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

A780925744

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:** 06/26/2014
STAFF: Katherine Koster	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** MEGASITE
SUBJECT: Targeted FY2014 Inspection		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Targeted Inspection
INSPECTED BY: Katie Koster, AQD
PERSONNEL PRESENT: Brad Wargnier, Environmental Engineer
FACILITY PHONE NUMBER: (313) 749-2744 (Office)

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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, City of River Rouge. The 80-inch Hot Strip Mill facility is located in the City of River Rouge between the Zug Island and the Main Plant. The Main Plant Area is located on a 682 acre site located in the City of Ecorse. There are also six support facilities located inside or adjacent to the facility.

USSGLW is currently operating under ROP No. 199600132d and Permit to Install 96-12 (for an iron ore screening process which has not yet commenced). The ROP is in the renewal period.

The facility is also operating under AQD Consent Order 1-2005 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). FY2014 is the third year of the cycle.

PROCESS DESCRIPTION

Below includes the processes discussed and/or observed during the inspection. This does not include the entire facility.

Tube City IMS

Tube City IMS is one of the six support facilities for USSGLW and is Section 3 of the ROP. Tube City IMS has operated the slab scarfing machine since 1992. The scarfer is located on the north central part of the Hot Strip Mill property. Daily scarfing operating hours vary and can be as little as 2 hours. Operations are dependent on how much material is received from the mill. The target production rate is 35-40 slabs per hour.

Scarfing removes a thin layer of material from the steel slab to reveal potential surface defects. One operator is positioned between two tracks used to transport slabs in and out of the scarfing area and mans the automatic scarfing machine. Negative pressure is maintained inside the building during scarfing. There are four canopy hoods, two on each side of the machine, for capturing emissions and venting them to the baghouse.

Once the slab is moved into position along the track, the operator initiates the scarfing. Oxygen and natural gas are the fuel sources for the torch. Water sprays are also used to dislodge the scale. For a typical 70 inch slab, each face of the slab requires seven passes with the torch and the process takes about 4 minutes per side. If the slab has a high carbon content, it glows bright orange during the machine scarfing.

A water pit is underneath each track to capture the scale as it falls off of the slab. After each heat, the scale is pushed out of the pit by the push car through openings on the west end of the building. Scale piles remain there until hauled away by Levy Company.

Every slab is also hand scarfed after machine scarfing is completed. Operators torch any parts of the slab that were missed and to remove fins.

Hot Strip Mill

The 80" mill facility includes the hot strip finishing and shipping building, the scale pit, coil storage and shipping, slab yard, and 80" mill. Slabs of steel are rolled into coils at the mill. 80 inches refers to the width of the equipment as opposed to the width of the steel coil.

The process starts in one of five continuous reheat furnaces located at the eastern end of the mill. Typically, furnaces are either the newer walking beam type or older pusher type. Each furnace can hold about 30 slabs at a time. Slabs remain in the furnace for about three to four hours in order to reach the desire temperature of 2500F. The furnaces are fired with natural gas or a combination of natural gas and coke oven gas. Each furnace has an exhaust stack; however, stacks are not visible from ground level as the roof monitor on both sides surrounds them.

When a slab is ready for rolling, it is extracted from the furnace onto a rolling conveyor where it passes through five roughing mills. Mills are referred to as "two, three, or four high" where the classification depends on the number of rolls. Each mill incrementally reduces the thickness of the slab by compressing the steel in between the rolls. Along the way, the slab is sprayed with hi pressure water to knock off scale that has formed either in the furnace or through the rolling process. Scalebreakers reduce the thickness slightly and/or squeeze the slab to loosen any remaining scale. Water and scale are collected in a trough below the conveyor.

After the roughing mills, there is a lull in activity as the slab travels along the "holding table". At the end of the table, it enters the finishing descale where it is sprayed with 2000 psi water before passing through the seven closely spaces finishing mill stands. Operators at the finishing mills control the line upstream using x-ray feedback technology.

After leaving the last finishing mill, the strip moves along the "run-out table" where cooling sprays provide laminar flow for rapid cooling before the strip enters the coiler. The amount of water applied is carefully controlled as the rate of cooling affects the properties of the strip.

The strip enters one of three coilers and is placed on a conveyor moving south toward the storage building for banding. Steel is still hot at this point (around 900F). Up to 30 coils an hour can be manufactured and the entire line uses about 100,000 gallons of water per minute.

The scale pit is visible to the southeast of the strip mill. Scale is dug out and piled into the pit where it awaits pick up by Levy. Levy sells the scale to PVS where it is used to make ferrous chloride, a water treatment chemical.

Delray Connecting Railroad

Delray Connecting Railroad Company (DCRR) is Section 2 of the ROP. The company is a subsidiary of US Steel Corporation and is located on Zug Island. It operates the coke screening and handling facility consisting of screening machines, conveyors, and coke handling and storage. It is also responsible for maintaining and operating the locomotives that transport molten iron from the blast furnaces on Zug Island to the basic oxygen furnaces at the Main Plant.

The raw materials at DCRR are supplied by EES Coke or USSGLW. Materials received from EES Coke are separated into type (furnace coke, nut coke, coke breeze, sump coke, etc), and placed into piles for screening. Furnace coke is coke that is going to be used in the blast furnace. Coke breeze is the fines that cannot be reused in the process. Sump coke is material from the quench pit. Facility also receives scarfing fines, "A" scrap, and "B" scrap from US Steel. B scrap is reused in the blast furnace while A scrap is discarded.

No 2 BOP Shop Roof Monitor

Iron is converted to steel in the BOP Shop. Operations are comprised of hot metal transfer, desulfurization, slag skimming, charging, oxygen blowing, tapping, and deslagging. Visible emissions limits for the BOP roof monitor are in effect.

INSPECTION NARRATIVE
On June 26, I arrived at USS and met Mr. Brad Wargnier. We drove to Tube City IMS and met with the staff. We observed the automatic scarfing operation from outside of the room. I did not notice any fugitive smoke escaping during scarfing. The emissions are sent to a six module pulse jet baghouse. Baghouse bags and tubesheets are scheduled to be replaced this quarter. The baghouse is on a four year cycle for replacement of bags and tubesheets. No hand scarfing was occurring at the time of the inspection.

During the inspection, I recorded the following pressure drops (in. H20):
Comp #1 - 6
Comp #2 - 4
Comp #3 - 5
Comp #4 – 6
Comp #5 – 5
Comp #6 – 1 (module was just cleaned)

Baghouse cleaning is automatically initiated and the compartment being cleaned is isolated. During the cleaning cycle, dust dumps into a trough and an auger pushes the dust into the hopper. Each module has a separate hopper. The hoppers are emptied into a covered roll-off box and Waste Management picks up the box when full.

Daily, weekly, monthly, quarterly, yearly records were presented for the baghouse. Yearly calibration records for the gauges were also presented.

Certified visible emissions readings were presented and all readings were zero. Veolia conducts the Method 9 readings. Tube City staff also conducts a daily check for the presence of visible emissions. These records were also presented. According to Dan, maintenance manager, he has never seen anything.

Cutting and slicing of the slabs is done by the mill and not Tube City.

Hot Strip Mill
There are 5 reheat furnaces although 4 were running during the inspection. Furnace #2 was down. We went into the control room. All operating furnaces were running a combination of COG and Natural Gas except for #1. The soak zone is always run on natural gas. Brad and I walked the line. I observed the roof periodically while inside the mill and did not observe fugitive visible emissions.

No. 2 BOP Shop
I conducted visible emission observations with Mr. Paul Bush, Veolia. We were positioned to the NE of the roof monitor. As such, we could also view a lower "roof monitor" or secondary opening that was near the hot metal transfer stations. I observed visible emissions of up to 50% opacity from this section.

Also ground level fugitive dust and smoke from torch cutting of scrap slabs to go into the BOF vessels was rising up toward the roof monitor at times. I did not take visible emission readings of this activity. We drove down 10th Avenue where the scrap is stored and torch cutting occurs. According to USSGLW, Tube City IMS is responsible for managing fugitive dust in this area. It was very dusty and needed to be watered. Mr. Bush called Tube City and left a message that fugitive dust suppression was needed. Beyond 10th Avenue, we travelled on Skeeter Shop road. This road is unpaved and the responsibility of USSGLW but based on my observations, it was not causing a fugitive dust issue.

We returned to the office and discussed readings at the roof monitor at the No. 2 BOP. According to Veolia, for the required certified readings that occur every other week, they read from tap to tap on the same vessel. If the BOP shop is alternating vessels, Veolia reads two heats; otherwise they read one heat. I reviewed the number of BOP heats per vessel in Mr. Wargnier's office. In general, heats per vessel seemed to be evenly split except for August 2013 when #25 only had 92 heats which Brad attributed to maintenance. Typically, USS takes one blast furnace down and one vessel each year for maintenance.

APPLICABLE RULES/PERMIT CONDITIONS EVALUATED

(Note: Special Conditions are paraphrased for brevity)

Hot Strip Mill - This emission unit is in the ROP No. 199600132d under EG80MILLFURNCS

II. Material Usage/Emissions limits

B. **IN COMPLIANCE**. Opacity - 20% on a 6 minute average. No emissions were observed from the roof monitor during the inspection. No excess emissions have been reported based on the certified readings performed by the company.

NOT APPLICABLE. Nitrogen Oxide - .25 lb/MMBTU. This condition has a UAR of R336.1801(4)(c). However, based on review of Part 8 regulations and discussion with US Steel, this limit does not appear to apply to the reheat furnaces. See attached letter.

III. Compliance Evaluation

A.2 **IN COMPLIANCE**. Shall monitor and record natural gas and coke oven gas consumption, total operation time, and NOx emissions for entire ozone season. Reports including this information are submitted on time and are in the facility file.

IV. Reporting

4.a. and b. **IN COMPLIANCE**. Shall submit a summary report within 60 days after the end of each ozone season, containing the following: calculated NOx emissions and total operating time. The most recent report was submitted on time and included the required information. Reports are in the facility file.

V. Operational Parameters

IN COMPLIANCE. Shall implement the NOx control program to ensure proper operation and combustion in each of the reheat furnaces as submitted under Rule 801. According to Rule 801 analysis submitted, the NOx control plan is proper combustion in the furnaces. No VE's issues have been noted from the roof monitor.

Tube City IMS - This emission unit is in the ROP No. 199600132d under Section 3, Slab Scarfing Machine Operations.

II. Material Usage/Emissions limits

A. **IN COMPLIANCE.** Natural gas – Shall not use more than 2,400 cubic feet of natural gas per hour based on a 12 month rolling time period. According to the 2013 MAERS additional information (attached), for the time period ending in December 2013, natural gas usage was 3,161,200 ft3 and hours of operation were 3,683 which equates to a usage of 858 ft3/hr of natural gas.

B. **UNKNOWN.** PM - .004 gr/dscf per hourly average, 3.77 lbs/hr, and 14.45 tons/year. Facility has not been required to stack test. Stack testing will be required in the renewed ROP. The 2013 MAERS reported emissions from scarfing for 2013 were 0.92 tons of PM based on a PM emission factor for natural gas combustion and an emission factor of 0.5 lb/hr from a 1993 stack test. See attached.

C. **IN COMPLIANCE**. Opacity – 25% based on a 1.5 minute average under Method 9A. Records were reviewed during the inspection (daily checks for the presence of any visible emissions and Veolia certified readings) and indicated compliance with the limit. No VE's have been observed. An example of the daily check is attached.

III. Compliance Evaluation

A.2. IN COMPLIANCE. Facility has records of natural gas usage, hours of operation per day, hours of operation per 12 month time period, pressure drop, certified and non certified VE readings.

V. Operational Parameters

1. **IN COMPLIANCE**. Shall not operate more than 21 hours per day or 7665 hours per year. According to the 2013 MAERS data, the scarfer operated 3,683 hours in 2013. I did not request records of daily hours of operation.
2. **IN COMPLIANCE**. Scarfer is equipped with a baghouse.
3. **IN COMPLIANCE**. Gauge which measures pressure drop is installed and appeared to be operating properly
4. **IN COMPLIANCE**. Overall pressure drop was above 4 inches H20 during the inspection

Delray Connecting Railroad

II.1 and VI.1 - EU-DELRAY- COKESCR-S2 limited to 150,000 tons coke per 12 month rolling time period. **IN COMPLIANCE.**

According to the 2013 MAERS report, the stationary coke breeze screening operation had a throughput of 88,309 tons for the 12 month rolling time period ending in December 2013.

No. 2 BOP Roof Monitor

I took visible emissions readings with Mr. Paul Bush, Veolia, from 10:51 to 11:42 a.m. Readingsand are attached. We were positioned about 120 yards NE of the BOP. From this position, the north side of the BOP Shop is visible and I noted the presence of a lower roof monitor/secondary opening. During the VE readings, I noticed brown particulate from the lower roof of up to 50% opacity around 11:15 a.m. Mr. Bush called the control room and verified that hot metal transfer had occurred at that time. The highest three minute average opacity I observed was 14% and Mr. Bush was 16.25%. Reddish brown emissions were also observed from the west side of the upper roof monitor.

I also observed torch cutting of scrap by Tube City IMS on the north side of the BOP which was generating about 10-20% opacity at times. I did not take visible emissions readings of this activity.

Table F-01.07 FG2BOP-SHOP Condition II.B.3 – **NON COMPLIANCE.** While an exceedance of the opacity limit was not observed during this visit, self-reported opacity exceedances at the BOP roof monitor are the subject of ongoing litigation between DOJ/EPA and AG/MDEQ (referenced below in the compliance determination). As such, non compliance was chosen.

I also requested records of corrective actions taken during non-certified readings of the roof monitor for 2014 (Condition 3.A.III.1) which are attached. I received five reports from the beginning of 2014. 4 of the 5 incidents are related to ongoing emissions observed from 26 vessel attributable to "poor draft" and were observed before and around the March 27 collapse of the No. 26 vessel downcomer. Based on this information, it does not appear that the collapse was attributable to a malfunction which would be a "sudden, unavoidable, and not reasonably preventable" event. The facility was issued a violation notice by AQD and USEPA for this incident. The response received was inadequate as facility claimed they were still investigating. On 7/9/14, I was informed via email by Mr. Wargnier that an investigation was still ongoing and follow up information was to be provided in "the next few weeks." (attached).

COMPLIANCE DETERMINATION

At this time, USSGLW is not in compliance with all of the applicable requirements reviewed in this report. There is ongoing litigation as a result of two EPA Region V NOV's issued on September 30, 2009 and June 17, 2011 which involves Table F-01.07 FG2BOP-SHOP Condition II.B.3 (opacity exceedances at the No. 2 BOP roof monitor) and the AQD is a plantiff in the suit. Additionally, the VN for the collapse of the downcomer at the No. 2 BOP is still unresolved as the facility has not sufficiently responded with appropriate corrective actions. Until these actions are resolved, facility compliance status is non compliance.

Based solely on the permit conditions reviewed for Tube City and Delray Connecting Railroad that are listed in this report, these two sections are in compliance.

Follow up items:
DCRR emission factors in the 2013 MAERS have a basis of "Other" and no supporting information was provided. More information is needed.

NAME Katie Knoll DATE 7/30/14 SUPERVISOR W. M -