would be made to the permit to address the issue. USEPA agrees in its Order and states that it was reasonable for Illinois EPA to forego action in response to comment, and denied the petition on this issue.

In Section IV.B. of the Order, USEPA refers to the Petitioner's claims that nine permit terms illegally allow for broad exemptions from permit requirements during periods of SSM, and that Illinois EPA's response to comments falls short of adequately explaining why these SSM exemptions are legally or factually justified pursuant to 40 CFR 70.7(a)(5).

USEPA granted the petition on the issue detailed in Section IV.B. directing the Illinois EPA to explain how it determined in advance that the Permittee had met the requirements of the Illinois SIP at 35 IAC 201.262, or otherwise make appropriate changes to the permit and explain how the permit ensures compliance with the requirement of the SIP.

USEPA further directs Illinois EPA to either explain in the Statement of Basis how it determined in advance that the Permittee had met the requirements of the SIP, or to specify in the permit that continued operation during malfunction or breakdown will be authorized on a case-by-case basis if the source meets the SIP requirement.

In response to the Order, Illinois EPA has provided in Section VI of this Statement of Basis an explanation of the Illinois SIP and how the permit ensures compliance with Illinois' SIP requirements. Most significantly, Illinois EPA has explained that the sole determinations that are made in advance are whether that the source requested permission to continue to operate during a malfunction or breakdown in its CAAPP application, and whether the CAAPP application satisfied the application content of the SIP and provided proof sufficient to enable Illinois EPA to afford the source a potential prima facie defense to an enforcement action. This explanation applies to each unit for which the Illinois EPA afforded an opportunity to make a prima facie defense.

D.5 Petitioner Alleges that the Permit Fails to Include Compliance Assurance Monitoring (CAM) Requirements (Section V of the Order)

Section V of the order discusses the Petitioner's claims that the requirement for compliance assurance monitoring (CAM) plans, pursuant to 40 CFR Part 64, apply to the source because US Steel filed an initial CAAPP application after April 20, 1998.

The USEPA responded in the Order that the Petitioner had not demonstrated that the source met any of the criteria that trigger applicability of CAM plans. The petition was denied on that issue.

D.6 Petitioner Alleges that Numerous Permit Provisions Are Not Practically Enforceable (Section VI of the Order)

a. Section VI(A) of the Order: The Permit Fails to Appropriately Incorporate Plans by Reference

In this Section of the Order, USEPA addressed the Petitioner's claims that the CAAPP permit does not sufficiently identify the plans or portions of plans that are incorporated by reference into the permit by reference.

USEPA responds in the Order that Illinois EPA's incorporations are ambiguous and leave room for interpretation and misunderstanding about what exactly is required of the source. USEPA recommends that Illinois EPA use methods of incorporation by reference that are consistent with *White Paper 2* and the *Tesoro Order* that are referenced in the order.

In response to the Order, Illinois EPA has made changes to the planned revised permit to make clear which plans would be incorporated by reference. A full discussion of the manner in which the five plans referenced in the Order would be incorporated can be found in Section VII of this Statement of Basis.

b. Section VI(B) of the Order: Vague Provisions in the Permit Are Not Practically Enforceable

In this Section of the Order, USEPA address the Petitioner's claims that permit conditions must contain sufficient detail to ensure that the source and the public clearly understand permit obligations and compliance evaluation procedures.

USEPA granted the petition on this issue, specifically in regard to Condition 7.7.5 of the permit, and has directed Illinois EPA to evaluate whether, and ensure that, any permit conditions regarding startup are practically enforceable.

In response to the Order, Illinois EPA has provided in Section VI of this Statement of Basis an explanation of the Illinois SIP and how the planned revised permit complies with Illinois' SIP. Most significantly, Illinois EPA has explained that neither the SIP nor the permit provide for automatic, advance SSM exemptions. The sole determinations that are made in advance are whether the source requested permission to continue to operate during a malfunction or breakdown in its CAAPP application, and whether the CAAPP application satisfied the application content of the SIP and provided proof sufficient to enable Illinois EPA to afford the source a potential prima facie defense to an enforcement action. Additionally, consistent with the USEPA's directive on start-ups, the critical elements of the start-up procedures are included in the planned revised permit. This approach applies to each unit for which Illinois EPA afforded an opportunity to make a prima facie defense.

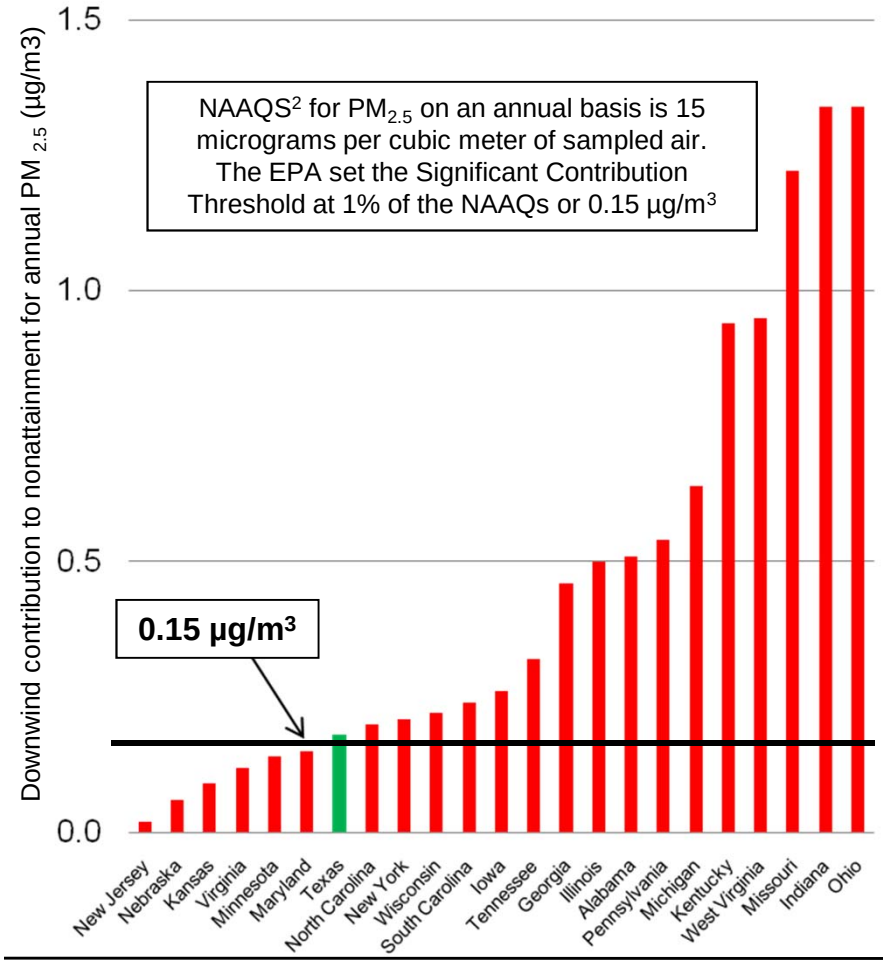
Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

Docket No. EPA-HQ-OAR-2009-0491

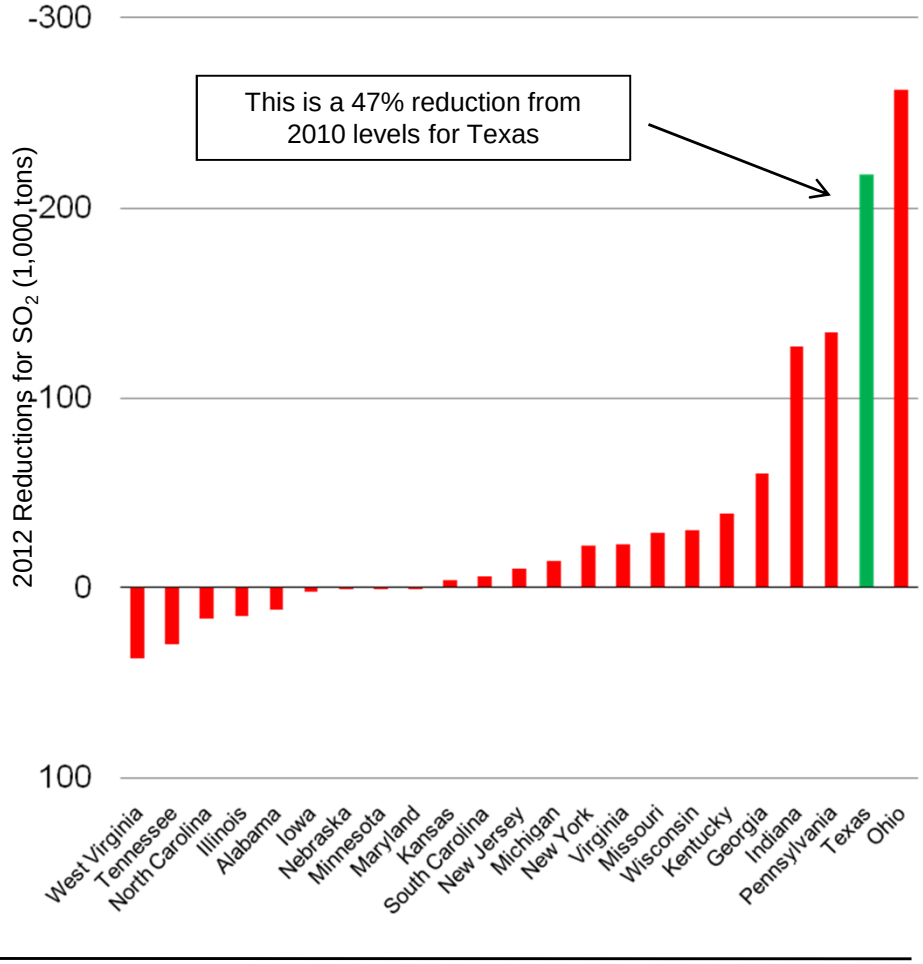
Exhibit 7

State-By-State Contributions And Mandated Reductions

SO_2 Group 1 & 2 State Contributions To Down-wind Nonattainment For Annual $PM_{2.5}$ (µg/m³)[1]



Required 2012 SO2 Reductions for Group 1 & 2 States[3]



[1] Source: Table V.D-1, page 148 of 1,323, Final CSAPR
[2] NAAQS refers to the National Ambient Air Quality Standard
[3] Source: Reductions are the differences between 2012 state budgets from CSAPR prepublication version preamble, pages 234 and 235, and the actual 2010 emissions from EPA's Clean Air Markets Division, Data & Maps, Quick Reports

Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

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Exhibit 8

Mine Safety and Health Administration
MSHA - Protecting Miners' Safety and Health Since 1978

Help Printing This Page

Mine Data Retrieval System as developed by PEIR

Mine Yearly Production Information

Current Mine Information

Mine ID:	**4801337**
Operator:	**Antelope Coal LLC**
Opr. Begin Date:	**6/2/1993**
Mine Name:	**Antelope Coal Mine**
Current Controller:	**Cloud Peak Energy Resources LLC**
Mine Status:	Active
Status Date:	12/3/1985
Mined Material:	Coal (Bituminous)
Type of Mine:	Surface
Location:	Converse County, WY
State:	WY

Operator History for Mine ID: 4801337

Operator Name	Begin Date	End Date
Antelope Coal LLC	6/2/1993	
Antelope Coal Company	12/1/1980	6/1/1993

How do I use this information? *Click Here*

Please note that the information provided by the Data Retrieval System is based on data gathered from various MSHA systems. As there may be a lag time in data being entered into those systems, there will also be a lag in the reflection of that data on the DRS.

MSHA Mine Yearly Reported Production Information

Mine ID: 4801337 Operator: Antelope Coal LLC

Prod. Year	Subunit Cd	Subunit	Annual Hrs.	Coal Prod.	Sum of Avg. Annual Emp.*
2010	03	Strip, Quarry, Open Pit	1101522	35908216	526
2010	99	Office Workers at Mine Site	20281	0	10
		Totals . . .	**1121803**	**35908216**	**536**
2009	03	Strip, Quarry, Open Pit	1009557	33975524	478
2009	99	Office Workers at Mine Site	19207	0	10
		Totals . . .	**1028764**	**33975524**	**488**
2008	03	Strip, Quarry, Open Pit	1022403	35777489	471
2008	99	Office Workers at Mine Site	16072	0	9
		Totals . . .	**1038475**	**35777489**	**480**
2007	03	Strip, Quarry, Open Pit	978186	34474682	448
2007	99	Office Workers at Mine Site	11380	0	6
		Totals . . .	**989566**	**34474682**	**454**
2006	03	Strip, Quarry, Open Pit	793209	33879292	362
2006	30	Mill Operation/Preparation Plant	24137	0	20
2006	99	Office Workers at Mine Site	96654	0	40
		Totals . . .	**914000**	**33879292**	**422**
2005	03	Strip, Quarry, Open Pit	640411	29953375	298
2005	30	Mill Operation/Preparation Plant	19823	0	4
2005	99	Office Workers at Mine Site	75108	0	35
		Totals . . .	**735342**	**29953375**	**337**

* The calculated sum of the average employee count where the average quarterly employment is greater than zero with grouping by calendar year, subunit code and mine ID.

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Mine Safety and Health Administration
MSHA - Protecting Miners' Safety and Health Since 1978

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Mine Data Retrieval System as developed by PEIR

Mine Yearly Production Information

Current Mine Information

Mine ID:	**4801353**
Operator:	**Peabody Powder River Mining LLC**
Opr. Begin Date:	**5/19/1998**
Mine Name:	**North Antelope Rochelle Mine**
Current Controller:	**Peabody Energy**
Mine Status:	Active
Status Date:	12/1/1985
Mined Material:	Coal (Bituminous)
Type of Mine:	Surface
Location:	Campbell County, WY
State:	WY

Operator History for Mine ID: 4801353

Operator Name	Begin Date	End Date
Peabody Powder River Mining LLC	5/19/1998	
Powder River Coal Company	6/1/1981	5/18/1998

How do I use this information? ***Click Here***

Please note that the information provided by the Data Retrieval System is based on data gathered from various MSHA systems. As there may be a lag time in data being entered into those systems, there will also be a lag in the reflection of that data on the DRS.

MSHA Mine Yearly Reported Production Information

Mine ID: 4801353 Operator: Peabody Powder River Mining LLC

Prod. Year	Subunit Cd	Subunit	Annual Hrs.	Coal Prod.	Sum of Avg. Annual Emp.*
2010	03	Strip, Quarry, Open Pit	2548270	105755685	1229
2010	30	Mill Operation/Preparation Plant	16636	0	12
2010	99	Office Workers at Mine Site	22127	0	10
		Totals . . .	**2587033**	**105755685**	**1251**
2009	03	Strip, Quarry, Open Pit	2396041	98279377	1166
2009	30	Mill Operation/Preparation Plant	17082	0	12
2009	99	Office Workers at Mine Site	21966	0	10
		Totals . . .	**2435089**	**98279377**	**1188**
2008	03	Strip, Quarry, Open Pit	2098374	97578499	1001
2008	30	Mill Operation/Preparation Plant	20213	0	12
2008	99	Office Workers at Mine Site	21915	0	10
		Totals . . .	**2140502**	**97578499**	**1023**
2007	03	Strip, Quarry, Open Pit	1915524	91523280	913
2007	30	Mill Operation/Preparation Plant	19314	0	12
2007	99	Office Workers at Mine Site	18339	0	10
		Totals . . .	**1953177**	**91523280**	**935**
2006	03	Strip, Quarry, Open Pit	1753164	88527969	835
2006	30	Mill Operation/Preparation Plant	17609	0	12
2006	99	Office Workers at Mine Site	16702	0	10
		Totals . . .	**1787475**	**88527969**	**857**
2005	03	Strip, Quarry, Open Pit	1598734	82688918	771
2005	30	Mill Operation/Preparation Plant	17453	0	12
2005	99	Office Workers at Mine Site	16353	0	10
		Totals . . .	**1632540**	**82688918**	**793**

* The calculated sum of the average employee count where the average quarterly employment is greater than zero with grouping by calendar year, subunit code and mine ID.

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Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

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Exhibit 9

EIA Form 923 - 2008

Plant	Unit	Year	Efficiency at Annual Operating Factor
Fayette	3	2008	93.4
Gibbons Creek	1	2008	
J K Spruce	1	2008	95.5
Limestone	1	2008	87
Limestone	2	2008	88
Martin Lake	1	2008	65.7
Martin Lake	2	2008	79.5
Martin Lake	3	2008	74.8
Monticello	3	2008	65.9
Oklaunion	1	2008	72.6
Pirkey	1	2008	25
San Miguel	1	2008	93.6
Sandow	4	2008	76.6
W H Parish	8	2008	81.7

Source: www.eia.gov

Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

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Exhibit 10

Luminant's North Lake Plant-
view of control room

Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

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Exhibit 11

Luminant's Collin Plant:
demolition

Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

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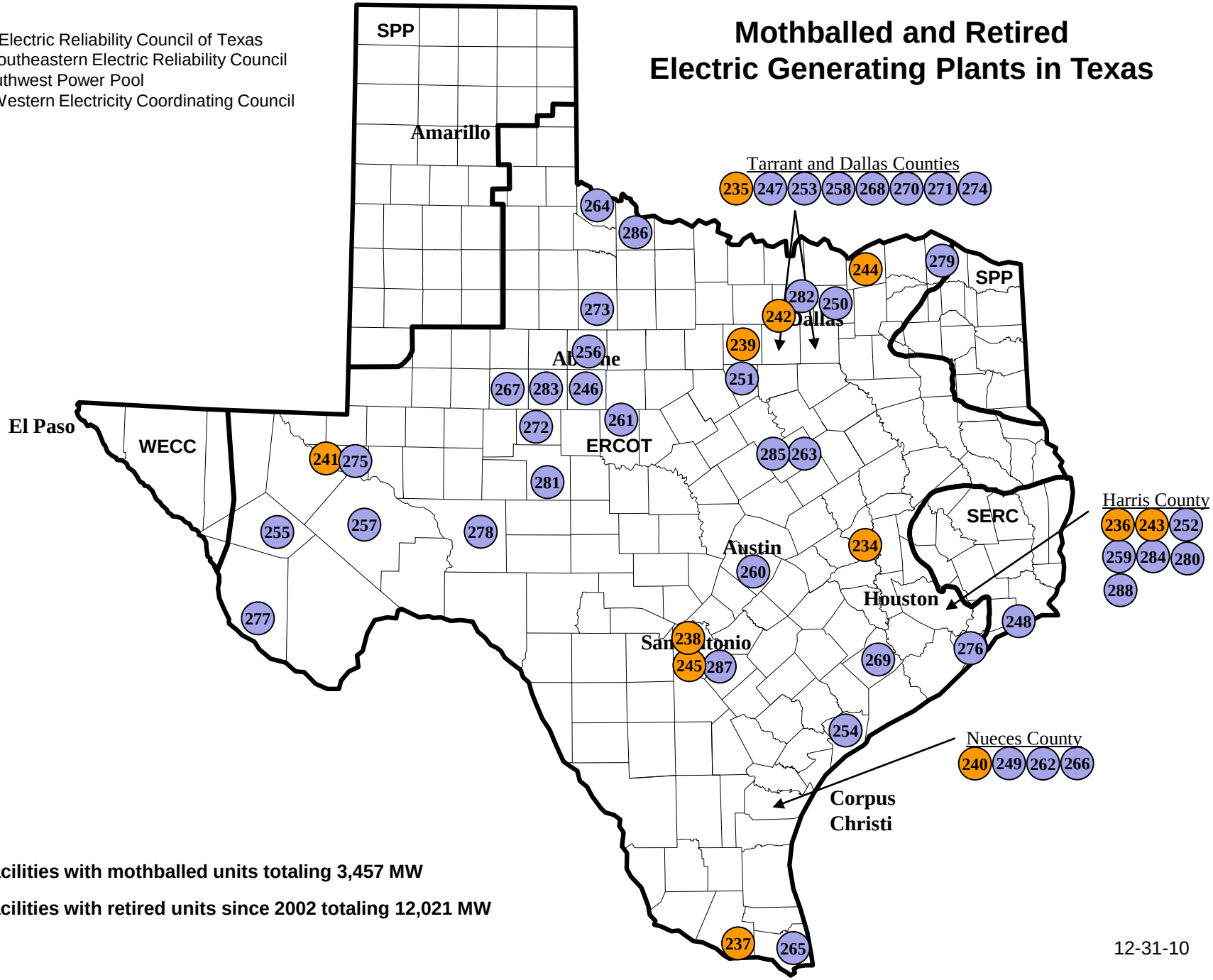
Exhibit 12

ERCOT - Electric Reliability Council of Texas
SERC - Southeastern Electric Reliability Council
SPP - Southwest Power Pool
WECC - Western Electricity Coordinating Council

Mothballed and Retired Electric Generating Plants in Texas



Facilities with mothballed units totaling 3,457 MW

Facilities with retired units since 2002 totaling 12,021 MW

12-31-10

New Electric Generating Plants in Texas Since 1995
(Updated 12/31/2010)

Map No.	Company	Facility	City	County	Energy	Capacity (MW)	Status	In Service	Region	Notes
234	Bryan Texas Utilities	Atkins 3,4,5,6		Brazos	NG	109	Mothballed	1955-69	ERCOT	
235	City of Garland	CE Newman 5		Dallas	NG	38	Mothballed	1963	ERCOT	
236	NRG Energy	Greens Bayou 5		Harris	NG	406	Mothballed	1973	ERCOT	
237	J.L. Bates, LP (Sempra)	JLBates 1,2		Hidalgo	NG	181	Mothballed	1958-60	ERCOT	
238	CPS Energy	Leon Creek 3,4		Bexar	NG	158	Mothballed	1953-59	ERCOT	
239	Brazos Electric Power Coop	North Texas 1,2,3		Parker	NG	76	Mothballed	1958-63	ERCOT	
240	Nueces Bay WLE LP (Sempra)	Nueces Bay 7		Nueces	NG	367	Mothballed	1972	ERCOT	
241	Luminant	Permian Basin 6		Ward	NG	540	Mothballed	1973	ERCOT	
242	City of Garland	Spencer 4,5		Denton	NG	122	Mothballed	1966-73	ERCOT	
243	NRG Energy	SR Bertron 1,2		Harris	NG	292	Mothballed	1956-58	ERCOT	
244	Luminant	Valley 1,2,3		Fanin	NG	1,069	Mothballed	1962-71	ERCOT	
245	CPS Energy	WB Tuttle 3		Bexar	NG	100	Mothballed	1961	ERCOT	

New Electric Generating Plants in Texas Since 1995

(Updated 12/31/2010)

Map No.	Company	Facility	City	County	Energy	Capacity (MW)	Status	In Service	Region	Notes
246	AEP-TNC	Abilene 4		Taylor	NG	18	Retired	1949	ERCOT	
247	City of Garland	CE Newman 1,2,3,4		Dallas	NG	51	Retired	1957-61	ERCOT	
248	NRG Energy	Cedar Bayou 3		Chambers	NG	743	Retired	1974	ERCOT	
249	Valero Refining	Coastal 1,2		Nueces	NG	38	Retired	1984	ERCOT	
250	Luminant	Collin 1		Collin	NG	154	Retired	1955	ERCOT	
251	Luminant	DeCordova 1		Hood	NG	816	Retired	1975	ERCOT	
252	Texas Genco II	Deepwater 7		Harris	NG	159	Retired	1955	ERCOT	
253	Luminant	Eagle Mountain 1,2,3		Tarrant	NG	665	Retired	1954-71	ERCOT	
254	AEP-TCC	ES Joslin 1		Calhoun	NG	254	Retired	1971	ERCOT	
255	CSW Services	Fort Davis Wind Farm	Ft. Davis	Jeff Davis	Wind	7	Retired	1996	ERCOT	
256	AEP-TNC	Fort Phantom 1,2		Jones	NG	362	Retired	1974-77	ERCOT	
257	AEP-TNC	Fort Stockton 2		Pecos	NG	5	Retired	1958	ERCOT	
258	Extex Laporte	Handley 1,2		Tarrant	NG	122	Retired	1948-50	ERCOT	
259	Texas Genco II	HO Clarke (6 units)		Harris	NG	78	Retired	1968	ERCOT	
260	Austin Energy	Holly 1,2,3,4		Travis	NG	575	Retired	1960-74	ERCOT	
261	City of Coleman	IC Units (9)		Coleman	NG	17	Retired	1955-86	ERCOT	
262	City of Robstown	IC Units 3-11		Nueces	NG	18	Retired	1955-79	ERCOT	
263	Luminant	Lake Creek 1,2		McLennan	NG	320	Retired	1953-59	ERCOT	
264	AEP-TNC	Lake Pauline 1,2		Hardeman	NG	35	Retired	1928-51	ERCOT	
265	La Palma WLE (Sempra)	La Palma 4,5,6,7		Cameron	NG	243	Retired	1947-75	ERCOT	
266	Lon C. Hill LP (Sempra)	Lon C. Hill 1,2,3,4		Nueces	NG	559	Retired	1954-69	ERCOT	
267	Luminant	Morgan Creek 2,3,4,5,6		Mitchell	NG	133	Retired	1950-54	ERCOT	
268	Extex Laporte	Mountain Creek 2,3		Dallas	NG	86	Retired	1945-49	ERCOT	
269	Wharton County Power Partners	New Gulf 2		Wharton	NG	15	Retired	1988	ERCOT	
270	Luminant	North Lake 1,2,3		Dallas	NG	650	Retired	1959-64	ERCOT	
271	TXU Generation Company	North Main 4		Tarrant	NG	85	Retired	1952	ERCOT	
272	AEP-TNC	Oak Creek 1		Coke	NG	85	Retired	1962	ERCOT	
273	AEP-TNC	Paint Creek 1,2,3,4		Haskell	NG	350	Retired	1953-71	ERCOT	
274	TXU Generation Company	Parkdale 1,2,3		Dallas	NG	334	Retired	1953-57	ERCOT	
275	Luminant	Permian Basin 5		Ward	NG	115	Retired	1958	ERCOT	
276	NRG Energy	PH Robinson 1,2,3,4		Galveston	NG	2,187	Retired	1966-73	ERCOT	
277	AEP-TNC	Presidio 5,6		Presidio	DFO	2	Retired	1967	ERCOT	
278	AEP-TNC	Rio Pecos 4,5,6		Crockett	NG	140	Retired	1959	ERCOT	
279	TXU Generation Company	River Crest 1		Red River	NG	111	Retired	1954	ERCOT	
280	NRG Energy	Sam Bertron 1		Harris	NG	20	Retired	1967	ERCOT	
281	AEP-TNC	San Angelo 1,2		Tom Green	NG	123	Retired	1965-66	ERCOT	
282	City of Garland	Spencer 1,2,3		Denton	NG	53	Retired	1955-62	ERCOT	
283	Luminant	Sweetwater 1,CT1,CT2,CT3		Nolan	NG	228	Retired	1989	ERCOT	
284	Texas Genco II	TH Wharton 2		Harris	NG	229	Retired	1960	ERCOT	
285	Luminant	Tradinghouse 1,2		McLennan	NG	1350	Retired	1970-72	ERCOT	
286	AEP-TNC	Vernon 1,2,3,4,7		Wilbarger	DFO	9	Retired	1952-68	ERCOT	
287	CPS Energy	WB Tuttle 2		Bexar	NG	90	Retired	1956	ERCOT	
288	Texas Genco II	Webster 3,21		Harris	NG	387	Retired	1965-67	ERCOT	

Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

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Exhibit 13

CSAPR ISSUES

Oak Grove 2

- **Should be treated as a new unit but is incorrectly determined by EPA to be an existing unit**
- **Its abbreviated 'start up' and 'commissioning' phase in 2009 was used to determine its allocation of emission allowances and results in only a partial year's worth of needed allowances.**

Heat Input

- **When EPA determined the 'heat input' for Sandow and San Miguel, the limited amount meant that both would be forced to operate on a 'seasonal' basis.**
- **Both plants are 'mine-mouth' facilities with fuel coming from the adjacent lignite mines that cannot be run on a 'seasonal' basis.**

Limestone Power Plant

- **This plant was treated differently by EPA and was determined that it would still burn lignite although other plants like it that are now blending western coal with Texas lignite are presumed to be switching to 100% western coal.**
- **This treatment deprives the allowance pool for Texas of its proper number of allowances.**

Big Brown Mine Closure

- **EPA assumes that the lignite mines supplying the Big Brown plant are shutdown in 2010/2011.**
- **Additional mining areas have been permitted and are producing.**
- **This assumption of no lignite fuel leaves the Big Brown plant short of emission allowances.**

FGD (SO_2 scrubber) Efficiency in Base Case

- **EPA claims that 75% of Texas' coal fueled electric generating units have SO_2 scrubbers (FGD).**
- **Three (3) of the FGDs are phantoms and do not exist at all.**
- **This results in a shortfall of emission allowances for Texas.**

PRB Coal Railroad Transport Capacity

- **While PRB coal is shipped into Texas by railroad, EPA fails to assess whether there is enough capacity in the current tracks to safely handle more coal importation from the western states.**
- **The cost of track expansion for the long haul railroads and the cost for the track to the power plants where there is none or an inadequate capacity of rail is not calculated.**
- **Additionally EPA fails to assess how quickly and at what cost the 'coal unit trains' could be found or built to handle the additional supply of PRB coal that Texas will be forced to import and use.**

Replacement of Coal Fueled Generators with Natural Gas Fueled Generators

- **While EPA overestimated the mothballed and retired amount of natural gas generation that could be brought on-line, it appears to have failed to realize the limited quantity of new natural gas generation that is actually under construction and could be ready for 2012 use.**
- **In addition, the pricing assumptions for natural gas for use as a fuel for electric generation is outdated. Most natural gas plants that have been mothballed or retired have let the natural gas supply contracts lapse, and restarting would mean securing new natural gas supply contracts.**

Permitting Infeasibility

- **Securing any necessary permits for mothballed or retired generating units will not be possible before January 2012.**
- **The explosion of new EPA regulations and those in the pipeline have created regulatory uncertainty, and have left many state environmental agencies scrambling to rewrite their regulatory rules and programs.**
- **New plant construction at new or even existing sites will be difficult with the new ozone standard that will soon be finalized.**

Alcoa Emission Inventory

- **Sandow 1, 2, & 3 were part of the Alcoa Consent Decree that led to their retirement and replacement with a much lower emitting new unit (Sandow 5).**
- **It is unclear if the emission reductions from the Alcoa Consent Decree were actually included in the models.**

San Miguel

- **In EPA's calculation of current fuel quality, the sulfur content of San Miguel's lignite was reduced by ~75% from its actual sulfur content.**
- **This leads to its anticipated reduced operation starting in 2012, i.e. seasonal only, due to this error.**

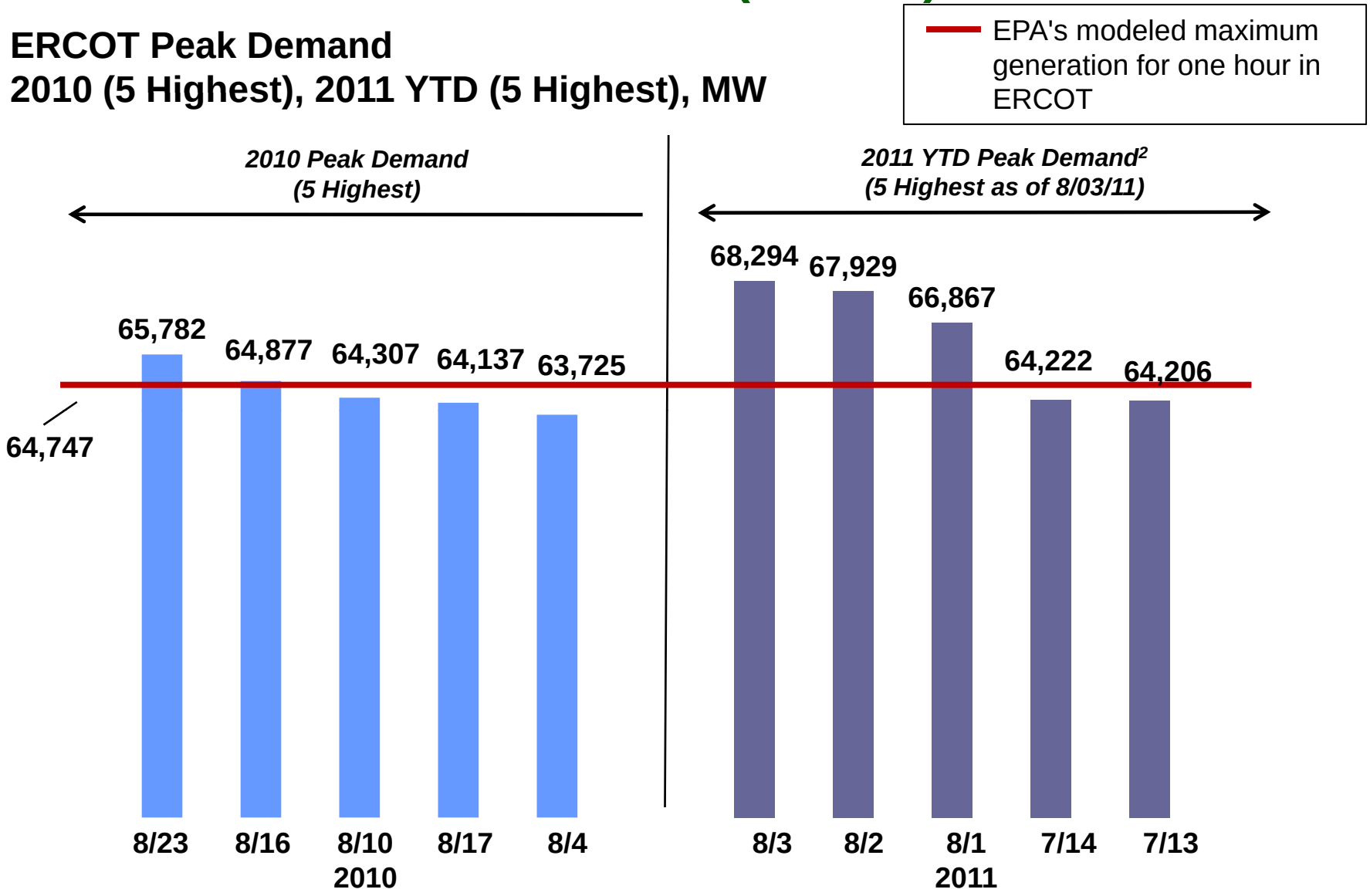
Luminant's Petition for Partial Reconsideration and Stay of EPA's Final Rule titled "Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States"

Docket No. EPA-HQ-OAR-2009-0491

Exhibit 14

Historical ERCOT Peak Demand (ERCOT)[1]

ERCOT Peak Demand
2010 (5 Highest), 2011 YTD (5 Highest), MW



2011 YTD peak demand exceeded EPA's maximum projected peak demand by 3500 MW

1. Source: ERCOT; 2011 ERCOT Planning – Long-Term Hourly Peak Demand and Energy Forecast (June 30, 2011)
2. Preliminary peak demand estimates; subsequent settlement peak demand may differ from the preliminary peak demand estimates