



October 21, 2015

Ms. Katherine Koster
State of Michigan, Department of Environmental Quality
Air Quality Division, Southeast District
3058 W. Grand Blvd, Suite 2-300
Detroit, MI 48202

SENT VIA ELECTRONIC MAIL AND CERTIFIED MAIL

**SUBJECT: United States Steel Corporation – Great Lakes Works
No. 2 BOP Shop Roof Monitor & Self reported deviations Jan. 1 – June 30,
2015
Violation Notice dated September 30, 2015**

Dear Ms. Koster,

On or about October 5, 2015, U. S. Steel – Great Lakes Works (U. S. Steel) received a violation notice (VN) dated September 30, 2015 from the Michigan Department of Environmental Quality (MDEQ) regarding an alleged abnormal emission event that was reported as observed by MDEQ. The Department alleges that the incidence occurred on August 26, 2015. In the notice, MDEQ alleges U. S. Steel incurred a 3-minute opacity average of 46% in excess of the 20% 3-minute average opacity limit as observed by the Department at the BOP Shop roof monitor. This would be a violation of MI Rule 336.1364(2) and 40 CFR Part 63 Subpart FFFFF, Table 1.12 as incorporated by reference in Table F-01.07, Condition II.B.3 and Consent Order AQD No. 1-2005, Paragraph 11.A.3and (e).

After MDEQ was reported to have observed the emissions from the BOP Shop roof monitor, , U. S. Steel received a call from the Department to inform U. S. Steel of an alleged exceedance. In response, U. S. Steel expeditiously investigated the allegation and reviewed BOP Shop operations and activities. During the investigation, U. S. Steel determined that any abnormal emissions during the reported time frame (3:36 PM and 3:39 PM) could have been caused from a malfunction of Vessel 25 sand seal. Once identified, repairs were immediately scheduled and completed to the seal. During the September maintenance outage, U. S. Steel took additional action and further refurbished the No. 25 Vessel sand seal.

As MDEQ is aware, U. S. Steel submitted its semi-annual report as required by Great Lakes Works' Title V ROP No. 199600132d. Within the report was a list of all self reported visible emissions deviations incurred by U. S. Steel at the the No. 2 BOP Shop at the roof monitor from January 1, 2015 through June 30, 2015. The report also, if applicable, provided detailed corrective actions taken to prevent reoccurrence. Thus, while the Department has requested information as to corrective actions regarding the deviations, U. S. Steel has already provided the Department with the corrective actions in its deviation reports which were the basis of the notice. Since the Department is requesting the information again, U. S. Steel resubmits the following:



On 1/22/2015, during heat No. 25-0371 at approximately 10:38 AM, abnormal emissions were seen exiting the BOP Shop Roof Monitor. Certified Method 9c observations recorded reached 32% as a 3-minute average.

The incident was investigated and it was found that that a large skull had built up on the bottom of the lance. The skull, upon removal from the vessel, came in contact with and jarred the thimble. Immediately following the completion of the heat, No. 25 Vessel was removed from service and the damaged thimble replaced and skull removed. As a continuous improvement project and to minimize the chance for skulls to build up on the lance, U. S. Steel is in the process of switching over from standard lances to post combustion lances.

On 1/22/2015, during heat No. 25-0371 at approximately 11:31 AM, abnormal emissions were seen exiting the BOP Shop Roof Monitor. Certified Method 9 observations recorded reached 26%.

The incident was investigated. The abnormal emissions were observed at the east end of the BOP Shop roof monitor and were emitted from the east desulfurization station during the skimming process. Slag skimmed into Pot #52 reacted adversely due to moisture present in the pot and released the abnormal emission.

As pots are cooled at the slag watering station operated by Edward C. Levy Co, moisture has the potential to exist in the pots. To minimize the chance of reoccurrence, Levy is bringing the pots back to U. S. Steel at a higher temperature to evaporate any remaining water and U. S. Steel is waiting longer before placing pots back into service to allow for complete evaporation to occur.

On 2/17/2015, during the charging of heat No. 25-0714 at approximately 1:51 PM, abnormal emissions were observed exiting the BOP Shop roof monitor. Method 9c readings averaged 21% and 22% consecutively as 3-minute averages.

A thorough investigation of the abnormal emission event was conducted but failed to yield any definitive results. U. S. Steel investigated the scrap charge, molten iron chemistries, vessel tilt angle, charge rate, baghouse differential pressures, fan amps, etc. The investigation found that all parameters were within the normal ranges. To date, U. S. Steel has been unable to identify the cause of the abnormal emissions but continues to closely monitor charging activities.

On April 17, 2015 at approximately At 6:29 PM and 6:35 PM which coincided to 10 minutes into the oxygen blow on Vessel No. 25, a significant slopping event occurred. The opacity measured via the COM reached a 6-minute average of 23% and 21%, respectively. In addition, abnormal emissions were visible exiting the roof monitor.

Upon review of the sequence of events, the abnormal emission occurrence was a result of significant slopping on No. 25 Vessel. Slopping occurred approximately 10 minutes into the heat and was attributed to a severely adverse chemical reaction from the scrap. For a generic understanding of the steelmaking process, the first 10 minutes of the oxygen blow are simply heating up the molten iron and scrap within the vessel. At around the 10 minute mark, the molten iron is hot enough that scrap added to the vessel prior to molten iron charging reaches its melting point. It is at this point in the oxygen blow that chemical, instead of physical, reactions



begin to occur. A significant adverse reaction occurred with the scrap and molten iron. The oxygen blow was immediately halted when the slopping event occurred.

After it was determined that the cause of the abnormal emission event was attributed to the scrap charge, a review of the quantities and types of scrap mixture was conducted. This was a very normal scrap mixture and is regularly utilized on several grades of steel. Nothing abnormal was identified to be present within the mixture. U. S. Steel has concluded that something present in the physical scrap blend itself was the cause for the adverse reaction.

On 5/28/2015, U. S. Steel incurred a 3-minute opacity average visible at the BOP Shop Roof Monitor of 31%. The abnormal emission event was witnessed during charging activities on No. 25 Vessel.

The incident was reviewed. It appeared that an abnormal reaction occurred during the charge. High flaming was exhibited during the charge of molten iron into the vessel and the emissions overwhelmed the capture hoods.

On 6/24/15 beginning at 3:02 PM on heat no. 25-3000, abnormal emissions were observed at the BOP Shop Roof Monitor and reached a 3-minute average opacity of 21%.

After investigation, personnel identified slight deterioration of a steam seal. The deterioration of the seal allowed emissions to escape capture and bleed through the seal. The fugitive emissions then exited via the roof at the BOP Shop Roof Monitor.

As soon as the root cause for the abnormal emission event was identified, No. 25 Vessel was taken out of service for repair. Both the steam ring and thimble were replaced and the vessel brought back online.

We would be pleased to address any questions or concerns the MDEQ may have. If you have any questions regarding this matter or require additional information, please contact Alexis Piscitelli at 313-749-3900.

I certify that based off information and belief formed after reasonable inquiry, the information provided in this response is true and correct to the best of my knowledge and information.

Sincerely,

A blue ink signature of James Gray, consisting of several overlapping loops and a long horizontal stroke.

James Gray
General Manager
U. S. Steel – Great Lakes Works

A black ink signature of Alexis Piscitelli, written in a cursive style with a long horizontal stroke at the end.

Alexis Piscitelli
Director, Environmental Control
U. S. Steel – Great Lakes Works

cc: Dave Hacker (USS)