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

A864025269

FACILITY: SEVERSTAL DEARBORN, LLC		**SRN / ID:** A8640
LOCATION: 4001 MILLER ROAD, DEARBORN		**DISTRICT:** Detroit
CITY: DEARBORN		**COUNTY:** WAYNE
CONTACT: James E. Earl , Environmental Engineer		**ACTIVITY DATE:** 05/15/2014
STAFF: Katherine Koster	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** MEGASITE
SUBJECT: Targeted inspection 2014		
RESOLVED COMPLAINTS:		

Reason for Inspection: Targeted Inspection
Level of Inspection: PCE
Inspected by: Katie Koster, AQD
Personnel Present: Jim Earl, Environmental Manager; Bethany Gozdzialski, CEC, Inc.
Facility phone number: 313-845-3217
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FACILITY BACKGROUND

Severstal Dearborn, LLC (SDL) is an integrated iron and steel mill operating at 4001 Miller Road, Dearborn which primarily produces flat rolled coils. The previous address, 3001 Miller Road, has now been solely assigned to the Ford Motor Company Rouge Plant which is adjacent to the mill. The company was previously operating under the names Severstal Dearborn, Inc. and Severstal North America (SNA). SNA is now the corporate name of Severstal that encompasses all of its North American properties. Before being purchased by Severstal in 2004, the company was operating as Rouge Steel.

SDL is currently operating under ROP No. 199700004, and Permits to Install 182-05C, 8-08, and 8-08A. These permits have not been rolled into the ROP renewal. A public hearing was held July 2012. However, the ROP renewal is currently on hold pending the resolution of an EPA/AQD enforcement action. The facility was issued PTI 182-05C on May 12, 2014 to revise emissions limits that were exceeded based on stack testing that was required when 182-05B was issued and EPA required testing through an ICR related to the Iron and Steel MACT.

The facility is also operating under AQD Consent Order 6-2006.

PROCESS DESCRIPTION

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

C Blast furnace – Iron ore is converted to pig iron in the furnace. Raw materials are iron ore, coke, limestone, and BOF slag. Coke provides heat for the reaction and carbon need to reduce the iron ore. Metallurgical coke also has enough strength to withstand high pressure and temperature in the furnace and provides structural support to the burden. Pulverized coal is blown into the furnace through the tuyeres as a fuel source. C furnace has two tapholes; east and north. This process is controlled by a baghouse during drilling, casting, slagging, and plugging the furnace. There are hoods over the taphole and the iron and slag tilting runners. Hot metal is cast into torpedo cars and transferred by rail to the Basic Oxygen Furnace building. Operators use natural gas suppression lances during filling so that they can see the level of material in the torpedo cars and slag pots. Slag is collected in pots and dumped at the corner of Dix and Miller by Edw. C Levy company.

INSPECTION NARRATIVE

On May 15, 2014, I arrived at the Severstal environmental offices and met Mr. Jim Earl, Environmental Manager, around 10 a.m. Ms. Bethany Gozdzialski, CEC, contractor on-site full time assisting with Title V recordkeeping and reporting was also present. Ms. Annette Switzer, AQD permit engineer, accompanied me.

At 10:30 a.m., we proceeded to the C Blast Furnace IPO control room. The C Blast furnace has twenty (20) tuyeres and two (2) tapholes, north and east, which are normally alternated with each cast. Emissions are controlled by a 10 module pulse jet baghouse with two fans designed to meet a 98-99.99% control efficiency.

C Blast Furnace has three bleeder valves which are emergency relief valves at the top of the furnace to relieve pressure in order to prevent a catastrophic event. There is one semi clean bleeder (on the south side), a two dirty gas bleeders (one south; one north). Bleeders are programmed to open at certain set points; with the semi clean bleeder opening at a lower pressure than the dirty bleeders. According to the operator, the gas released from the semi clean bleeder has already passed through the dust catcher and the venturi scrubber. There would not be a situation where the dirty gas bleeders would open before the semi clean. When the bleeders are opened for a planned start up or shut down, steam is manually introduced into the uptakes. This "helps with emissions" according to Jim Earl but the steam also helps evacuate the gas from the furnace. A shut down for minor maintenance work, such as to change out a tuyere, can be accomplished in about 10 minutes. For longer shut downs, extra coke needs to be added to the furnace to compensate for heat loss when down. A log was presented for several of the most recent openings; trend data of stockline movement and pressures were attached to the report. Bleeder openings are trended too.

The dust catcher is emptied every 10 minutes and pressed down with water. Once the bin is full, it is cleaned out with front end loaders. An alarm is sounded for those in immediate area to evacuate as there could be a CO hazard.

Cast times range from 45 minutes to several hours; slag starts flowing within 45 minutes to 1.5 hrs. into the cast. Once the tap hole is plugged, iron can still run for 10 – 15 minutes. According to Stuart, blast furnace manager, this is why operators leave the dampers open for a time even after the tap hole is plugged.

Next, we proceeded to the casthouse and met Mr. Churchill Long in the pulpit. Casting at the north taphole was underway. While walking to the casthouse, I viewed the iron (torpedo car) filling and slag pot filling stations, I did not notice any visible emissions escaping the hoods. Iron and slag flow from the taphole into the iron trough. Slag floats on top. Once the molten liquid hits the dam, slag flows one direction into the slag runner; iron flows down the iron runner. There is a tilting runner/spout for pouring iron and slag into one of two vessels.

The cast had started at 8:25 a.m. I recorded the following parameters from the furnace:
Cast# - CN141374
Wind rate – 125,000 (128,000 prior inspection)
Top Gas Pressure – 13.54 (15.71 psig, and 13.4 psig prior inspections)
Gap time – 29 minutes (10 minutes and 25 minutes prior)
Hot blast pressure – 42 psi (45 psi prior)
Bleeder set points – 23 psi (semi clean), 27 psi (dirty North), 29 psi (dirty South); prior inspection was 23, 25, and 28 respectively
Drill bit – 1 ¾ inch (1 7/8 inch prior)
Natural gas and oxygen were being injected into the furnace. PCI was not being injected because the system was under repair; otherwise it is constantly being injected; 120 is the normal rate.

Slag started flowing at 9:16 a.m., which was about 50 minutes after the tap. Furnace was plugged at 10:52 a.m.

I observed the emissions during casting and the smoke appeared to be very well captured by the hood over the taphole. There are also hoods over the torpedo car filling area and the slag pots. Mr. Earl explained the damper positioning. At the north hole, there is only one hood so the iron damper is always open at 95%. The taphole hood damper is at 100%. Slag damper was at 30%. The damper positions are manually initiated by the operators by choosing from the following operating modes: idle, drilling, casting, and slagging.

Before the baghouse was installed in 2007, natural gas suppression was used for emissions control. Natural gas consumes the oxygen so that the iron cannot react with the oxygen and create a fume. According to Mr. Earl, it works ok in small confined space but is not as effective in an open area like the iron trough.

Iron flows north into the torpedo cars and slag flows west. The iron and slag runner covers and iron trough cover were in place. Mr. Earl explained that the current runner covers were installed as part of the C furnace baghouse installation.

A pulse jet 10 module baghouse controls emissions during casting. I recorded the following values. According to the May 12, 2014 O&M manual (excerpt in Appendix B), parameters are within acceptable ranges. Numbers in parenthesis are values recorded during the last inspection:

	Overall	A	B	O&M plan range
Pressure drop	5 (6.4)	4.8 (6.3)	4.8 (6.2)	3-8 in wc

Fan speed	N/A	124 amps	124 amps	Varies based on operating scenario. Minimum amps are 115 with casting on 1 taphole 189 amps – high alarm
Compressed air	132.1 (130)psi	N/A	N/A	100-150 psi
Inlet T	N/A	138.4 (125.1)	138.4 (126.1)	50-200 F

Inlet P was -3.2 in. w.c.

I also requested trend data for compressed air pressure, fan amps, and baghouse differential pressure for May 15. See Appendix A. Compressed air pressure was between 120 and 140 psi, baghouse differential pressure was between 0 and 12 in. w.c., and fan amps were between 150 and 180 amps. Compressed air and fan amps were within the acceptable range. Pressure drop appeared higher than the acceptable range at some points. AQD will follow up with the facility for an explanation.

It was raining during the inspection so I did not conduct Method 9 readings.

Jim Earl showed us where the emergency engines were located for the blast furnace. He stated that usage data is electronically recorded and trended.

B Blast Furnace Cast House (EGBBFCASTHOUSE)

The entire B blast furnace and casthouse were demolished and the site was prepared for reconstruction. However due to the bad economic climate the reconstruction project was temporarily stopped. There is no ongoing activity at the B blast furnace area during inspection.

Basic Oxygen Furnace Shop (BOF), Ladle Refining Facility (LRF) and Scarfing

We quickly walked through these processes. Below are the items of note:

- At the desulf station, 30 lbs/min is the ideal rate for Mg addition (as opposed to the prior rate of 40 -50) to control emissions causing by splashing; lime rate is 80 lbs/min but lime doesn't affect the splashing
- A slag layer has been placed below the desulf area and the BOF vessels to minimize emissions from splashing; Jim Earl stated majority of the opacity problem is when hot material hits the ground and kicks up dust
- ID fan at the desulf was at 65 amps; this is the new minimum through PTI 182-05C that must be reached before additions occur at the desulf
- Observed a hot metal charge at B vessel; emissions appeared to be very well captured
- Majority of Mn is added during tapping of the BOF vessel into a ladle
- Coke is received by rail
- Terminology: Klein moves the ladles; Kress is the slab hauler, and then there is a slag pot hauler

We also viewed the kish watering station that is being constructed by Levy company. Mr. Earl stated that 10 additional slag pots had to be purchased and they are of a different design because prior ones could not be carried by the heavy equipment.

RULES/PERMIT CONDITIONS EVALUATED

Permit to Install 182-05C was issued on May 12, 2014. Hourly and yearly limits have changed from PTI 182-05B based on numerous stack tests that have been conducted in the last several years and especially throughout 2013. Another round of testing is due within three years of permit issuance. At this time, facility in in compliance with hourly limits in the permit that are based on stack testing as that is how the limits were derived.

The iron production limit for the C blast furnace did not change from PTI 182-05B to C. **IN COMPLIANCE.** The limit is as follows: Total iron production for both furnaces combined shall not exceed 3,321,500 tons per 12 month rolling time period. The company's MAERS records show that during 2013, C Blast Furnace has a total iron production of 2,159,620 tons.

EUCFURNACE

At this time, I did not request various maintenance records at the C blast furnace as Title V deviation reports self reported on going gaps in performance of maintenance and recordkeeping. A violation notice was issued in April 2014; resolution is still pending due to the open enforcement action.

VE readings for C blast furnace bleeder – I requested certified VE readings of bleeder openings from Jan 2012 – present. All readings indicate compliance with R301; 20%, 6 minute average (Appendix A). I asked Jim Earl whether the readings were during start up or shut down. He stated that they were all conducted during shut down. I requested that the facility take readings during start up as well.

VI.4 – **IN COMPLIANCE.** Log of bleeder openings and investigation into cause was provided for 2014. Appendix A.

VI.22 – **IN COMPLIANCE.** Bag leak detection alarms and corrective actions taken for 2014 were provided. Appendix A.

Emergency generators – Hours of operation: **IN COMPLIANCE.** Each engine is limited to 500 hours of operation per 12 month rolling time period. All generators are well below this limit. See Appendix A.

Note, 2013 MAERs data indicates several exceedances of yearly limits due to exceedances of hourly limits based on stack test results. Facility has already been cited several times for these stack test failures which resulted in a revised PTI issued on May 12, 2014 (182-05C). Therefore, AQD is not reciting the facility for violations.

FGANNEALFURNACES

VI.2 **IN COMPLIANCE**. Monthly natural gas usage log for 2014 submitted. Appendix A.

COMPLIANCE DETERMINATION

AQD issued a violation notice on April 15 based on a review of last several Title V deviation reports which indicated on going issues with performing and documenting inspections and maintenance, failure to follow the MACT continuous parametric monitoring plan for fan amps and damper positions, and excessive opacity deviations at the ESP stack. These items are currently unresolved. Also, at this time, there is a pending open enforcement action between DEQ/EPA/DOJ and Severstal. For these reasons, non compliance was chosen.

Items for follow up:
Coke – Material receipt and handling
Natural gas usage tracking for suppression activities
Beaching procedures

Note, I informed Jim Earl that AQD was not in agreement with the May 6, 2014 VN response claiming beaching is subject to R 301. It is a fugitive emission source and subject to VE limits in Act 451 Part 55 Section 5524.

NAME Katie Hottle DATE 6/15/14 SUPERVISOR W. M