

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

A780930744

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: 08/19/2015
STAFF: Katherine Koster	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MEGASITE
SUBJECT: BOP Visible Emission limits, No.5 Pickle Line		
RESOLVED COMPLAINTS:		

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

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 Main Plant facility location. 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.

REGULATORY ANALYSIS

USSGLW is currently operating under ROP No. 199600132d and Permit to Install 96-12 (for an iron ore screening process). The ROP is in the renewal period.

The facility is also operating under AQD Consent Order 1-2005, AQD Consent Order No. 50-2014 and numerous Wayne County consent order, 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). FY2015 is the first year of the cycle.

PROCESS DESCRIPTION (This description only includes processes inspected during AQD inspection on 8/19)

No. 5 Pickle Line and No. 4 Tandem Mill are housed in the J Building, south of the Environmental Office at the Main Plant. From the Hot Strip Mill, some coils are sent to No 5. Pickle Line, Tandem Mill, and on to either the Continuous Galvanizing Line (CGL) or annealed and sent to the Electrogalvanizing Line (EGL). The pickling process uses hydrochloric acid to remove metal oxides formed when steel is hot rolled and cooled. It is necessary to remove these oxides to provide a smooth clean surface for use as hot rolled steel and/or to perform subsequent cold forming operations.

Coils are unrolled, welded together, and pass through the tension leveler to break off scale. The tension leveler is controlled by a baghouse. Next, the strip enters the looper which allows the line to run continuously. The pickling process consists of 4 heated pickle tanks installed in series; the 4th tank is a rinse tank. The fresh acid solution is introduced in the 3rd pickle tank. The acid solution then cascades from the 3rd tank to the 1st tank in a direction counter to the direction of the metal coil strip. By this countercurrent arrangement, the cleanest coil strip near the process exit is treated by the freshest acid, ensuring that the steel strip is as free of oxide scale as possible.

MACES- Activity Report

All pickle line tubs, including the rinse tank, are completely covered. Ductwork along the edge of each tank, covered by rubber seals, carries the fumes to the packed bed scrubber rated at 17,000 ACFM. The fumes are pulled through the scrubber by an I.D. fan.

After the rinse tank, the strip enters the dryer, exit looper, side trimmers, and inspection area before proceeding to the tandem cold mill.

Fresh and spent HCl is stored in tanks outside, on the west side of the building.

Iron is converted to steel in the No.2 BOP Shop in one of two BOP vessels, No. 25 and 26. Operations in the BOP Shop are comprised of hot metal transfer, desulfurization, slag skimming, charging, oxygen blowing, tapping, and deslagging. Emissions from charging and tapping at the vessels are controlled by the No. 1 baghouse. Emissions from hot metal transfer, desulfurization, and slag skimming are controlled by the No. 2 baghouse. Emissions during oxygen blowing are controlled by an ESP.

INSPECTION NARRATIVE

AQD inspectors, Kerry Kelly, and Katie Koster, arrived at USS Great Lakes Works on 8/19/15 at 9:30 a.m. We met with Mr. Brad Wagnier, U.S. Steel Environmental Engineer. We proceeded to the No. 2 BOP Shop. We viewed emissions during hot metal transfer which is when a torpedo car is rotated and poured into a steel ladle. There were some visible emissions escaping from behind the hood; I could not determine whether these emissions were exiting the BOP Shop at a level that would exceed the 20% 3 minute average limit. Desulfurization and slag skimming were not occurring at the time. The west hood at the desulfurization station appeared to be damaged. I asked Mr. Wagnier to check and see if the hood was awaiting repairs. We also observed charging on No. 25 vessel. Emissions appeared to be well captured. No. 26 vessel was down for maintenance; these activities were generating a lot of particulate inside the BOP Shop. I asked why the dampers were not open to draw dust to the baghouse but Mr. Wagnier did not know. We went into the pulpit of No. 25 vessel to speak with the operator. The ESP was undergoing maintenance activities. It was operating on 20 fields. No. 25 vessel and B2 furnace were scheduled for a shut down in the next week. No. 25 vessel is getting relined at the end of August. It has processed about 23,000 heats; the typical life is 12,000. The reaction does not start until about 10 minutes into the heat; minutes 0 to 10 are for melting the scrap. O2 injection is what causes a reaction to occur. The operator explained that it was impossible to blow heats on both furnaces at the same time; dampers are either at charge, tap, or blow. Operators have to manually switch the dampers and they are interconnected between the two furnaces.

Based on the sun, I conducted visible emissions observations between 2:28 and 3:03 on the south side of the BOP. We drove to this position. Heat no. 3137 was charged at 2:44 p.m. on No. 25 vessel. As such, I could not see the downcomers, dirty gas main, or lower roof portion of the shop. Ms. Kelly noticed fugitive emissions from the No. 25 downcomer when we were driving on the north side of the BOP. I observed reddish brown opacity from the ESP at about 10-15% around 2:58. Mr. Wagnier confirmed that there was an opacity stop at 3:01. This occurs to prevent an exceedance of the 20% 6 minute average limit for the ESP stack.

We also walked through the continuous caster and No.2 argon stir station. The No. 2 argon was not in use at the time.

We returned to the office and discussed visible emissions readings and records with the certified independent VE readers employed by Veolia. 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 inquired about slag pit VE readings and Veolia stated that those are no longer conducted. I skimmed through blast furnace and BOP Shop VE readings. I requested copies of BOP Shop certified and non certified readings.

On 8/11/15, I was on site for the No.5 pickle line stack test. According to the maintenance staff, the line was scheduled to be shut down in the next several weeks. All tanks and covers were going to be replaced. The scrubber was going to remain as-is. There are 4 pickling tanks; tank 3 contains 10% HCl. The scrubber recirculation rate was around 553 gal/min and makeup water flow around 53 gal/min throughout the test. These are above the minimum values established during the prior testing. The pressure drop was around 6.2 in. w.c. and the demister pressure drop was 10.5. I walked along the line to observe the rubber tank seals. While I could not see evidence of leaks, there was a strong smell of HCl at various points along the line. If HCl is leaking from the seals, this would reduce the amount of HCl being collected and sent to the scrubber.

RULES/PERMIT CONDITIONS EVALUATED

Table below were cut and pasted from the ROP 199600132d.

TABLE E-01.08 PICKLE LINE OPERATIONS
EMISSION UNIT/PROCESS GROUP REQUIREMENTS

TABLE E-01.08 PICKLE LINE OPERATIONS					
EMISSION UNIT/PROCESS GROUP REQUIREMENTS					
EMISSION GROUP		EG5-PICKLE-LINE - No. 5 Pickle Line and Operations, including: pickle line, welder, acid fume wet scrubber and dust collector.			
Flexible Grouping ID		NA			
I. DESIGN PARAMETERS					
A. Pollution Control Equipment		Scrubber and Baghouse			
B. Stack/Vent Parameters		Exhaust gases shall be discharged unobstructed vertically upwards to the ambient air.			
Stack/Vent ID	a. Minimum Height(feet)	b. Maximum Exhaust Dimension (inches)	c. Temp.	d. Air Flow Rate	Applicable Requirement
SVPIC-SCRUBBER DID NOT EVALUATE	69	42	NA	NA	(R336.1201(3), R336.1225)
C. Other Design Parameters					
The permittee shall install, operate and maintain system of measurement and recording of the scrubber makeup water flow rate and, if required, recirculation water flow rate. (40 CFR Part 63, Subpart CCC, 63.1162(a)(2) IN COMPLIANCE - Parameters were being measured and recorded as verified during AQD observed stack test. Historical records were presented. A sample is attached.					
II. MATERIAL USAGE/EMISSION LIMITS					
A. Material		Maximum Usage Rate			
NA		NA			
B. Pollutant		Maximum Emission Limit			
Hydrogen Chloride		18 parts per million by volume (ppmv); OR HCl at mass emission rate that corresponds to a collection efficiency of less than 97 percent.			
3.		1.64 pounds per hour.			
		IN COMPLIANCE – February 2013 stack test results were 0.02 lb/hr HCl and 0.3 ppm. Stack test was also performed on August 11, 2015. Awaiting results; 60 days has not yet passed.			
III. COMPLIANCE EVALUATION					
Records of all of the following shall be maintained on file for a period of 5 years. (R 336.1213(3)(b)(ii))					
A. MONITORING/RECORDKEEPING (R 336.1213(3))					
In Addition To General Requirements in Part A					
1.	Continuous Emission Monitoring (CEM) System and Recordkeeping	NA			
2.	Process Monitoring System and Recordkeeping	The water flow rate to the scrubbers must be monitored continuously and recorded at least once per shift while scrubber is operating. Operation of the			

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	<p>scrubber shall be with a minimum of scrubber makeup water flow rate and recirculation water flow rate as established during the most recent performance test. The normal pressure drop range of 3 to 10 inches of water column is considered normal range. The permittee shall initiate appropriate maintenance activity per 63.1160(b)(2) on the scrubber if the pressure drop exceeds the normal range which is not a deviation.</p> <p>IN COMPLIANCE – Flow rates and pressure drop are continuously monitored and are recorded once per shift. Pressure drop was within the normal range during the stack test (6.3 in H₂O). Flow rates were around 553 gal/min for recirculation rate and 55 for makeup water flow rate. This are above the minimum (522 and 30). See attached records for an example. Records indicate compliance as well.</p>
3. Other Monitoring and/or Recordkeeping	<p>The permittee shall record and keep the following information and make it available to AQD upon request: Operating parameters for the scrubbers established from the initial test conducted. IN COMPLIANCE – Parameters are listed on the daily monitoring sheet which is reference in the O&M plan (See attached), occurrence and duration of each startup, shutdown, or malfunction of the pickling operation. IN COMPLIANCE – Records are maintained. Sample is attached; Occurrence and duration of each startup, shutdown, or malfunction of the air pollution control equipment. IN COMPLIANCE – Reports are submitted semi annually with the required information.</p> <ol style="list-style-type: none"> 4. All maintenance performed on the air pollution control equipment. IN COMPLIANCE – Records from January – August 2015 are attached. 5. Actions taken during periods of startup, shutdown, and malfunction and dates of such actions (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) when these actions are different from the procedures specified in the Startup, Shutdown, and Malfunction Plan (SSMP). IN COMPLIANCE – Information is included in the semi-annual MACT reports. See orange folder in facility file. 6. All information necessary to demonstrate conformance with the SSMP when all actions taken during periods of startup, shutdown, and malfunction (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) are consistent with the procedures specified in the plan. Can be recorded on a checklist or similar form. DID NOT EVALUATE AT THIS TIME – AQD did not request this information from the facility at this time 7. All required measurements needed to demonstrate compliance with the standard and to support data that the source is required to report, including, but not limited to, performance test measurements and measurements as may be necessary to determine the conditions of the initial test or subsequent tests. DID NOT EVALUATE AT THIS TIME - AQD did not request this information from the facility at this time. 8. All results of initial or subsequent performance tests. DID NOT EVALUATE AT THIS TIME - AQD did not request this information from the facility at this time. However, results of performance testing are in the AQD file. 9. All documentation supporting initial notifications and notifications of compliance status required by 63.9 DID NOT EVALUATE AT THIS TIME - AQD did not request this information from the facility at this time. 10. The permittee shall keep and maintain the following record for 5 years from date of each record of: Scrubber makeup water flow rate and recirculating water flow rate. Calibration and manufacturer certification that monitoring devices are accurate to within 5%. Each maintenance inspection and repair, replacement, or

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	<p>other corrective actions IN COMPLIANCE – Maintenance records are maintained and are attached (January – August 2015) as well as calibration records.</p> <p>Records of any applicability determination, including supporting analyses. N/A – A/QD staff is not aware of any applicability determinations related to CCC at this time.</p> <p>12. The permittee shall keep records of emission information; operating parameters; maintenance information; and inspections to comply with the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR 63 Subparts A and CCC. All source emissions and operating and maintenance information shall be kept on file for a period of at least five years and made available to the Department upon request. IN COMPLIANCE – Records are maintained and are attached.</p>
B. TESTING/RECORDKEEPING (R 336.1213(3)) In Addition to General Requirements in Part A	
1. Parameter to be Tested/Recorded	Hydrogen chloride emissions.
2. Method/Analysis	EPA reference Method 26A (40 CFR Part 63, Subpart CCC, 63.1161 (d))
3. Frequency and Schedule of Testing/Recordkeeping	<p>1. The permittee shall conduct a hydrochloric acid emission test on the pickle line scrubber stack twice during the term of this permit in compliance with the required testing interval of every 2 ½ years or more frequently upon the request of A/QD. IN COMPLIANCE – Dates of previous two tests were August 2015 and February 2013. Reference Method 26A was used.</p> <p>2. No less than 60 days prior to the hydrochloric acid emission test, a complete stack test protocol must be submitted to A/QD for approval and the time schedule of the testing to allow the A/QD to have an observer present during the test. The final plan must be approved by the A/QD prior to testing IN COMPLIANCE – Test plan received on June 9 and testing conducted August 11 2015.</p>
IV. REPORTING	
Reports and Schedules	<p>1. 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. Annual certification of compliance pursuant to Conditions 28 and 29 of Part A. Due annually by March 15 for the previous calendar year. If actions taken by the permittee during a startup, shutdown, or malfunction of an affected source (including actions taken to correct a malfunction) are consistent with the procedures specified in the startup, shutdown, and malfunction plan, the permittee shall state such information in a semiannual report. The report, to be certified by a responsible official shall be submitted to A/QD semiannually and delivered or postmarked by the 30th day following the end of each calendar half, June 30.</p> <p>5. Any time an action taken by the permittee during a startup, shutdown, or malfunction of an affected source (including actions taken to correct a malfunction) is not consistent with the procedures in the startup, shutdown, and malfunction plan, the permittee shall comply with all requirements of 63.10(d)(5)(ii). See Appendix 8 for summary of 63.10(d)(5)(ii) reporting requirement IN COMPLIANCE – This relates to all conditions above. Reports are received on time and include the relevant information. One malfunction was report in the last two years and relevant information was included in the semi annual report. Semi annual reports state that actions consistent with the SSM plan for all SSM events were taken. See facility orange files.</p>

<p>TABLE E-01.08 PICKLE LINE OPERATIONS</p> <p>EMISSION UNIT/PROCESS GROUP REQUIREMENTS</p>
<p>V. OPERATIONAL PARAMETERS</p> <p>The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR 63 Subparts A and CCC, as they apply to EUPICKLE5 IN COMPLIANCE – Provisions are included in the permit and have been evaluated throughout this table.</p> <p>The permittee shall not operate EUPICKLE5 unless the acid fume wet scrubber is installed, maintained, and operated in a satisfactory manner. IN COMPLIANCE – Scrubber appeared to be operated in a satisfactory manner and within established ranges during the stack test and random spot check of records (see attached).</p> <p>The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to continuously monitor the makeup and recirculation water and recirculation water flowrate in the EUPICKLE5 acid fume wet scrubber consistent with the requirements of 40 CFR 63 Subpart CCC. Monitored data shall be recorded once per operating shift. IN COMPLIANCE – Monitoring in place and recorded once per shift. Most recent records of calibrations were requested and submitted (see attached).</p> <p>The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to continuously monitor the pressure drop across the EUPICKLE5 acid fume wet scrubber consistent with the requirements of 40 CFR 63 Subpart CCC. Monitored data shall be recorded once per operating shift. IN COMPLIANCE – Monitoring in place and recorded once per shift (see attached). Did not obtain calibration records at this time.</p>
<p>VI. OTHER REQUIREMENTS</p> <p>The permittee shall provide and operate the hydrochloric acid storage vessels, except during loading and unloading of acid, a closed-vent system for each vessel. Loading and unloading shall be conducted either through enclosed lines or each point where the acid is exposed to the atmosphere shall be equipped with a local fume capture system, ventilated through an air pollution control device. IN COMPLIANCE – Based on visual observation, enclosed lines for loading and unloading are present.</p> <p>The permittee shall comply with the operation and maintenance requirements prescribed under 63.6(e) of subpart A. (40 CFR Part 63, Subpart CCC, 63.1160(b)(1))</p> <p>The permittee shall prepare and implement an approved operation and maintenance plan (OMP) for the pickle line scrubber and pickle line welder cartridge filter dust collector. This plan is incorporated by reference into this permit as No. 5 Pickle Line Operation and Maintenance Plans. These plans must be consistent with good maintenance practices and for the scrubber emission control device, must at a minimum: IN COMPLIANCE - OMP's attached</p> <p>) Require monitoring and recording the pressure drop across the scrubber once per shift while the scrubber is operating in order to identify changes that may indicate a need for maintenance. IN COMPLIANCE. Pressure drop recorded on daily operating sheets. Sample attached.</p> <p>i) Require the manufacturer's recommended maintenance at the recommended intervals on fresh solvent pumps, recirculating pumps, discharge pumps, and other liquid pumps, in addition to exhaust system and scrubber fans and motors associated with those pumps and fans. IN COMPLIANCE. Inspected weekly. Records attached.</p> <p>ii) Require cleaning of the scrubber internals and mist eliminators at intervals sufficient to prevent buildup of solids or other fouling. IN COMPLIANCE – This is listed as an annual activity in the O&M plan.</p> <p>Require an inspection of each scrubber at intervals of no less than 3 months with:</p> <p>A) Cleaning or replacement of any plugged spray nozzles or other liquid delivery devices.</p> <p>B) Repair or replacement of missing, misaligned, or damaged baffles, trays, or other internal components.</p> <p>C) Repair or replacement of droplet eliminator elements as needed.</p> <p>D) Repair or replacement of heat exchanger elements used to control the temperature of fluids entering or leaving the scrubber.</p>

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e)	Adjustment of damper settings for consistency with the required air flow.
f)	<p>If the scrubber is not equipped with a viewport or access hatch allowing visual inspection, alternate means of inspection.</p> <p>IN COMPLIANCE – Records of the above at a 3 month frequency for 2015 were provided.</p> <p>The permittee shall initiate procedures for corrective action within 1 working day of detection of an operating problem and complete all corrective actions as soon as practicable. Procedures to be initiated are the applicable actions that are specified in the maintenance plan. Failure to initiate or provide appropriate repair, replacement, or other corrective action is a violation of the maintenance requirement of this subpart. IN COMPLIANCE – Corrective actions appear to be documented on the inspection forms and performed in a timely manner.</p>
g)	<p>The permittee shall maintain a record of each inspection, including each item identified in paragraph (b)(2)(iv) of this section, that is signed by the responsible maintenance official and that shows the date of each inspection, the problem identified, a description of the repair, replacement, or other corrective action taken, and the date of the repair, replacement, or other corrective action taken. IN COMPLIANCE- OMP for dust collector attached. Based on records submitted, scrubber appears to be inspected more frequently than the MACT requires (on an almost weekly basis). Corrective actions taken are also documented on the inspection forms.</p> <p>Each water flow monitoring device shall be certified by the manufacturer to be accurate to within 5% and shall be calibrated in accordance with the manufacturer's instructions at least once per year. IN COMPLIANCE – Most recent yearly record was submitted. See attached.</p> <p>The permittee may develop and implement alternative monitoring requirements subject to the approval by the AQD District Supervisor. N/A – No alternative monitoring has been requested.</p> <p>The permittee shall inspect each pickle line operation associated hydrochloric acid storage vessel semiannually to determine that the closed-vent system and either the air pollution control device or the enclosed loading and unloading line, whichever is applicable, are installed and operating when required. IN COMPLIANCE – Inspection documented on attached records.</p> <p>The permittee shall operate and maintain each emission source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the level required by the standard at all time, including during period of startup, shutdown, or malfunction. Malfunction must be corrected as soon as practicable after their occurrence in accordance with the startup, shutdown, and malfunction plan. IN COMPLIANCE – Pickle line and associated air pollution control devices appear to be operated in a manner consistent with good air pollution control practices based on the inspection and records submitted and semi annual SSM reports.</p>

No. 2 BOP Roof Monitor

F-01.07 FG2BOP-SHOP Condition II.B.3 – **NON COMPLIANCE.** While an exceedance of the opacity limit was not observed during this visit, I reviewed the records of visible emissions readings and non certified observations from January – August 2015 (attached). Records indicate ongoing non compliance with the BOP roof monitor opacity limit and multiple observations of abnormal emissions during the non certified observations. There was an exceedance almost every month with additional observations of "abnormal" emissions during non certified observations. The required frequency of certified visible emissions observations from "tap to tap" is once every two weeks. This constitutes about one heat every two weeks. For an operation that generally runs 24 X7, and processes about 30-35 heats per day according to the MAERS report for 2014, this represents an extremely small fraction of the total heats/total operation. Having excess visible emissions about 50% of the time (8 exceedances out of 16 heats read) in less than 1% of the total heats is unacceptable.

COMPLIANCE DETERMINATION

At this time, USSGLW is not in compliance with all of the applicable requirements reviewed in this report. Non compliance was chosen for the ongoing visible emissions exceedances at the No.2 BOP Shop. A violation notice will be issued.

MACES- Activity Report

NAME Kate Kelle

DATE 9/28/15

SUPERVISOR W.M.