

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: On-site Inspection**

A780954562

<b>FACILITY:</b> U S STEEL GREAT LAKES WORKS		<b>SRN / ID:</b> A7809
<b>LOCATION:</b> 1 QUALITY DR, ECORSE		<b>DISTRICT:</b> Detroit
<b>CITY:</b> ECORSE		<b>COUNTY:</b> WAYNE
<b>CONTACT:</b> Nathan Ganhs , Environmental Engineer		<b>ACTIVITY DATE:</b> 08/11/2020
<b>STAFF:</b> Katherine Koster	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MEGASITE
<b>SUBJECT:</b> FY20 Targeted Inspection - CGL		
<b>RESOLVED COMPLAINTS:</b>		

Reason for Inspection: FY2020 Targeted Inspection

Targeted Inspection – Continuous Galvanizing Line, Electrogalvanizing Line, HSM, Delray, PCI

Level of Inspection: PCE

Inspected by: Katie Koster, AQD

Personnel Present: Nathan Ganhs, Environmental Engineer

Facility phone number: 313-749-3857, 313-378-1612 (cell)

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### **FACILITY BACKGROUND**

United States Steel, Great Lakes Works (USS – GLW) 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.

This inspection report focuses on the continuous galvanizing line (CGL) and the electrogalvanizing line (EGL), and visible emissions observations for several emission units as well as hours of operation for the hot strip mill generators. The hot strip mill was temporarily idled in June 24, 2020. The electrogalvanizing line has been inoperable since July 2015.

### **COMPLAINT/COMPLIANCE HISTORY**

No complaints have been received related to the equipment inspected in this report.

### **OUTSTANDING CONSENT ORDERS**

The CGL is operating under Consent Order 33-2015 as a stack test and inspection revealed that the facility was operating the annealing furnace without the use of the selective catalytic reduction system which is a pollution control device for NOx. As such, they were not meeting the NOx limit.

A burner had to be installed in the ductwork before the SCR system in order to ensure the temperature of the furnace exhaust gas entering the SCR system was sufficient to initiate the reaction to control NOx.

Consent Order 50-2014 was the originally issued consent order which was revised to CO 33-2015 which adjusted the compliance timeline and increased the monetary penalty.

The HSM is not operating under any consent orders although it is an emission unit that is part of the proposed SO2 non-attainment SIP for a portion of Wayne County.

Two of the emergency generators associated with the HSM operations were referred to the enforcement unit for failure to obtain a PTI and the facility refused to apply for one for an extended period of time. However, a permit application was finally submitted, and no further enforcement action was warranted.

### **OUTSTANDING VNs**

There are no outstanding Violation Notices related to the equipment that was inspected.

### **INSPECTION NARRATIVE**

On August 11, 2020, AQD inspector Katie Koster arrived at USS around 10:00 am and proceeded to the CGL with Mr. Nathan Ganhs, USS Environmental Engineer. We met with Mr. Al Blevens, manager, and he presented some of the environmental records associated with the CGL. We walked part of the line and went into the Center Pulpit control room and I recorded the following values:

Urea flow: 6.34 gph

Inlet T: 680F(present value); 725F (set value)

NOx analyzers: NOx corr – 1.13 lb/hr, NO – 0.635, NO2 – 0.972, NOx – 1.614, O2 – 8.5720

Precleaner scrubber flow – 49.2 gpm

#### Continuous Galvanizing Line

Zinc galvanizing is performed on steel that will be used on “exposed” parts which have a high likelihood of rusting. Annealing occurs first to soften and improve the formability of the steel strip prior to being coated with zinc. The galvanizing line is composed of a welder/tension leveler controlled by a dust collector, an electrolytic caustic precleaner controlled by a mist scrubber, a strip dryer, an annealing furnace controlled by selective catalytic reduction unit, cooling tower, zinc dip tank, dryers, and a line oiler and a new phosphorus chromate coating section. The new coating section is to provide an extra layer of corrosion resistance but it has not been put into operation yet as there are no customers. There are 1.3 miles of steel running through the line at any given time.

Some parts are galvanealed and some are galvanized which is essentially the same but results in a matte vs. spangled finish; it depends on the customer preference. Natural gas fired edge burners are used in the galvanealing process to ensure the edges of the steel strip are maintained at the proper temperature. First, the off-gauge part of the steel coil is cut off at the entry end of the process and two coils are welded together. After the welder and tension leveler, the strip enters the electrolytic cleaning process. The cleaning tank contains an NaOH solution and four brushes scrub the steel strip. Hot water is used which is heated with residual heat from the annealing furnace. The process is controlled by a water scrubber which runs continuously. Once per shift, the water flow rate is recorded and twice a year the inside of the scrubber is cleaned. There is also a low flow alarm. During the inspection, I recorded a water flow rate of 57.5 gpm. The system is set to alarm at 35 gpm or lower as a low flow condition. In the center operators’ pulpit, the scrubber flow was also registering at 58 gpm. The scrubber was replaced in 2016.

Next, we proceeded to the annealing furnace where the temperature can be as high as 2000F. NOx emissions from the furnace are controlled by the SCR system whereby urea is injected in the exhaust gas from the furnace to convert the NOx to N<sub>2</sub>, H<sub>2</sub>O, and CO<sub>2</sub>. There is also a catalyst bed present to foster the necessary reaction. The urea injection rate is dependent upon the measured NOx value before the gas stream enters the control device and is constantly changing. The exhaust gas has to be at a minimum temperature before urea is injected. Facility has the set point at 600F. If the exhaust gas/inlet gas to the SCR is not at the required minimum temperature for a reaction to occur, a burner is present that automatically turns out to heat the air. Previously, there was no duct burner and the facility was not using the SCR when the temperature was not at the minimum needed for a reaction. Stack testing revealed the NOx hourly limits could not be met during this scenario. This was the subject of CO 33-2015 and resulted in the burner being installed. According to USS, there is no scheduled preventative maintenance for the burner as it is apparent whether it is working. The NOx and O<sub>2</sub> inlet and exit analyzers self-calibrate every day and there are quarterly audits of the calibration gas cylinders. At the time of the inspection, the NO analyzer was reading 2.79 ppm, NOx was 3.21 ppm, and NOx corrected was 1.08 lb/hr. The urea tank is nearby and has a low-level alarm. At the time of the inspection, urea flow was 6.0 gph and urea tank level was 3.05. In the center pulpit, I observed that the duct burner was not on because the inlet temperature was already at 771.5F.

After exiting the furnace, the strip enters a cooling tower because if it is too hot, it will collect too much zinc and the excess zinc will stick to rollers in the line. The strip exits the furnace around 1480F and enters the 300 ton molten zinc bath at around 920F. There is a zinc premelt pot which is necessary to control the aluminum content in the pot. Next, the strip enters skin pass mill (temper mill) where it is sprayed with a 1% rolling solution to prevent rolling defects, then the electrostatic oiler for rust prevention, and the vertical looper. Four different oils were previously in use but at this time only Ferrocote 61MAL and 61A are being applied. Quaker Chemical reports the usage to USS based on how much they have ordered and how much Quaker comes to take away in waste. The permit was modified to apply a phosphorus and chromate coating in 2015 (98-15, 219-06B). Nitrogen and hydrogen are used for cooling plus water. The presence of oxygen will cause scaling. Finally, the strip is recoiled and packaged. According to Mr. Blevens, USS GLW can make and process jumbo rolls through the CGL which is the only operation that can domestically.

Edge burners are used when products are galvanealed. There is a separate natural gas meter solely for the edge burners. Natural gas usage is recorded every turn from the DSC center pulpit. The natural gas usage for the edge burners is read at the end of each month.

During the most recent stack test, the urea injection rate fluctuated between 5.66-6.83 gal/hr and the edge burners were not in use.

Mr. Blevens also mentioned that zinc rusts white and the steel has to be the same temperature as the zinc for proper coating.

#### Hot Strip Mill

The hot strip mill has been idled as of June 2020. At this time, I reviewed the visible emissions readings that were conducted every six months. There are two generators at the hot strip mill. A log of the hours of operation is attached.

### Electrogalvanizing Line

This equipment is no longer in operation. It was shut down several years ago when USS purchased the old Double Eagle Facility in Dearborn (DESCO) on Miller Road to perform electrogalvanizing. See attached email. The Dearborn facility was temporarily idled in November 2019.

### Vacuum Degas Boiler and Main Plant Boiler

Method 9 readings are required for each of these emission units.

### **APPLICABLE RULES/PERMIT CONDITIONS**

Permit to Install (PTI) 219-06B addresses excess NO<sub>x</sub> emissions from the CGL with the installation of a duct burner to heat the gas entering the SCR to ensure it is at the proper temperature for a reaction. PTI 98-15 was issued to modify the cleaning section of the CGL and add a new phosphate and chromic acid coating operation. The following conditions are from PTI 98-15. This permit has not yet been incorporated into existing ROP. There are no other conditions in the existing ROP that would conflict with this PTI or that are not covered in the PTI.

### **The following conditions apply to EUCON-GALV-LINE-S1**

Continuous galvanizing operations including: 1. Continuous galvanizing line 2. Continuous galvanizing line annealing furnace 3. Continuous galvanizing line selective catalytic reduction unit with exhaust gas NO<sub>x</sub> and Oxygen analyzers 4. Burner to heat exhaust if needed before entering the selective catalytic reduction unit 5. Continuous galvanizing line oiler 6. Continuous galvanizing line pre-cleaner mist scrubber 7. Phosphorus and Chromate coating section

### **POLLUTION CONTROL EQUIPMENT: Pre-cleaner mist scrubber and Selective Catalytic Reduction Unit.**

#### **I. EMISSION LIMITS**

1. Total combined nitrogen oxide emissions as nitrogen dioxide (NO<sub>x</sub>) is limited to 7.24 pounds per hour from the EUCON-GALV-LINE-S1 Annealing Furnace, including the burner and the edge burners of the hot dip galvanizing line in the G-Building.

**IN COMPLIANCE. For the Annealing Furnace, the NO<sub>x</sub> emissions were 0.3 lb/hr based on the April 2018 stack test; the permit limit is 6.6 lb/hr.**

2. Total combined nitrogen oxide emissions as nitrogen dioxide (NO<sub>x</sub>) is limited to 27.51 tons per year based on a 12-month rolling time period as determined at the end of each calendar month for the EUCON-GALV-LINE-S1 Annealing Furnace and the edge burners of the hot dip galvanizing line in the G-Building.

**IN COMPLIANCE. Based on the attached records, the highest twelve month rolling NO<sub>x</sub> emissions from January 2019 through May 2020 were 0.93 tons in January 2019.**

3. Total combined nitrogen oxide emissions as nitrogen dioxide (NO<sub>x</sub>) are limited to 6.6 pounds per hour as determined by the average of three one-hour time periods by testing or otherwise determined by the testing protocol agreed upon by AQD. This applies to EUCON-GALV-LINE-S1 Annealing Furnace controlled by a Selective Catalytic Reduction (SCR) unit.

**IN COMPLIANCE. Based on the most recent April 2018 test result, NO<sub>x</sub> emissions were 0.3 lb/hr; prior test in 2013 was 0.2 lb/hr.**

4. Total combined nitrogen oxide emissions as nitrogen dioxide (NO<sub>x</sub>) 25 tons per year based on a 12-month rolling time period as determine at the end of each calendar month from EUCON-GALV-LINE-S1 Annealing Furnace controlled by a Selective Catalytic Reduction (SCR) unit.

**IN COMPLIANCE. The highest twelve month rolling NO<sub>x</sub> emissions from January 2019 through May 2020 were 0.93 tons in January 2019. See attached records.**

5. Particulate Matter is limited to 0.26 pounds per hour as determined through reference test method 5 from the EUCON-GALV-LINE-S1 Electrolytic cleaning process equipment controlled by a cross flow packed bed scrubber system.

**IN COMPLIANCE. Most recent testing was conducted on April 5, 2018. Based on the TPU review, the Pre-Cleaner Scrubber results were 0.03 lb PM/hr, the permit limit is 0.26 lb/hr. Prior stack test was conducted on March 13, 2013 and results were 0.04 lb/hr.**

6. VOC is limit to 28.91 tons per year based on a 12-month rolling time period as determined at the end of each calendar month from the EUCON-GALV-LINE-S1 Rust preventive oil application electrostatic spray unit operation.

**IN COMPLIANCE.** Based on the attached records, highest 12 month rolling VOC emissions from January 2019 through March 2020 were 10.58 tons.

7. VOC content is limited to 0.44 pound per gallon of oil per Method 24 or other AQD approved method for the EUCON-GALV-LINE-S1 rust preventive oil application electrostatic spray unit operation.

**IN COMPLIANCE.** Based on the SDS's, the highest VOC content of the oils used is 0.44 lb/gal for Ferrocoate 61MAL HCL.

8. Ammonia is limited to 1.44 pounds per hour as determined by the average of three one-hour time periods by testing or otherwise determined by the testing protocol agreed upon by AQD from EUCON-GALV-LINE-S1 Annealing furnace controlled by SCR unit.

**IN COMPLIANCE.** Based on the most recent stack test in April 2018, the ammonia emissions were 0.84 lbs/hr; the permit limit is 1.44 lb/hr. Prior test results from May 2013 were 0.6 lb/hr of ammonia.

9. Phosphoric Acid is limited to 4.4 pounds per hour on a 24-hour average from the EUCON-GALV-LINE-S1 Phosphorus and Chromate Coating operation.

**IN COMPLIANCE.** Highest usage was approximately 2 pounds per hour in March 3, 2020. Need clarification if it is a block or rolling average.

## **II. MATERIAL LIMITS**

1. 850,000 tons galvanized steel processed per year based on a 12-month rolling time period as determined at the end of each calendar month from EUCON-GALV-LINE-S1.

**IN COMPLIANCE.** From January 2019 through May 2020, the highest 12 month rolling tons of galvanized steel produced was 487,546 tons in May 2019. See attached.

2. 838.6 million cubic feet per year of natural gas based on a 12-month rolling time period as determined at the end of each calendar month from EUCON-GALV-LINE-S1 Annealing Furnace, including the duct burner, and edge burners.

**IN COMPLIANCE.** From January 2019 through May 2020, the highest 12 month rolling natural gas usage was 391.677 MMCF in January 2019. See attached.

3. Phosphoric Acid is limited to 105.6 pounds per day on a 24-hour average from the EUCON-GALV-LINE-S1 Phosphorus and Chromate Coating operation.

**IN COMPLIANCE.** Highest usage was approximately 50 pounds per day on a 24-hour average in March 3, 2020. Need clarification if it is a block or rolling average.

## **III. PROCESS/OPERATIONAL RESTRICTIONS**

1. The permittee shall not operate the continuous galvanizing line, EUCON-GALV-LINE-S1, unless an Operation and Maintenance Plan (OMP) as described in Rule 911(2) has been submitted to the AQD District Supervisor. The permittee shall submit an updated OMP including the burner no later June 29, 2016, or 210 days after the issuance of Permit to Install 219-06B, whichever is later. The OMP shall include monthly inspections of all systems associated with the urea feed system, describe preventative maintenance consistent with the manufacturer's recommendations, and include a requirement for periodic determination of the functional viability of the catalyst. The OMP shall also include a requirement to repair any defect that could reasonably be expected to result in non-compliance identified during any inspection within a reasonable time period.

**IN COMPLIANCE.** The OMP and MAP were received on June 30, 2016. The main update was the addition of the duct burner and the catalyst is checked annually and either cleaned or replaced. The latest version of the plan was requested by AQD and is attached. It appears to be the same version that was received before on June 30, 2016. According to the attached email, the catalyst was last changed 2 years ago. US Steel uses a third-party each year to verify that the catalyst is still in good condition.

2. The permittee shall not operate the continuous galvanizing line, EUCON-GALV-LINE-S1, unless a Malfunction Abatement Plan (MAP) as described in Rule 911(2) has been submitted to the AQD District Supervisor. The permittee shall submit an updated MAP including the burner no later than June 29, 2016, or 210 days after the issuance of Permit to Install 219-06B, whichever is later. The MAP shall include the annealing furnace controlled by the SCR unit, the burner, and the electrolytic cleaning equipment controlled by a packed bed scrubber. It shall address alarm conditions that indicate abnormal functioning of the system including the operating parameter values and associated averaging time that would trigger the alarm.

**IN COMPLIANCE.** The OMP and MAP were received on June 30, 2016. The main update was the addition of the duct burner. Facility claims there is no averaging time for the alarms in the attached email. The alarms are instantaneous.

3. The permittee shall submit the OMP and MAP and any amendments to the OMP or MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the OMP, MAP, amended OMP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the OMP/MAP within 45 days, if new equipment is installed. The permittee shall review the OMP/MAP upon request from the District Supervisor.

**IN COMPLIANCE.** Documents were submitted. AQD did not issued a formal approval so the plans were approved by default after 90 days.

#### **IV. DESIGN/EQUIPMENT PARAMETERS**

1. The SCR unit shall be equipped with an automatic urea feed injection system controlled by an automatic control system based on feedback and feed forward controls. This automatic control system shall be equipped with an alarm that will indicate any abnormal functioning of the system as described in the MAP.

**IN COMPLIANCE.** Automatic control system is in place. Urea flow rate alarm would be main indicator of abnormal functioning. Alarms flash on the HMI screen in the operator's pulpit and they are recorded in the shift report.

2. The permittee shall not operate the electrolytic cleaning process equipment unless the cross flow packed bed scrubber is installed and operating properly. A minimum water flow rate of gallons per minute or other rate established during compliance testing shall be maintained. The permittee shall install a flow gauge to measure the water flow rate. Note, there is a typo in this condition, "a minimum flow rate of gallons per minute" but 30 gpm is referenced in condition VI.9.

**IN COMPLIANCE.** Water flow gauge is installed and routinely calibrated. During the inspection, I recorded a flow rate of 49.2 gpm (prior inspection was 57.5 gpm). According to the OMP/MAP, flow rate below 35 gpm triggers an alarm. The scrubber is inspected on a monthly, quarterly, and yearly schedule. I did not obtain the inspection records this time.

3. NO<sub>x</sub> and Oxygen concentrations in the exhaust gases from the annealing furnace controlled by the SCR unit shall be monitored using NO<sub>x</sub> and Oxygen analyzers and the automatic calibration equipment shall be programmed pursuant to the manufacturer's specifications on a time frame acceptable to the AQD District Supervisor.

**IN COMPLIANCE.** NO<sub>x</sub> and O<sub>2</sub> analyzers are installed and calibrated. Automatic calibrations occur at monthly intervals. Outside contractor calibrates the analyzers at quarterly intervals. See attached records.

4. Effective April 30, 2016 or 150 days after the issuance of Permit to Install 219-06B, whichever is later, the permittee shall not operate the galvanizing line unless the SCR unit and associated burner are installed and operating properly. Proper operation includes, but is not limited to, maintaining a minimum catalyst bed inlet temperature of 475 degrees Fahrenheit during production mode of operation. The unit shall be considered in production mode if the main burners are firing and the product is moving through the continuous annealing furnace.

**IN COMPLIANCE.** A letter was received that burner was installed on May 6, 2016. Catalyst bed temperature was above the minimum of 600F, which is the facility's set point, during the inspection. On the "Center Section Checklist" (attached), the exhaust temperature entry is recorded once per shift and also alarms on the operator control screen if it is too low. Burner turns on/off automatically based on the temperature set point.

5. Effective 150 days after the issuance of Permit to Install 219-06B, the permittee shall not operate the galvanizing line unless the SCR alarms monitoring the catalyst bed inlet temperature and urea injection rate are installed, maintained, and operating properly as specified in the OMP and MAP. The unit shall be considered in production mode if the main burners are firing and the product is moving through the continuous annealing furnace.

**IN COMPLIANCE.** There are reportedly alarms that flash on the HMI control screen for inlet temp and urea injection rate. Operators cannot use the control screen without acknowledging the alarm. An automated email also goes out to managers.

## V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1201(3))

1. The permittee shall conduct a nitrogen oxides and ammonia emission test from the annealing furnace/SCR unit during operation once every five years or more frequently upon the request of AQD. Nitrogen oxides emission testing shall be performed using Reference Method 7E or other approved method and ammonia emission testing shall be performed using an approved method. No less than 30 days prior to testing, a complete stack test protocol must be submitted to AQD for approval. The final plan must be approved by the AQD prior to testing.

**IN COMPLIANCE. The most recent test was performed in October 2018 and prior to that in October 2013. The SCR was in operation during the testing this time. For 2018, stack test results for the CGL Annealing Furnace and Pre-Cleaner Scrubber were received on June 4. Testing was conducted on April 5, 2018. Test plan was received on February 23, 2018 and approval letter was issued on March 15, 2018. Results were reviewed by Ms. Gina Hines, TPU, on July 9. The test was originally scheduled for March but according to USS, the furnace broke down, and the test had to be rescheduled.**

2. The permittee shall conduct a particulate matter emission test from the cross flow packed scrubber stack during operation once every five years or more frequently upon the request of AQD. Particulate emission testing shall be performed using Reference Method 17 or other approved method. No less than 30 days prior to testing, a complete stack test protocol must be submitted to AQD for approval. The final plan must be approved by the AQD prior to testing.

**IN COMPLIANCE. The most recent test was performed in October 2018 and prior to that in October 2013.**

## VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1201(3))

1. The permittee shall monitor NO<sub>x</sub> and Oxygen concentrations in the exhaust gases from the annealing furnace controlled by the SCR unit using the NO<sub>x</sub> and Oxygen analyzers. The permittee shall continuously monitor outlet NO<sub>x</sub> concentration and record the concentration once per shift as an indicator of proper operation of the Selective Catalytic Reduction (SCR) during production mode of operation. The unit shall be considered in production mode if the main burners are firing and the product is moving through the continuous annealing furnace.

**IN COMPLIANCE. I viewed the continuous monitoring of the NO<sub>x</sub> and O<sub>2</sub> concentrations from the analyzers. NO<sub>x</sub> corrected, which is the NO<sub>x</sub> value after SCR treatment is recorded once per shift on the Center Section Checklist (attached).**

2. The permittee shall continuously monitor the urea injection rate and record at least once per shift as an indicator of proper operation of the SCR during production mode of operation. In the event the urea injection rate alarm is triggered, corrective action must be initiated to determine the cause of the alarm within 1 hour of the alarm. The unit shall be considered in production mode if the main burners are firing and the product is moving through the continuous annealing furnace.

**IN COMPLIANCE. Urea flow is continuously monitored as shown on the operators HMI screen and recorded once per shift on the Center Section Checklist (attached). If there is an alarm triggered during the operator's shift, it flashes on the HMI screen and is noted in the Checklist or Turn Manager Shift Report (attached) in the comment or operational issues section. An email is automatically generated and sent to management. According to Mr. Ganhs, no alarms have been generated.**

3. The permittee shall continuously monitor catalyst bed inlet temperature and record the inlet temperature at least once per shift as an indicator of proper operation of the SCR. In the event the catalyst bed inlet temperature alarm is triggered, corrective action must be initiated to determine the cause of the alarm within 1 hour of the alarm.

**IN COMPLIANCE. Inlet temperature is recorded at least once per shift on the "Center Section Checklist" (example attached). Alarms are visible on the operator control screen if it is too low. Mr. Blevens stated that USS will change the nomenclature from exhaust temp to SCR entry temp or something similar for more clear indication of the temperature that is being portrayed. If there is an alarm triggered during the operator's shift, it flashes on the HMI screen and is noted in the Checklist or Turn Manager Shift Report (attached) in the comment or operational issues section. An email is automatically generated and sent to management. According to Mr. Ganhs, no alarms have been generated.**

4. An excursion is a departure from the indicator range defined in the MAP and/or OMP. Upon detecting an excursion or exceedance, the owner or operator shall restore operation of EUCON-GALV-LINE-S1 (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions).

**UNKNOWN. Facility claims that no excursions have been experienced as there have been no alarm conditions.**

5. The permittee shall conduct a cylinder gas audit on the NO<sub>x</sub> and Oxygen analyzers once each calendar quarter to assess the accuracy of the data collected by the monitors using a method acceptable to the AQD District Supervisor.

**IN COMPLIANCE. Cylinder gas audits are performed quarterly and were presented during the inspection.**

6. The permittee shall record each occurrence of abnormal functions by the automatic control system of the automatic urea feed injection system of the SCR as defined in the MAP and make the records available to AQD upon request.

**IN COMPLIANCE. See attached email. Facility is reporting that there have been no abnormal functions of the injection system or the SCR. According to the facility, a system is in place to review the alarms recorded on the shift report by a manager who signs off on the report and no alarms have been triggered.**

7. The permittee shall keep records of the total amount of galvanized steel processed per month and rolling 12-month time period as determined at the end of each calendar month. These records shall be made available to AQD upon request.

**IN COMPLIANCE. Monthly and 12 month rolling values for 2019 and part of 2020 are attached.**

8. The permittee shall keep records of the total amount of urea usage per day and make the records available to AQD upon request

**IN COMPLIANCE. Urea usage is tracked daily. See attached daily urea records.**

9. The permittee shall keep records of the water flow rate reading in the cross flow packed bed scrubber daily and make the records available to AQD upon request. Permittee shall take appropriate corrective action if flow rate is below minimum of 30 gallons per minute or other flow established during stack testing and shall keep records of corrective action taken:

**IN COMPLIANCE. At this time, a flow rate below 35 gpm triggers an alarm. No low flow alarms below 30 gpm have been triggered. See attached email. Flow rate is recorded daily on the shift report. See attached record.**

10. The permittee shall keep records of the calibration and maintenance activities conducted on the automatic calibration equipment for the NO<sub>x</sub> and Oxygen Analyzers and make the records available to AQD upon request.

**IN COMPLIANCE. Calibration and maintenance activities are regularly scheduled and records were submitted as part of AQD records request. See attached.**

11. The applicant shall keep a record of the following concerning the use of the rust preventive oil application electrostatic spray unit of the hot dip galvanizing line:

- a. The amount applied in gallons on a monthly and 12 month rolling basis as determined at the end of each calendar month.
- b. The VOC content of each oil applied
- d. VOC emission calculations determining the total mass emissions on a monthly and 12 month rolling basis as determined at the end of each calendar month.

(There is a typo in the permit and bullet point c is skipped)

**IN COMPLIANCE. See attached records.**

12. The permittee shall monitor and record the total and separate monthly natural gas usage for both the edge burners and the annealing furnace including the burner in a manner and with instrumentation acceptable

to the AQD District Supervisor. Acceptable instrumentation and manner of recording are natural gas meters and total natural gas usage summary every end of the month recorded by the permittee. The permittee shall keep records of the total natural gas usage for the annealing furnace and edge burners based on the 12-month rolling time period as determined at the end of each calendar month and make the records available to AQD upon request.

**IN COMPLIANCE. Monthly total and separate natural gas usage records for 2019 are attached.**

13. The permittee shall keep records of monthly and 12 month rolling NO<sub>x</sub> emissions calculations at the end of each calendar month for the annealing furnace and edge burners and make the records available to AQD upon request.

**IN COMPLIANCE. Monthly NO<sub>x</sub> emissions records are being maintained.**

14. The permittee shall maintain records as necessary to demonstrate compliance with the Operation and Maintenance Plan (OMP) including, but not limited to, records of inspections, maintenance and repair for the SCR system.

**IN COMPLIANCE. Records of inspections and maintenance of the SCR, including catalyst bed, were presented during the inspection.**

15. The permittee shall properly maintain the monitoring system including maintaining necessary parts for routine repair of the monitoring equipment.

**DID NOT EVALUATE. Did not evaluate the presence of parts for repair.**

16. Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the owner or operator shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit is operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for purposes of this part, including data averages and calculations or fulfilling a minimum data availability requirement, if applicable. The owner or operator shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

**DID NOT EVALUATE.**

17. The permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan and any activities undertaken to implement a quality improvement plan, and other information such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions.

**DID NOT EVALUATE.**

18. The permittee shall obtain the material safety data sheets (MSDS) for all coatings and cleaners used in EUCON-GALV-LINE-S1. The permittee shall maintain a copy of all versions of MSDS for each material utilized on-site with corresponding dates of material content changes on file and make them available to AQD upon request.

**IN COMPLIANCE. SDS sheets have been presented in the past. Coating have not been changed.**

19. Records are attached. The permittee shall keep the following information on a daily basis for EUCON-GALV-LINE-S1

- a. Gallons of each liquid material used containing phosphoric acid.
- b. Phosphoric Acid content of each material on a pound per gallon basisd.
- c. Calculation of the total pounds of phosphoric acid used per day
- d. Phosphoric Acid emission calculations determining the average hourly emission rate in pounds per hour based on daily use

The permittee shall keep the records in a format acceptable to the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request.

**IN COMPLIANCE. See attached records.**

20. The permittee shall maintain records of the date and time each time the urea injection or catalyst bed temperature alarm was triggered, date and time the corrective action was initiated, the corrective action taken, and the time and date when corrective actions were completed in response to an alarm. Records shall also contain the operating parameter and value that triggered the alarm and the value at the time the corrective action is completed.

**IN COMPLIANCE.** Facility claims that no alarms have been triggered. See attached email.

## **VII. REPORTING**

1. Each semiannual report of monitoring deviations shall include summary information on the number, duration and cause of excursions and/or exceedances and the corrective actions taken. If there were no excursions and/or exceedances in the reporting period, then this report shall include a statement that there were no excursions and/or exceedances.

**DID NOT EVALUATE.** No semi annual reports have been received.

## **VIII. STACK/VENT RESTRICTIONS**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted. **DID NOT EVALUATE.** Did not evaluate stack heights at this time. Gas is discharged unobstructed vertically upward.

## **IX. OTHER REQUIREMENTS**

1. The permittee shall comply with all applicable requirements of 40 CFR Part 64. **DID NOT EVALUATE.**

2. If the permittee identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the permittee shall promptly notify the AQD and if necessary, submit a proposed modification of the CAM Plan to address the necessary monitoring changes. Such a modification may include but is not limited to, reestablishing indicator ranges or designated conditions, modifying the frequency of conducting monitoring and collecting data, or the monitoring of additional parameters.

**NOT APPLICABLE.** No failures have been identified.

From Consent Order 33-2015, the following is the compliance program and implementation schedule:

9. A. Permit 1. No later than April 30, 2016 or 150 days after the issuance of Permit to Install 219-06B, whichever is later, the NOx emissions from EG-CON-GALV-LINE shall not exceed the emission rates specified in the Company's ROP that is in effect.

B. Compliance Schedule 1. No later than April 30, 2016 or 150 days after the issuance of Permit to Install 219-06B, whichever is later, the Company shall have completed the installation of the appropriate equipment and notified the AQD Detroit District Supervisor in writing that the installation of the appropriate equipment has been completed and operation of the equipment has commenced in accordance with the provisions of Permit to Install 219-06B, as amended.

**IN COMPLIANCE.** Consent Order 33-2015 - Permit issuance date was December 3, 2015. According to the letter received on June 6, 2016, as of May 6, 2016, the equipment required by AQD CO 33-2015 and PTI 219-06B has been installed. This met the 150 day window. The required equipment was a pre-burner for the SCR system to heat the incoming exhaust air from the annealing furnace to at least the minimum temperature needed for the SCR system. The SCR system has been tested and shown to achieve compliance with the NOX emission rates so the CGL should be achieving said emission rates with proper maintenance. Maintenance records and temperature records were presented during the inspection. The next stack test is due in 2018.

### **Hot Strip Mill Emergency Engines**

**IN COMPLIANCE.** The following engines are operating under PTI 19-16A, issued on July 1, 2016.

**EUEMERGEN4** A 2922 horsepower diesel-fueled emergency engine with a model year of 2006, and a displacement of less than 10 liters/cylinder. Ordered 11/7/2005, manufactured on 3/27/2006. Located by the 80" Hot Strip Mill (HSM) river pump house. August 2006 installation.

**EUEMERGEN5** A 2922 horsepower diesel-fueled emergency engine with a model year of 2006, and a displacement of less than 10 liters/cylinder. Ordered 11/7/2005, manufactured on 5/12/2006. Located by the 80" Hot Strip Mill (HSM) river pump house. August 2006 installation.

AQD performed a cursory review of the permit conditions related to these engines as most of the conditions are related to the NSPS IIII and RICE MACT ZZZZ for which AQD does not have delegation. However, based on the review, engines appear to be operating in compliance with the conditions:

- Facility reportedly purchased certified engines. Spec sheets with emission data and engine information were provided during the permitting process and are in the permit file. Based on the information in the exhaust emission data sheet, 2000DQKAB, the engines can meet the pollutant limits in the permit.
- Sulfur in fuel records were provided (attached) and facility is using ULSD.
- Run logs are maintained, USS needs to convert the information to a 12-month rolling basis but based on review it does not appear that the engines have exceeded 500 hours or 100 hours of operation per year.
- Permitted engine sizes appeared to match up with nameplate information.
- Non-resettable hour meters are in place
- Maintenance records were documented in the log book.
- Notification that the engines will be operated in a certified manner was required within 30 days. Letter was received on August 5 and dated July 29. I do not have the postmark date; discretion is being applied as it is very close to the July 31 deadline.

#### Electrogalvanizing Line

The electrogalvanizing line is no longer operating. Operations were transferred to the former Double Eagle Steel location on Miller Road that USS purchased. This includes the following emission units: EUEGL-OPERATIONS-S1, EUEGL-STO-TANKS-S1, and EUREACTOR-1-10-S1.

#### Visible Emissions Observations (VEO's)

Required visible emissions observations for the HSM, Main Plant Boiler, and Vacuum Degasser boiler were reviewed. No excess visible emissions were observed. See attached records.

#### Not in operation

As of March 30, 2020, facility has indefinitely idled most operations facility wide, including but not limited to Delray Connecting, Tube City IMS, Section 5 – PCI.

#### **APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS**

Fugitive dust measures were not evaluated during this inspection. However, process specific fugitive dust is not an issue for these EU's.

#### **MAERS REPORT REVIEW**

2019 MAERS report appears to be correct for the emission units evaluated. For the CGL, there are two columns one for injection and one for non injection. I asked Mr. Ganhs about this as injection should occur at all time while the furnace is processing steel. Below is part of the answer I received:

“The determination on the difference for injection vs non injection is based on PI data. The urea injection rate is tracked, so as long as it is greater than 0, it goes under the injection total and if it is 0 then it does not. The periods of Non-Injection I believe would be times where the Furnace is burning

NG, but we are not running. So, startups and likely delay periods when the furnace needs to be kept warm for example.”

Emergency generators are now in MAERS. They were missing from the report during the prior inspection of these units.

#### FINAL COMPLIANCE DETERMINATION

At this time, the facility appears to be in compliance with the conditions evaluated in this report.

NAME Katherine Koster

DATE 5/13/2021

SUPERVISOR April Wendling