DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

A780945535

FACILITY: U S STEEL GREAT LAKES WORKS		**SRN / ID:** A7809
LOCATION: 1 QUALITY DR, ECORSE		**DISTRICT:** Detroit
CITY: ECORSE		**COUNTY:** WAYNE
CONTACT: Alexis Piscitelli , Environmental Manager		**ACTIVITY DATE:** 07/26/2018
STAFF: Katherine Koster	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** MEGASITE
SUBJECT: B2 and D4 blast furnaces and VE readings		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Targeted Inspection
INSPECTED BY: Katie Koster, AQD
PERSONNEL PRESENT: Nathan Ganhs, USS Environmental Staff
FACILITY PHONE NUMBER: 313-749-3857
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FACILITY BACKGROUND

United States Steel, Great Lakes Works (USSGLW) is an integrated steel mill in operation since August 1930. It is located just south of the City of Detroit. The site consists of approximately 1100 acres that span along the Detroit River through the cities of Ecorse and River Rouge. The facility includes the Main Plant Area, the 80-inch Hot Strip Mill, and the iron making and coke making operations on Zug Island. Coke making is done at the No. 5 battery by EES Coke, a subsidiary of DTE Energy. The plant produces flat-rolled steel products for a variety of industries; mainly automotive. The primary iron producing facility is located on Zug Island in River Rouge. The 80-inch Hot Strip Mill facility is located in River Rouge between the Zug Island and Main Plant locations. The Main Plant Area is located on a 682 acre site located in Ecorse. There are also six support facilities located inside or adjacent to the facility.

Required PPE is a respirator (for the blast furnaces), CO monitor, greens, hard hat, steel toed shoes with metatarsal guard, safety glasses, and hearing protection.

REGULATORY ANALYSIS

USSGLW is currently operating under ROP No. 199600132d and Permits to Install 13-17 (Argon Stir Baghouse), 19-16A (two generators), 98-15 and 219-06B (modification to the CGL), 123-12A (portable screen), and 96-12A (iron ore screening).

Federal and State Consent Decree Case No. 2:12-cv-00304 was entered into March 30, 2017. AQD Consent Order 1-2005 was terminated once the company entered into the aforementioned CD.

The facility is also operating under AQD Consent Orders No. 1-2016 (No 1 Argon Stir Baghouse stack test violation) and 22-2016 (No. 5 Pickle Line stack test violation) and numerous Wayne County consent orders, including a fugitive dust SIP Consent Order.

The facility is subject to the Integrated Iron and Steel Manufacturing MACT (FFFFF), Steel Pickling MACT (CCC), Boiler MACT (DDDDD), and NSPS Na (Secondary Emissions from Basic Oxygen Process Steelmaking Facilities for Which Construction is Commenced After January 20, 1983). Also, the emergency generators are subject to the RICE MACT (ZZZZ) and/or NSPS IIII.

This facility is considered a megasite and is on a three year inspection cycle to complete a full compliance evaluation (FCE). FY2018 is the first year of another three year cycle.

PROCESS DESCRIPTION

Below are the processes discussed and/or observed during the inspection. This does not include the

entire facility.

Blast Furnaces

B2 and D4 are the two operating blast furnaces on Zug Island. Iron ore is converted to pig iron in the furnace. The raw materials, mainly iron ore, coke, limestone, and BOF slag, are charged to the top of the furnace via a skip car. Note, B2 and D4 have different types of tops (B2 has a bell system but D4 has a Paul Wurth top). Pulverized coal is blown into the bottom of the furnace through the tuyeres as a fuel source. This process is controlled by a baghouse during drilling, casting, and plugging the furnace. Hoods are present over the tap hole and iron filling station and there are runner covers at the iron and slag troughs to enhance capture efficiency. Hot metal is cast into bottle cars on Zug Island and transferred by rail to the Main Plant No. 2 Basic Oxygen Process shop. Slag is cast into one of two pits outside of each casthouse. It is sprayed with water and hydrogen peroxide for quenching and odor control. Edw. C. Levy Co. manages and digs the pits. USSGLW aims for about 50% slag per cast, and it takes about 7 hours from when material is charged into the furnace until it is cast. Hot blast air enters the furnace at approximately 1800-2000F, hot metal is cast at about 2600-2800F, and top gas leaves the furnace at about 300-400F.

Gas generated in the furnace (blast furnace gas) exits the top of the furnace and proceeds through the downcomer. Gas can travel to the top of the furnace in 1 to 5 seconds. This gas is mostly CO and CO2. To slow the gas flow out of the furnace, the operators can increase the furnace top pressure. Next, the gas enters the dustcatcher for removal of large particulate and then a venturi scrubber for additional particulate matter removal. The dust catcher is typically emptied once per shift. Each furnace has a clean and dirty gas bleeder valve which opens when the pressure in the furnace reaches a certain set point. The bleeders function to relieve pressure. The clean gas bleeder opens first and releases blast furnace gas which has already passed through the dustcatcher and venturi scrubber. Gas from the dirty gas bleeder has not been cleaned. There is also a last resort "explosion valve" that is counterweighted.

"Clean" blast furnace gas is combusted along with natural gas in the stoves and used to heat the hot blast air injected into the furnace. Excess blast furnace gas is combusted in the boilers or sent to a flare. There are two blast furnace gas flares on Zug Island. Historically, some of the excess gas was combusted at the No. 5 coke battery but this is no longer the case.

INSPECTION NARRATIVE

AQD inspector, Katie Koster, arrived at USSGLW on 7/26/18 around 9:30 a.m. I met with Mr. Nathan Ganhs, and we proceeded to Zug Island. First, we viewed the B2 Blast Furnace roof monitor and baghouse stack. Casting was in progress. I did not observe any visible emissions from the roof monitor or baghouse stack. There are three stoves for heating the air that is blown into the furnace; two were on gas and one was on blast. Cast #538670 started at 10:00 a.m. The bleeder set points were as follows: clean opens at 10.5 psi and dirty opens at 12.5. At 11:35, I recorded the following parameters: the overall baghouse pressure drop was 4.7 in. H2O, inlet temp was 192 F, wind rate was 111,512 scfm, hot blast temp was 1950 F, top pressure was 6.6 psi. The attached table shows the fan amps for each of the three operating fans between 11:27 and 12:00. Fan #1 was at 118-119, Fan #2 was in the 270's and Fan #3 was in the 270's. The MACT cumulative fan amp limit as set during the initial compliance test is 477 amps. Generally, all three fans are running at around the same amps. It's unclear why Fan #1 was at a much lower amperage. During the prior visit, the set points were 11 psi for the clean bleeder and 12 psi for the dirty. The furnace was operating on a 30 minute gap time. The tap hole was plugged at noon. Nate and I went out onto casthouse floor to observe the casting before the tap hole was plugged. The runner covers were in place. Slag and iron were flowing. Capture at the hood over tap hole was adequate. There were fugitive emissions but based on my visual observation, the capture efficiency was similar to my past observations. We left the casthouse and walked out to the B2 baghouse. I observed the exterior of the compartments and the hoppers which appeared to be in good condition. I did not observe any fugitive dust escaping from hoppers to the collections bins.

Next, we drove to D4 Blast Furnace. This furnace is being shut down on August 3 for a complete re-line, among other activities. Before we could enter the casthouse, I noticed heavy fugitive emissions near the slag pit. Mr. Ganhs and I approached the area. I observed a front end loader scooping slag from a stockpile (as opposed to directly from the pit) and loading it into a truck. This activity seemed to create a 100% plume when dumping. I watched for several minutes. Since the activity persisted, I began to take Method 9D readings since it is a fugitive emissions source. I stopped the reading when my view became

blocked by a bottle car although slag loading was still ongoing. See attached VE readings.

We entered the casthouse and went into the pulpit. D4 is only running on two stoves. The operators stated that the hot metal temperature was too low and they had been casting for hours. Fan 1 was at 75 amps; Fan 2 was at 80 amps, Fan 3 – zero (2 fans are in operation at a time; one fan is always on standby). This is above the required minimum in the MACT O&M plan of 116 cumulative amps. The hot metal temperature was 2511 F, and the target temperature is 2714 F. The wind rate was 95,000 scfm, and the top pressure was 3.97 psi.

Nate inquired about the slag pits. According to the operators, there are no rainbirds installed at the pits in the stockpile area. Even if there was one, it would only wet the top of the pile. The front end loaders dig from the bottom which is dry and this still creates a plume. There is only a spray nozzle at the end of the spray bank but it does not reach the slag staging area/stock pile. This is slag that has been dug out of the pit and is awaiting loading into a truck for offsite processing. Operators turn on water sprays over the pits for 20 minutes after plugging the tap hole.

We left the casthouse. The area around the blast furnace was being used for staging all of the parts needed for the rebuild so we were unable to get near the D4 baghouse. This baghouse is older than the B2 baghouse and harder to maintain. According to maintenance personnel, when a leaking bag is found, they immediately replace it instead of just sealing it off.

On 7/30/18, Nate and I spoke with Mr. Joe Menna who is responsible for maintenance on both baghouses. He stated that D4 baghouse has new screw conveyors and new bearings, and the fans were replaced about 1.5 years ago. The baghouse is emptied three days per week. They generally replace about 30-50 bags per quarter. The screw conveyors are the most difficult components on the baghouse to predict when they need to be changed. Also, a baghouse fan failed at B2 on 7/26.

We returned to Nate's office and discussed records. I followed up with a records request via email (attached).

RULES/PERMIT CONDITIONS EVALUATED

GENERAL CONDITION 2 (Rule 336.1301) – NOT IN COMPLIANCE AND UNKNOWN

Slag pits and slag handling. NOT IN COMPLIANCE. As described above, at the D4 slag pit, slag was being loaded from a stock pile into a truck for hauling off site. Based on the certified Method 9D readings, a violation of the 5% opacity on a 3 minute average for fugitive dust sources was observed.

Slag was dug from the pit and placed in a pile until it could be loaded into a truck for off site processing. This pile is a storage pile for slag material. The facility is in one of the SIC categories for the fugitive dust regulations to be applicable; specifically SIC 33. The dust was being emitted into the outer air from an outdoor process and due to human activity.

From 324.5524 (1) The provisions of this section, including subsection (2), shall apply to any fugitive dust source at all mining operations, standard industrial classification major groups 10 through 14; manufacturing operations, standard industrial classification major groups 20 through 39; railroad transportation, standard industrial classification major group 40; motor freight transportation and warehousing, standard industrial classification major group 42; electric services, standard industrial classification group 491; sanitary services, standard industrial classification group 495; and steam supply, standard industrial classification group 496, which are located in areas listed in table 36 of R 336.1371 of the Michigan administrative code.

(2) Except as provided in subsection (8), a person responsible for any fugitive dust source regulated under this section shall not cause or allow the emission of fugitive dust from any road, lot, or storage pile, including any material handling activity at a storage pile, that has an opacity greater than 5% as determined by reference test method 9d. Except as otherwise provided in subsection (8) or this section, a person shall not cause or allow the emission of fugitive dust from any other fugitive dust source that has an opacity greater than 20% as determined by test method 9d. The provisions of this subsection shall not apply to storage pile material handling activities when wind speeds are in excess of 25 miles per hour (40.2 kilometers per hour).

"Fugitive dust source" means any fugitive dust emitting process, operation, or activity regulated under section 5524.

(c) "Fugitive dust" has the meaning ascribed to it in R 336.1106 of the Michigan administrative code.
(k) "Fugitive dust" means particulate matter that is generated from indoor processes, activities, or operations and that is emitted into the outer air through building openings and general exhaust ventilation, except stacks. The term also means particulate matter that is emitted into the outer air from outdoor processes, activities, or operations due to the forces of the wind or human activity

B2 slag pit. No material handling with a front end loader was occurring at the time of my observations.

Bleeders. UNKNOWN. Bleeder valves are subject to Rule 301 for opacity; 20 % limit on a 6 minute average; except for one 6 minute average of no more than 27%. A log of planned and unplanned openings for January 2017 through June 2018 is attached. There are many openings; several of the openings are longer than 105 seconds in duration and could be a violation of Rule 301 (assuming each 15 second reading during a Method 9 observation was 100% opacity). Facility does not take Method 9 readings of these openings due to their unplanned nature and/or short duration. In the absence of certified M9 readings, the compliance status is UNKNOWN at this time.

TABLE E-01.13 B2 Blast Furnace (ROP 199600132d)

I.B. DID NOT EVALUATE. Dimensions for blast furnace baghouse and stove stacks.

II.B. IN COMPLIANCE. PM limit of 0.0075 gr/dscf; 2017 stack test results were less than 0.0004 gr/dscf. The 2012 results were 0.00046 gr/dscf. 10% visible emissions (VE) limit on a 6 minute average from the baghouse stack. No VE's were observed during the inspection nor have nay exceedances been reported in the Title V deviation reports. VE from roof monitors limited to 20% opacity on a 6 minute average. Some VE's were observed during the inspection but opacity readings averaged below the limit. During the stack test, there were five exceedances of the VE limit. A violation notice was issued. Facility responded that the cause was due to problem with the mud gun and outlined corrective actions to prevent recurrence. No further action required at this time. Based on a review of the Title V deviation reports, two other exceedance were observed by the certified readers. Cause and corrective actions were identified. At this time, compliance was chosen for the roof monitor opacity limit as this does not seem to be an ongoing issue. Note, facility failed to include the stack test exceedances in the deviation report. AQD has informed the company of this deficiency.

III.A.2.1 IN COMPLIANCE. Pressure drop shall be maintained between 1 and 22. Pressure drop shall be recorded weekly. There is a baghouse inspection that occurs daily (among other timeframes). Pressure drop is recorded during this time. According to Mr. Ganhs, the pressure drop has been within the normal range. Also, a spot check of records shows pressure drop has been within this range when the baghouse is operating.

III.A.2.2 IN COMPLIANCE. Permittee shall keep records of baghouse compartment shut downs. This information is continuously tracked and recorded. Alarms are activated if more than one compartment is shut down. Environmental staff receive alarm notifications via email and a deviation is reported in the semi annual report. No deviations were reported for CY2017.

III.A.2.3 and A.3.1 NOT APPLICABLE and IN COMPLIANCE. Permittee shall initiate corrective action upon observation of excess VE's from the baghouse stack. No excess VE's were observed from the baghouse stack during the inspection, nor have any excess VE's been observed by the certified readers for CY2017. Permittee shall perform a non certified reading once a week during processing activity and a certified reading once per month. Spot check of records indicates that the required frequency for readings of the baghouse stack is being met.

III.A.2.4 and III.A.3.2 IN COMPLIANCE. Permittee shall initiate corrective action upon observation of excess VE's from the casthouse roof monitors. A non certified reading shall be taken once a week and a certified reading shall be taken at least once every two weeks. Spot check of records indicates that the required frequency for readings of the roof monitor is being met. Corrective actions are being documented when excess visible emissions are observed and are included in the Title V deviation reports. For CY2017, two deviations were reported based on the routine VE readings. Cause and

corrective actions were also included.

III. B.3 IN COMPLIANCE. Particulate matter test required once every 5 years. Test dates were 2009 and 2012 and 2017.

V.1 IN COMPLIANCE. Shall not operate the blast furnace unless the baghouse control system is maintained and operated in a satisfactory manner. Based on the records provided (attached) and my observations during the inspection, the baghouse appears to be maintained in a satisfactory manner.

V.2 IN COMPLIANCE. Shall not shut down more than one compartment at a time. This information is continuously tracked. An alarm is generated if more than one compartment is shut down, and a deviation is reported in the semi annual reports. No deviations have been reported for CY2017.

TABLE E-01.14 D4 Blast Furnace

I.B. DID NOT EVALUATE. Dimension for blast furnace baghouse and stove stacks.

II.B. IN COMPLIANCE. PM limit of .0052 gr/dscf; 2018 stack test results were 0.002 gr/dscf and the 2014 results were 0.0007 gr/dscf. 10% VE limit on a 6 minute average from the baghouse stack. No VE's were observed during the inspection; VE from roof monitors limited to 20% opacity on a 6 minute average. No VE's were observed from the roof. Based on a review of the Title V deviation reports for CY2017, one exceedance was observed by the certified readers. Cause and corrective actions were identified. At this time, compliance was chosen for the roof monitor opacity limit as this does not seem to be an ongoing issue.

III.A.2.1 PENDING. Pressure drop shall be maintained between 1 and 12. The condition states that the range can be changed upon approval of the AQD District Supervisor. There is a baghouse inspection that occurs daily (among other timeframes). Pressure drop is recorded during this time. Pressure drop is usually within the range; but has also been recorded higher than the upper limit of 12. Also, during the 2018 stack testing, the pressure drop was between 11 and 14. Facility passed the stack test at this pressure drop and has submitted an application to revise the operating range. Pending approval from AQD District Supervisor.

III.A.2.2 IN COMPLIANCE. Permittee shall keep records of baghouse compartment shut downs. This information is continuously tracked and recorded. Alarms are activated if more than one compartment is shut down. Environmental staff receive alarm notifications via email and a deviation is reported in the semi annual report. No deviations have been reported for CY2017.

III.A.2.3 and A.3.1 NOT APPLICABLE and IN COMPLIANCE. Permittee shall initiate corrective action upon observation of excess VE's from the baghouse stack. No excess VE's were observed from baghouse stack during the inspection, nor have any excess VE's been observed by the certified readers for CY2017. Permittee shall perform a non certified reading once a week during processing activity and a certified reading once per month. Spot check of records indicates that the required frequency for readings of the baghouse stack is being met.

III.A.2.4 and III.A.3.2 IN COMPLIANCE. Permittee shall initiate corrective action upon observation of excess VE's from the casthouse roof monitors. A non certified reading shall be taken once a week and a certified reading shall be taken at least once every two weeks. Spot check of records indicates that the required frequency for readings of the roof monitor is being met. Corrective actions are being documented when excess visible emissions are observed. For CY2017, one exceedance was observed by the certified readers. Cause and corrective actions were identified.

III. B.3 IN COMPLIANCE. PM test required once every 5 years. Test dates were 2018, 2014, and 2010.

V.1 IN COMPLIANCE. Shall not operate the blast furnace unless the baghouse control system is maintained and operated in a satisfactory manner. Based on the records provided (attached) and my observations during the inspection, the baghouse appears to be maintained in a satisfactory manner.

V.2 IN COMPLIANCE. Shall not shut down more than one compartment at a time. This information is continuously tracked. An alarm is generated if more than one compartment is shut down, and a deviation is reported in the semi annual reports. No deviations have been reported for CY2017.

TABLE F-01.05 A, B, and D Blast Furnaces

II.A. IN COMPLIANCE. Total iron produced from FGBLASTFURNACES-A,B&D is limited to 3,718,000 tons per 12-month rolling time period as determine at the end of each calendar month. "A" furnace is not in operation. Highest 12 month rolling value for iron produced was 2,451,852 tons in June 2018. This is the highest value since January 2016.

II.B. Pollutant Maximum Emission Limit

IN COMPLIANCE. Particulate Matter is limited to 447.4 tons per year on a 12-month rolling time period as determined at the end of each calendar month. Since January 2016, highest 12 month rolling value for PM emissions 24.47 tons in May 2018.

IN COMPLIANCE. PM10 is limited to 352.2 tons per year on a 12-month rolling time period as determined at the end of each calendar month. Since January 2016, highest 12 month rolling value for PM10 is 23.59 tons in May 2018.

IN COMPLIANCE. Nitrogen Oxide is limited to 821.4 tons per year on a 12-month rolling time period as determined at the end of each calendar month. Since January 2016, highest 12 month rolling value for NOx is 111.61 tons in January 2016.

IN COMPLIANCE. Visible emissions are limited to 10% (6 minute average) opacity from casthouse baghouse stacks. This was already evaluated in each furnace EU.

IN COMPLIANCE. Visible emissions are limited to 20% (6 minute average) opacity from casthouse roof monitors. This was already evaluated in each furnace EU.

IN COMPLIANCE. Particulate Matter is limited to 0.01 gr/dscf. This was already evaluated in each furnace EU.

III.A.2.1 IN COMPLIANCE. See attached iron production records. The permittee shall keep, in satisfactory manner, monthly and annual iron production rates. Annual iron production rates shall be based on a 12-month rolling time period as determined at the end of each calendar month. All records shall be kept and made available to the AQD upon request.

III.A.2.2 IN COMPLIANCE. See attached natural gas and blast furnace gas records. Monthly usage is submitted yearly in association with the MAERS database. The permittee shall keep, in satisfactory manner, monthly and annual natural gas usage records, indicating the total amount of natural gas used, in cubic feet, on a calendar month basis. Annual natural gas usage records shall be based on a 12-month rolling time period as determined at the end of each calendar month.

III.A.2.3. IN COMPLIANCE. See attached natural gas and blast furnace gas records. Monthly usage is submitted yearly in association with the MAERS database. The permittee shall keep, in satisfactory manner, monthly and annual blast furnace gas usage records, indicating the total amount of blast furnace gas used, in cubic feet, on a calendar month basis. Annual blast furnace gas usage records shall be based on a 12-month rolling time period as determined at the end of each calendar month.

III.A.2.4. NOT IN COMPLIANCE. See attached emissions records. The permittee shall keep, in satisfactory manner, calculations determining the monthly and annual mass emissions of PM, PM10 and NOx. Annual emission calculations shall be based on a 12-month rolling time period as determined at the end of each calendar month. Separate calculations shall be conducted for each Emission Unit and for the Flexible Group. Calculations per emission unit are in the annual MAERS report. All calculations shall be conducted in accordance with the methodology specified in Appendix 7B of this permit. See evaluation of Appendix conditions below. Facility is not following NOx calculation methodology.

III.A.2.5. IN COMPLIANCE. The permittee shall monitor pressure drop across each baghouse cell each

day to ensure pressure drop is within normal operating range as specified in 40 CFR Part 63 Subpart FFFFF 63.7830 (b)(1). This is not the right citation; this refers to bag leak detector. Regardless, bag leak detector and pressure drop requirements are evaluated elsewhere in this report.

III.A.2.6. The permittee shall demonstrate continuous compliance of the blast furnace baghouses as specified in 40 CFR Part 63 Subpart FFFFF 63.7833 (c)(1) and (2).NOT APPLICABLE. 63.7833(c)(2) is not applicable because the baghouse does not have a COMS. IN COMPLIANCE. 63.7833(c)(1) refers to the bag leak detector and states facility must comply with 63.7831(f) which is: (1) The system must be certified by the manufacturer to be capable of detecting emissions of particulate matter at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.(2) The system must provide output of relative changes in particulate matter loadings. (3) The system must be equipped with an alarm that will sound when an increase in relative particulate loadings is detected over a preset level. The alarm must be located such that it can be heard by the appropriate plant personnel. (4) Each system that works based on the triboelectric effect must be installed, operated, and maintained in a manner consistent with the guidance document, "Fabric Filter Bag Leak Detection Guidance," EPA-454/R-98-015, September 1997. You may install, operate, and maintain other types of bag leak detection systems in a manner consistent with the manufacturer's written specifications and recommendations.

1. **See letter from Auburn which is the company that manufacturers the system**
2. **See letter from Auburn and operations manual**
3. **See attached email**
4. **Did not fully evaluate. The system is inspection on a bi annual basis**

III.A.2.7. The permittee shall demonstrate continuous compliance with the operation and maintenance requirements as specified in 40 CFR Part 63 Subpart FFFFF 63.7834(a) and (b). IN COMPLIANCE. 63.7834 (a) refers to monthly inspections of the capture system and corrective actions, preventative maintenance and required records, and corrective action when a BLD alarm is initiated. (a)(4) is not applicable because there is no COMS. Inspection and maintenance records were provided. According the facility, no bag leak detected alarms have occurred for either baghouse. See attached email. IN COMPLIANCE. (b) pertains to O&M plans. Facility must maintain current copy of O&M plan and all prior copies. Current copy was provided and is attached (November 2013). Prior copies are in the facility file.

III.A.3. IN COMPLIANCE. The permittee shall comply with the recordkeeping requirement as specified in 40 CFR Part 63 Subpart FFFFF 63.7842(a), (b), (c) and (d). Records are required to be maintained for a period of 5 years from the date of occurrence. Records must be maintained for SSM events, performance tests, COMS, deviations, VE's, and inspections and preventative maintenance, etc. At this time, records that were requested related to the MACT were available and provided. This is what the compliance status is based on.

III.B.3.1. UNKNOWN. I could not locate the test results from the test that occurred within 12 months of issuance. This condition is from a permit to install issued in 2002. However, the factor is determined every five years in conjunction with the Iron and Steel MACT test. Within one year after commencement of trial operation, excluding shutdown days, a PM emission factor shall be determined for the baghouse (BH) emission control of the EU-"A"BLAST AND EU-"B"BLAST, by testing at owner's expense, in accordance with Department requirements. Within one year of permit issuance, excluding shutdown days, a PM emission factor shall be determined for the baghouse (BH) emission control of the EU-"D"BLAST, by testing at owner's expense, in accordance with Department requirements. Testing for the emission factor shall encompass at least one full cycle of production operations (i.e.., cast to cast) per run. In addition, the production rates shall be measured. No less than 60 days prior to testing, a complete test plan shall be submitted to the AQD. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.

III.B.3.2. UNKNOWN. Facility could not provide a record of this test and claims they do not have it because they are only required to retain records for the past 5 years. This will be changed to a recurring test in the ROP renewal. Within one year of issuance of the permit, PM and NOx emission factors shall be determined for the combustion of blast furnace gas for one of the FG-BLASTFURNACES, by testing at owner's expense, in accordance with Department requirements. In addition, the blast furnace gas usage rate shall be simultaneously measured and recorded. Testing for PM will be performed in

accordance with Method 5D unless another test method is proposed in the testing protocol and approved by AQD. No less than 60 days prior to testing, a complete test plan shall be submitted to the AQD. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.

III.B.3.3 IN COMPLIANCE. While the original test could not be located, testing has been occurring every five years as required by the Iron and Steel MACT. At this time, the lb/ton of iron is also determined. The emission tests mentioned in III(B)(3)(1) above shall be conducted every fifth year thereafter or more frequently upon request of AQD. No less than 60 days prior to testing, a complete test plan shall be submitted to the AQD. The final plan must be approved by the AQD prior to testing. Did not evaluate whether every test met the 60 day notice. No deviations from this requirement have been reported in the Title V deviation reports.

III.B.3.4. NOT APPLICABLE. This is an old condition. The MACT was revised in 2006 and testing is only required once per ROP term. Note, AQD interprets "ROP term" to be once every 5 years. The initial test was conducted and subsequent tests have been conducted at the required frequency. The permittee shall conduct a performance test to demonstrate initial compliance with applicable emission and opacity limit as specified in 40 CFR Part 63 Subpart FFFFF 63.7820(a) and shall conduct subsequent performance tests no less frequently than twice during the term of this ROP.

IV. REPORTING 1-3. IN COMPLIANCE. Required reports have been submitted in a timely manner.
1. Prompt reporting of deviations pursuant to Condition 24 of Part A.
2. Semiannual reporting of deviations pursuant to Condition 23 of Part A. Due March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.
3. Annual certification of compliance pursuant to Conditions 28 and 29 of Part A. Due annually by March 15 for the previous calendar year.
4. DID NOT EVALUTE. Did not evaluate whether notifications due in or around 2003 were submitted timely. The permittee shall comply with the notification requirement as specified in 40 CFR Part 63 Subpart FFFFF 63.7840(a), (d), and (e). Also, did not evaluate whether every required MACT test met the notification deadlines.
5. IN COMPLIANCE. Reporting requirements have been met for Jan 2017 – August 2018. The permittee shall comply with the reporting requirement as specified in 40 CFR Part 63 Subpart FFFFF 63.7841(a), (b), (c) and (d).

V.1. IN COMPLIANCE. Device for tracking monthly natural gas usage for the furnaces is in place. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the monthly natural gas usage rate in cubic feet.

V.2. IN COMPLIANCE. Device for tracking monthly blast furnace gas usage for the furnaces is in place. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the monthly blast furnace gas usage rate in cubic feet.

V.3. IN COMPLIANCE. Already evaluated above. The permittee shall install, operate, and maintain a bag leak detection system according to the requirements of 63.7831(f) and conduct inspections according to the requirements of 63.7830 as specified in 40 CFR Part 63 Subpart FFFFF 63.7830(b).

VI. OTHER REQUIREMENTS
1. IN COMPLIANCE. This information is recorded daily and weekly. The A, B, and D blast furnace baghouses will be inspected by checking the following: the existence of visible stack emissions, chamber pressure differential, fan amps, compressor pressure and collectate handling operations. The permittee will inspect the A, B, and D blast furnace baghouse once every two weeks and record the results on an inspection form and shall retain such records for at least two years following the date of the record and shall be made available upon request to AQD.

2. IN COMPLIANCE. Regular inspections are performed in accordance with the schedule outlined in the MACT O&M plan. The permittee shall perform regular inspections of the A, B, and D blast furnace baghouses, and shall perform baghouse systems maintenance as required.

3. DID NOT EVALUTE. Did not request the SOP's for each blast furnace at this time. The permittee shall maintain and implement Standard Operating Procedure (SOP) detailing work practices at the A, B, and D blast furnace casthouses.

4. IN COMPLIANCE/UNKNOWN. A written procedure exists and is attached. At this time, it is unclear whether it has been reviewed with personnel and/or implemented or complies with Rule 912. The permittee shall maintain and implement a written procedure to address abnormal conditions that occur during blast furnace process upsets. The written procedure shall have been reviewed with operation personnel and will be implemented as necessary and shall comply with the requirements of R336.1912.

5. IN COMPLIANCE. Plan is attached and appears to contain the required elements. The permittee shall comply with the operation and maintenance requirements as specified in 40 CFR Part 63 Subpart FFFFF 63.7800 (a) and (b). The permittee shall prepare and operate at all times according to a written operation and maintenance plans for B2 and D4 Blast Furnace Casthouse Emission Control Baghouse. Each plan must address the following:
(b) (1) Plan includes this requirement and inspections are conducted. Monthly inspections of the equipment that is important to the performance of the total capture system (*e.g.,* pressure sensors, dampers, and damper switches). This inspection must include observations of the physical appearance of the equipment (*e.g.,* presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in the ductwork, and fan erosion). The operation and maintenance plan also must include requirements to repair any defect or deficiency in the capture system before the next scheduled inspection. No needed repairs or deficiencies were noted in the records.

(2) Plan includes this requirement. Schedule of maintenance and records of preventative maintenance for each baghouse were provided. For each control device, include a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.

(3) Plan includes these limits. Operating limits have been established in the form of minimum fan amps based on initial MACT testing and relevant justification was provided. Subsequent testing has shown the fans to be operating above the required minimum. Attached plan includes justification described below.

Operating limits for each capture system applied to emissions from a sinter plant discharge end or blast furnace casthouse, or to secondary emissions from a BOPF. You must establish the operating limits according to the requirements in paragraphs (b)(3)(i) through (iii) of this section.

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

(ii) For each operating limit parameter selected in paragraph (b)(3)(i) of this section, designate the value or setting for the parameter at which the capture system operates during the process operation. If your operation allows for more than one process to be operating simultaneously, designate the value or setting for the parameter at which the capture system operates during each possible configuration that you may operate.

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

(4) NOT APPLICABLE. Facility report no BLD alarms in 2017. Corrective action procedures for baghouses equipped with bag leak detection systems or continuous opacity monitoring systems

(COMS). The condition outlines actions that must be taken in response to an alarm.

(5) through (7) are NOT APPLICABLE.

IN COMPLIANCE. Records for both baghouses are attached and appear to meet the frequency required in this condition. Both baghouses are pulse jet so a check of bag tension is not required. The permittee shall conduct inspections of the B2 and D4 Blast Furnace Casthouse Baghouses at the specified frequencies according to the requirements in paragraphs (a) through (h) below. The permittee shall maintain records needed to document conformance with these requirements. a. Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in the manual. b. Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms. c. Check the compressed air supply for pulse-jet baghouses each day. d. Monitor cleaning cycles to ensure proper operation using an appropriate methodology. e. Check bag cleaning mechanisms for proper functioning through monthly visual inspection or equivalent means. f. Make monthly visual checks of bag tension on reverse air and shaker-type baghouses to ensure that bags are not kinked (kneed or bent) or laying on their sides. You do not have to make this check for shaker-type baghouses using self-tensioning (spring-loaded) devices. g. Confirm the physical integrity of the baghouse through quarterly visual inspections of the baghouse interior for air leaks. h. Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors, or equivalent means.

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

6. IN COMPLIANCE. SSM plan is attached. The permittee shall develop and implement a Start-up, Shutdown, and Malfunction Plan as specified in 40 CFR Part 63 Subpart FFFFF 63.7810 (c).

7. IN COMPLIANCE. The permittee shall demonstrate continuous compliance with other requirements as specified in 40 CFR Part 63 Subpart FFFFF 63.7835(a) and (b). These conditions refer to deviation reporting and SSM events. It appears that the facility is meeting these reporting requirements when submitting the Title V deviation report.

APPENDIX 1-7
NOT IN COMPLIANCE. Emission Calculation Methodology for FGBLASTFURNACES. Based on the MAERS spreadsheets, it appears the facility is using the required methodology to calculate emissions for the blast furnaces except for NOx emissions from the stove stack when burning blast furnace gas. Facility has not been using the appropriate emission factor for the combustion of BFG in the stoves. However, they have reportedly been using a value that is higher than the 2003 test results. Based on the attached email, they will start using the stack tested value. As facility was reportedly over-estimating and is correcting the equation moving forward, this is considered resolved.

Blast Furnace Gas Combustion NOX emission rate (lb/MMBtu) = 0.256 lb per million British Thermal Units or most recent stove stack test results

<u>Iron and Steel MACT requirements (5F) – Testing and CPMS requirements that are not specifically listed in the Title V permit</u>

IN COMPLIANCE. Frequency of testing has been met. Testing over integral casts occurred during the D4 and B2 tests during the 2017 and 2018 testing. Test runs were at least one hour per run. The permittee shall conduct performance tests for particulate matter emissions and opacity at least once during each term of your title V operation permit (i.e. once every five years). The permittee shall sample for an integral number of furnace tapping operations to obtain at least one hour of sampling for each test run. 63.7821(c)

IN COMPLIANCE. A review of the most recent PM tests indicates that visible emissions observations (30 6-minute observations) were conducted during the performance test. The permittee shall

NOT APPLICABLE. Settings have not changed since the initial MACT test. The permittee may change the operating limits for the baghouse capture system if the following requirements are met
a. Submit a written notification to the Administrator requesting to conduct a new performance test to revise the operating limit.
b. Conduct a performance test to demonstrate compliance with the applicable operating limitation.
c. Establish revised operating limits according to the applicable procedures in 40 CFR 63.7824, paragraphs (a) through (c) for a capture system.
63.7824(c)

IN COMPLIANCE. CPMS system (fan amps monitoring) is installed and operating at each casthouse. Historical trend data is maintained. A demonstration was presented during the inspection and an example is attached for B2. If applicable, the permittee shall install, maintain, and operate a Continuous Parametric Monitoring System (CPMS) for the baghouse capture system according to the requirements of 40 CFR 63.7830(a) and 40 CFR 63.7831(e).

IN COMPLIANCE. Company is continuously monitoring and recording fan amps for each baghouse. Damper positions are set and do not change. Any deviations from the required minimum are reported in the Title V deviation report. Based on the semi-annual deviation reports from 2017 and 1st half 2018, no deviations from fan amp minimums have been reported. Company periodically inspects the bag leak detection systems. No requests to change the sensitivity of the bag leak detection system have been received.

The permittee shall operate the baghouse capture system at or above the lowest value or settings established for the operating limits in the operation and maintenance plan and collect, reduce, and record the monitoring data for each of the operating limit parameters. Operate and maintain a bag leak detection system. If the sensitivity of the bag leak detection system is changed beyond the limits established pursuant to 40 CFR 63.7831(f)(6), a copy of a written certification by a responsible official shall be included in the semiannual compliance report for that period. 63.7833(b)&(c)

NO LONGER APPLICABLE. Initial compliance date was 10 years ago (May 22, 2006). The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart FFFFF for Integrated Iron and Steel Manufacturing by the initial compliance date.

COMPLIANCE DETERMINATION

At this time, based on conditions evaluated in this report, facility does not appear to be in compliance with opacity limits at the D4 slag pits. A violation notice was issued.

Follow up item: Further discussion regarding emptying of baghouse collection bins and handling and disposal of material is needed for the blast furnace baghouses.

NAME Katie Koza DATE 12/26/18 SUPERVISOR W.M