

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

A780939801

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: 05/11/2017
STAFF: Katherine Koster	COMPLIANCE STATUS: Compliance
	SOURCE CLASS: MEGASITE
SUBJECT: FY2017 Scheduled Inspection - No 1 Argon, No 2 Argon/LMF, Vacuum Degasser, Slab Scarfing	
RESOLVED COMPLAINTS:	

Reason for Inspection: Targeted Inspection – #1 Argon, #2 Argon/LMF, Vacuum Degassing, Tube City

Level of Inspection: PCE

Inspected by: Katie Koster, AQD

Personnel Present: Nathan Gahns, Environmental Engineer

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

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 No. 1 Argon Stir Station, Ladle Metallurgy Facility and No. 2 Argon Stir Station, Vacuum Degassing, and Machine Slab Scarfing (operated by TMS International).

COMPLAINT/COMPLIANCE HISTORY

No complaints have been received related to the emission units evaluated in this report.

OUTSTANDING CONSENT ORDERS

No. 1 Argon is the subject of an active consent order, CO No.1-2016. The consent order is in response to failed stack tests at the No. 1 Argon Stir Station baghouse for particulate matter on a lb/heat and lb/hr basis.

OUTSTANDING LOVs

There are no outstanding LOV's related to the equipment that was inspected.

INSPECTION NARRATIVE

I arrived at the facility on May 8, 2017, and met with Mr. Nathan Gahns, Environmental Engineer. First, we viewed the No. 1 Argon stir station process and baghouse and then No. 2 Argon and the Ladle Metallurgy Furnace and baghouse. Next, we went to the vacuum degassing facility with a baghouse and flare and finally to TMS International (Formerly Tube City IMS) to observe slab scarfing controlled by a baghouse.

No #1 Argon Stir and Baghouse

The No. 1 Argon stir station was not in use during the inspection. This station is used infrequently. Heats processed at the No. 1 Argon go to the No. 1 Caster which is the lesser used of the two continuous casters. Heats come from the BOP Shop to the No. 1 Argon. Argon stirring is used to promote homogenization within the heat and allow inclusions in the steel to float to the top. Alloys, such as aluminum, are added when needed. A hood moves over the ladle and a lance is lowered through the hood and into the bath to bubble argon through the steel. The fumes are controlled by a baghouse.

Stirring cannot commence unless the hood is above the ladle. I viewed the hood and associated ductwork which appeared to be in acceptable condition. We went outside and viewed the baghouse, and the operator showed me the portions that had been replaced. USS replaced the top half of the baghouse due to fires in the baghouse last summer.

Ladle Metallurgy Facility/No #2 Argon Stirring and Vacuum Degassing

The bulk of the metal chemistry is adjusted at the BOP and the ladle metallurgy operations are for "trimming" or "tweaking" the heat or maintaining heat in the ladle through argon stirring if there are problems at the caster or raising the temperature with electrodes using the LMF. LMF and #2 Argon are two separate stations controlled by a single baghouse. Each station has its own hood.

At #2 Argon, the ladle is placed into the station by overhead crane, and an exhaust hood is moved into place over the ladle. An argon-stirring lance is then lowered, and argon is injected as required. Alloys are added as needed. Argon #2 is used more frequently than #1 Argon because the No. 2 caster is used more heavily.

At the LMF station, only about 15 heats per month are processed. There are electrodes at the LMF which can be used for reheating the steel. Reheating cannot be achieved with argon stirring. According to the operators, reheating a ladle should not be necessary under normal operations; it is only used when the caster is not ready for steel or some other abnormal condition has happened.

We walked through the facility but none of the operations were in use. Vacuum degassing is used to produce ultra-low carbon steel for the automotive industry. It also reduces concentrations of dissolved gases (H₂, N₂, O₂) in the liquid steel. The ladle is set in place and a vacuum circulates the steel through a snorkel. These heats go straight to the degasser from the BOP. The gases generated from this process are combusted in a flare. A natural gas boiler is used to create the vacuum. Steam can be seen exhausting from the roof related to this boiler. Alloys are added at the degasser. The alloy handling system is controlled by a positive pressure baghouse. Baghouse fans are off when no alloys are being received or moved. None of these operations were in use at the time of the inspection.

Machine Scarfing

TMS International is a contractor that operates an automatic steel slag scarfing machine near the 80-inch hot strip mill for USS. The process is controlled by a baghouse. The baghouse runs continuously. Scarfing removes surface defects from the steel slab with the use of a torch that is run along the surface of the slab. I reviewed the records during the inspection and recorded the following baghouse pressure drops: Chamber 1 (6 in w.c.), 2 (just cleaned – less than 1), 3 (6 in w.c.), 4 (7 in w.c.), 5 (5 in w.c.) and 6 (4 in w.c.). Scarfing was not occurring at the time of the inspection. Every four years the facility replaces everything in the baghouse.

Lime Flux Unloading

We viewed where the lime is received and piped to the BOP. Lime was not being received at the time. Inspection records of different components of the system were presented.

Inspection records for No. 1 Argon, LMF/No 2 Argon, the vacuum degasser, ladle additive baghouse, and lime flux handling system were presented and I reviewed them while on site.

RULES/PERMIT CONDITIONS EVALUATED

The following conditions apply to: EU-ARGON-STIRS1 from PTI 13-17.

I. EMISSION LIMITS

- 1. IN COMPLIANCE.** Stack test was performed in December 2016. Results were reviewed by TPU staff. Emissions of PM were 0.0003 gr/dscf. Particulate Matter is limited to 0.01 grains per dry standard cubic foot of exhaust gas as determined by the testing procedures in 40 CFR Part 63 Subpart FFFFF.
- 2. IN COMPLIANCE.** Stack test was performed in December 2016. Results were reviewed by TPU staff. Emissions of PM were 0.049 lb/heat. Particulate Matter is limited to 0.543 pounds per heat on a calendar day basis as determined through reference method 5 at R 336.2004 or 5D at R336.2013.
- 3. IN COMPLIANCE.** Stack test was performed in December 2016. Results were reviewed by TPU staff. Emissions of PM were 0.054 lb/hr. Particulate Matter is limited to 1.63 pounds per hour as determined through reference method 5 at R 336.2004 or 5D at R336.2013.
- 4. IN COMPLIANCE.** According to the MAERS report, 971 heats were processed in 2016. 0.543 lb/heat * 971 heats = 527 pounds or 0.26 tons. Particulate Matter is limited to 3.67 tons per year on a calendar year basis.

5. **IN COMPLIANCE.** No excess visible emissions have been observed by the certified readers. Visible Emissions are limited to 10% opacity on a 6-minute average.

II. MATERIAL LIMITS NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. **IN COMPLIANCE.** Total number of heat processed for 2016 was 971. The maximum number of heats shall not exceed 13,505 heats per calendar year. A heat at the No. 1 Argon Stir Station is defined as follows: Processing of the heat at No. 1 argon stir station begins when the hood is down over the ladle and argon is injected. Argon is injected for several minutes to stir the heat. After the initial stir, a hot metal sample is taken to determine if additional processing is required. If alloys are required there is an argon stir to bring the heat into alloy specification. Argon is injected for a final stir for homogenization. The processing of the heat ends after the final stir.
2. **IN COMPLIANCE.** At this time, after rebuilding the baghouse and passing the most recent stack test, as well as the maintenance records and pressure drop records, it appears that the baghouse is installed and operating properly. The permittee shall not operate EUARGON-STIR-S1 unless the baghouse dust collector is installed and operating properly.
3. **IN COMPLIANCE.** The MAP is attached and was revised per CO No. 1-2016. The permittee shall implement and maintain the Malfunction Abatement Plan (MAP) for the No. 1 Argon Stir Station Baghouse developed pursuant to Consent Order WCAQMD 96-10. The MAP can be revised as appropriate, and alternate formats or revisions to the approved MAPs can be made upon approval by the AQD District Supervisor.
4. **IN COMPLIANCE.** The OMP is attached and appears to contain the required elements and was revised per CO NO. 1-2016. Permittee shall implement an Operation and Maintenance Plan (OMP) for the No. 1 Argon Stir Station Baghouse which shall include the following elements:
 - i) Monthly inspections for the proper operation of all pressure sensors dampers and dampers switches
 - ii) Monthly inspections of the integrity of ductwork hoods and fan housings
 - iii) A requirement to repair any defect that could reasonably be expected to result in non compliance identified during any inspection within 30 days. Any repair anticipated to extend beyond 30 days shall require a compliance plan be submitted to the AQD Detroit Office Supervisor for approval. The compliance plan shall include details of activities necessary to bring the facility into compliance with corresponding milestone dates included
 - iv) Preventative maintenance for each control device

IV. DESIGN/EQUIPMENT PARAMETERS NA

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

1. **IN COMPLIANCE.** Certified VE readings appear to be conducted at the required frequency and duration. The permittee shall perform a certified Method 9 visible emission observation of the No.1 Argon Stir Station Baghouse stack at least once every six months (between January – June and July – December). The required certified Method 9 visible emission observations shall be performed during heating activity and the duration of each certified Method 9 visible emission observation shall be a minimum of one hour.
2. **IN COMPLIANCE.** A performance test was conducted on the following dates: December 2016, 2014, and 2010 and so the required frequency appears to be met. Test results were received in a timely manner. Test protocol was reviewed and approved before the testing. Permittee shall conduct a performance test of the No. 1 Argon Stir Station Baghouse for particulate matter (PM) emissions no less frequently than once per five years from the date of the last performance test. Testing shall be performed in accordance with Reference Methods 1 (Port Location); 2, 2F or 2G (Volumetric Flow); 3, 3A, or 3G (Dry Molecular Weight); 4 (Moisture Content); 5, 5D or 17, as applicable, (concentration of particulate matter - front half filterable catch only), or another AQD approved method, and shall occur only when the processes being controlled are in operation. Each test run shall collect a minimum sample volume of 60 DSCF of gas and three valid test runs are needed to comprise a performance test. Performance testing shall not include non-production time or any time beyond the completion of a heat. Permittee shall submit notification of intent to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin for any testing required

under 40 CFR Part 63, Subpart FFFFF. 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. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years.

1. **IN COMPLIANCE.** Based on the 2016 MAERS report, total heats processed in 2016 was 971 (see attached) and the PM emissions were calculated above. The permittee shall keep records of the total number of heats per calendar year and tons of particulate matter emitted per calendar year and make the records available to AQD upon request.
2. **IN COMPLIANCE.** Records of Method 9 readings are maintained. No corrective actions have been required. The permittee shall keep a written record of each certified Method 9 visible emission observation required by V.1. The permittee shall initiate corrective action if visible emissions exceeding the limit are observed during certified Method 9 visible emission observations and keep a written record of each corrective action taken.
3. The permittee shall conduct inspections of the No. 1 Argon Stir Station Baghouse at the specified frequencies according to the requirements in paragraphs (i) through (viii) below. The permittee shall maintain records needed to document conformance with these requirements.

IN COMPLIANCE. Facility manually records the pressure drop once per day and ensures it is within the required range. Facility also ran a report that pulled the pressure drop values once per day at midnight for No. 1 Argon which is attached. Some of these values were outside of the normal range. Based on the attached email, any time the pressure drop was not in the required range, it is because the No. 1 Argon was not processing any heats. While this may be the case, and is reasonable because No. 1 Argon is used intermittently, better documentation is needed to show that these values were reviewed and it was verified that No. 1 argon was not in use. I have informed Mr. Gahns of this request.

(i) Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in the manual.

IN COMPLIANCE. Regarding (ii) through (viii) below, according to weekly operating procedures (see attached), all of the items below are being checked/inspected. Compressed air is also recorded daily.

- (ii) Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms.**
 - (iii) Check the compressed air supply for pulse-jet baghouses each day.**
 - (iv) Monitor cleaning cycles to ensure proper operation using an appropriate methodology.**
 - (v) Check bag cleaning mechanisms for proper functioning through monthly visual inspection or equivalent means.**
 - (vi) Make monthly visual checks of bag tension on reverse air and shaker-type baghouses to ensure that bags are not kinked (knead or bent) or laying on their sides. You do not have to make this check for shaker-type baghouses using self-tensioning (spring-loaded) devices.**
 - (vii) Confirm the physical integrity of the baghouse through quarterly visual inspections of the baghouse interior for air leaks.**
 - (viii) Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors, or equivalent means.**
4. **IN COMPLIANCE.** See attached certification from FilterSense that the bag leak detection system is meeting the MACT requirements. It does not contain information on whether the alarm is audible. See attached email from facility stating that the alarm is audible as required by the MACT. The permittee shall install, operate and maintain a bag leak detection system to monitor the relative change in particulate matter loadings for the No. 1 Argon Stir Station Baghouse according to the requirements of 40 CFR 63.7831(f).
 5. **IN COMPLIANCE.** Information was presented and is attached. The permittee shall record all information needed to document conformance of each bag leak detection system with applicable requirements of 40 CFR Part 63, Subpart FFFFF.
 6. **NOT APPLICABLE.** According to the facility, no alarms have been triggered. See attached. In the

event of a bag leak detection alarm, the permittee shall maintain records of the time corrective action was initiated, the corrective actions taken, and date corrective action was completed.

- 7. **NOT APPLICABLE.** Facility reported no excursions of the bag leak detection system or pressure drop. See attached email. An excursion is a bag leak detection alarm or a pressure drop outside of the normal operating range identified in the manual as described in S.C. VI.3 and VI.6. Upon detecting an excursion or exceedance, the owner or operator shall restore operation of EUARGON-STIR-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).
- 8. **IN COMPLIANCE.** Inspection records and follow up activities were presented during the inspection. The permittee shall maintain records of all inspections and required remedial actions associated with the OMP.
- 9. **DID NOT EVALUATE.** The permittee shall properly maintain the monitoring system including keeping necessary parts for routine repair of the monitoring equipment.
- 10. **DID NOT EVALUATE.** 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.
- 11. **DID NOT EVALUATE.** 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.

VII. REPORTING NA

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:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV-ARGN-BAGHSE UNKNOWN. This information does not match what is in MAERS. Facility claims MAERS data was an error and corrected it to match PTI requirements. See attached email.	42	173	R336.1201(3)

TABLE E-01.04 LADLE METALLURGY FACILITY OPERATIONS					
EMISSION UNIT/PROCESS GROUP REQUIREMENTS					
EMISSION GROUP		EGLMF-OPERATIONS			
Flexible Grouping ID		N/A			
I. DESIGN PARAMETERS					
A. Pollution Control Equipment		Baghouse			
B. Stack/Vent Parameters		NA			
Stack/Vent ID	a. Minimum Height (feet)	b. Maximum Exhaust Dimension (inches)	c. Temp. (°F)	d. Air Flow Rate acfm)	Applicable Requirement
NA	NA	NA	NA	NA	R336.1201(3)
C. Other Design Parameters					
NA					
II. MATERIAL USAGE/EMISSION LIMITS					
A. Material		Maximum Usage Rate			
N/A		N/A			
B. Pollutant		Maximum Emission Limit			
1. Particulate		0.005 grains per dry standard cubic foot of exhaust gas (LMF and No.2 Argon Stirring Station Baghouse stack), 1.077 pounds per heat (LMF Furnace Operation), and 0.180 pounds per heat (No.2 Argon Stirring Station), and 0.856 pounds per hour (LMF material Handling operation baghouse)			
		IN COMPLIANCE/UNKNOWN. Testing was conducted in 2014 for the LMF/No 2 argon stir station baghouse and reviewed by TPU staff. It appears that only No. 2 argon was operated during the testing. PM emissions were 0.0001 gr/dscf and 0.068 lb/heat. UNKNOWN applies the LMF furnace limit. Also, at this time, I am not aware of an LMF material handling baghouse. The only material handling baghouse is at the vacuum degasser. This test was conducted in 2013 and PM emissions were 0.17 lb/hr.			
2. Opacity		10% opacity - IN COMPLIANCE – Review of Method 9 records during the on site inspection did not indicate any problems. Equipment was not operating at the time of the inspection.			
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					
Continuous Emission Monitoring (CEM) System and Recordkeeping		NA			
Process Monitoring System and Recordkeeping		1. The permittee shall record and keep the following information and make it available to AQD upon request. Pressure drop across baghouse filters recorded daily. A pressure drop between 3 and 12 inches of water column shall be considered normal which can be changed upon approval by the AQD District Supervisor. The permittee shall initiate appropriate maintenance			

	<p>activity on the baghouse if the pressure drop exceeds the normal range which is not a deviation.</p> <p>IN COMPLIANCE. Facility manually records the pressure drop once per day and ensures it is within the required range. Facility also ran a report that pulled the pressure drop values once per day at midnight for LMF/No. 2 Argon which is attached. Some of these values were outside of the normal range. Based on the attached email, any time the pressure drop was not in the required range, it is because the LMF/No. 2 Argon was not processing any heats. While this may be the case, and is reasonable because the LMF/No. 2 Argon is used intermittently, better documentation is needed to show that these values were reviewed and it was verified that the process was not in use.</p> <p>2. Total number of heats per year based on a 12-month rolling time period determined at the end of each calendar month for LMF Furnace operation and No.2 Argon Stir Operation.</p> <p>IN COMPLIANCE – Records are being maintained.</p>
<p>Other Monitoring and/or Recordkeeping</p>	<p>1. The permittee shall perform a non-certified visible emission observation of the No.2 argon stir station and LMF furnace baghouse stacks at least once a week during source operations. The permittee shall initiate appropriate corrective action upon observation of visible emissions and shall keep a written record of each required observation and corrective action.</p> <p>IN COMPLIANCE - Records were presented and reviewed on site. Required frequency appears to be met.</p> <p>2. Permittee shall conduct regular inspections for the purpose of determining the operational condition of the baghouse, and if necessary, the reasons for malfunction or failure. These inspections shall be conducted during scheduled outages or downtimes, and as soon as practicable after observing visible emissions as warranted, but not less frequently than at least once a month and shall keep a written record of each inspection and corrective action taken if any.</p> <p>IN COMPLIANCE – Baghouse appears to be inspected routinely on a daily, weekly or monthly basis.</p>
<p align="center">B. TESTING/RECORDKEEPING (R 336.1213(3)) In Addition to General Requirements in Part A</p>	
<p>Parameter to be Tested/ Recorded</p>	<p>Particulate</p>
<p>2. Method/Analysis</p>	<p>Reference Method 17 or other approved method</p>
<p>Frequency and Schedule of Testing/Recordkeeping</p>	<p>The permittee shall conduct a particulate matter emission test and shall conduct a particulate matter emission test once every five years or more frequently upon the request of AQD. 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.</p> <p>IN COMPLIANCE/UNKNOWN. Stack test for LMF/No. 2 Argon was conducted in 2014 and 2010. At this time, it is unclear why the LMF was not operated during the test. Stack testing for material handling baghouse in the vacuum degasser building performed on November 2013 and 2010.</p>

IV. REPORTING	
Reports and Schedules	<p>Prompt reporting of deviations pursuant to Condition 24 of Part A. 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.</p> <p>IN COMPLIANCE – Reports submitted timely.</p>
V. OPERATIONAL PARAMETERS	
<p>1. The maximum number of heats for the LMF furnace operation shall not exceed 9,855 heats per year.</p> <p>IN COMPLIANCE – Based on the 2016 MAERS report, total heats were 413 for the year.</p> <p>2. The maximum number of heats for the LMF No.2 argon stir operation shall not exceed 12,775 heats per year.</p> <p>IN COMPLIANCE – Based on the 2016 MAERS report, total heats were 4416 for the year.</p> <p>3. The permittee shall not operate the LMF operations unless an instrumentation which shall measure pressure drop across the fabric filter collectors is installed and operating properly.</p> <p>IN COMPLIANCE – Pressure drop is recorded once per day and electronically trended. Readings indicate proper functioning of the instrumentation.</p>	
VI. OTHER REQUIREMENTS	
<p>1. The permittee shall implement and maintain the Malfunction Abatement Plan (MAPs) for the LMF Baghouse developed pursuant to Consent Order WCAQMD 0096-10. The MAPs can be revised as appropriate, and alternate formats or revisions to the approved MAPs can be made upon approval by the AQD District Supervisor.</p> <p>IN COMPLIANCE - Most recent version of MAP is from August 28, 2012 and appears to contain the required information.</p>	

NOTE: This emission unit is also subject to the Integrated Iron and Steel MACT (Subpart FFFFF) which requires the following:

1. Permittee shall conduct inspections of the LMF/No. 2 argon baghouse at specified frequencies according to the requirements in paragraphs (b)(4)(i) through (viii) of this section.

(i) Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in the manual.

(ii) Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms.

iii Check the compressed air supply for pulse-jet baghouses each day. NA. This is a positive pressure shaker type baghouse.

(iv) Monitor cleaning cycles to ensure proper operation using an appropriate methodology.

(v) Check bag cleaning mechanisms for proper functioning through monthly visual inspection or equivalent means.

IN COMPLIANCE. Daily records are maintained with manual entries checking the parameters in (i) through (v)

(vi) Make monthly visual checks of bag tension on reverse air and shaker-type baghouses to ensure that bags are not kinked (knead or bent) or laying on their sides. You do not have to make this check for shaker-type baghouses using self-tensioning (spring-loaded) devices.

(vii) Confirm the physical integrity of the baghouse through quarterly visual inspections of the baghouse interior for air leaks.

(viii) Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors, or equivalent means.

IN COMPLIANCE - (iv) through (vii) seem to be occurring monthly upon my review of the monthly mechanical records for the LMF/No 2 argon while on site. Records include inspection of ID fan motors, hoppers, isolation dampers, shakers, chamber bags, and manometer.

Note, this is a positive pressure shaker type baghouse so it does not require a BLD system.

TABLE E-01.05 VACUUM DE-GASSING OPERATIONS					
EMISSION UNIT/PROCESS GROUP REQUIREMENTS					
EMISSION GROUP	EGVDG-OPERATIONS Vacuum Degassing Operations comprised of Ruhrstahl-Heraeus recirculation vacuum degassing process and Kawasaki top blown oxygen blowing equipment, equipped with process flare, baghouse, and water condenser cooling system. Also includes ladle metallurgy additive handling system equipped with baghouse. NOTE: Vacuum degassing does not have a baghouse. Only the ladle metallurgy additive system is controlled by a baghouse.				
Flexible Grouping ID	N/A				
I. DESIGN PARAMETERS					
A. Pollution Control Equipment	Vacuum degassing process flare and baghouse.				
B. Stack/Vent Parameters	NA				
Stack/Vent ID	a. Minimum Height(feet)	b. Maximum Exhaust Dimension (inches)	c. Temp.(° F)	d. Air Flow Rate (acfm)	Applicable Requirement
SVVDG-DGAS-FLARE	190	NA	NA	NA	R336.1201 (3)
DID NOT EVALUATE					
C. Other Design Parameters					
NA					
II. MATERIAL USAGE/EMISSION LIMITS					
A. Material	Maximum Usage Rate				
Natural Gas usage in the flare	210,240,000 cubic feet per 12-month rolling time period as determined at the end of each calendar month. IN COMPLIANCE. Natural gas usage at the flare was 8 MM cubic feet at the end of Dec 2016 as shown in the MAERS				
B. Pollutant	Maximum Emission Limit				
Particulate	0.005 grains per dry standard cubic foot of exhaust gas (vacuum degassing process and ladle metallurgy additive handling systems baghouse). IN COMPLIANCE. Testing was performed on the material handling baghouse in the degasser building in November 2013. Results were 0.0005 gr/dscf.				
Carbon Monoxide	7 pounds per hour (vacuum degassing process) DID NOT EVALUATE. There is no testing condition in the current ROP. Needs further evaluation as to whether this unit can be tested. If so, it will be requested upon ROP renewal. USS claims it cannot even though AK Steel conducts a test of their degasser flare and applies an assumed control efficiency.				

	<p>report that pulled the pressure drop values once per day at midnight for the baghouse. Some of these values were outside of the normal range. Based on the attached email, any time the pressure drop was not in the required range, it is because the additive handling system was not in use. While this may be the case, and is reasonable because the additive handling is used intermittently, better documentation is needed to show that these values were reviewed and it was verified that the process was not in use.</p> <p>5. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month records of the flare natural gas consumption, the number of heats processed, and tons of steel processed in the vacuum degassing operation.</p> <p>IN COMPLIANCE – Records were submitted and are attached.</p>
<p>Other Monitoring and/or Recordkeeping</p>	<p>1. The permittee shall perform a non-certified visible emission observation of the Vacuum degassing process and ladle metallurgy additive handling systems baghouse stacks, Vacuum degassing process flare and baghouse dust collector, and vacuum degassing process roof monitors at least once a week during vacuum degassing activity. The permittee shall initiate appropriate corrective action upon observation of visible emissions and shall keep a written record of each required observation and corrective action taken.</p> <p>IN COMPLIANCE – Records were presented during inspection for review and appear to meet the required frequency.</p> <p>2. Permittee shall conduct regular inspections for the purpose of determining the operational condition of the baghouses, and if necessary, the reasons for malfunction or failure. These inspections shall be conducted during scheduled outages or downtimes, and as soon as practicable after observing visible emissions as warranted, but not less frequently than at least once a month and shall keep a written record of each inspection and corrective action taken if any.</p> <p>IN COMPLIANCE – Records of inspections were presented during the AQD inspection and appear to meet the required monthly frequency.</p> <p>3. Permittee shall conduct regular inspections for the purpose of determining the operational condition of the flare at least once every six month. A log of the inspection, cause(s) of malfunction or failure, repairs made and corrective actions taken shall be kept and maintained on file for a period of at least five years.</p> <p>IN COMPLIANCE – Records of inspections were presented and appear to meet the required frequency. Most recent inspection in April 2016 states flare is “working fine.”</p>

B. TESTING/RECORDKEEPING (R 336.1213(3)) In Addition to General Requirements in

Part A	
Parameter to be Tested/ Recorded	Particulate
2. Method/Analysis	Reference Method 17 or any other approved methods.
Frequency and Schedule of Testing/Recordkeeping	The permittee shall conduct particulate matter emission test on the baghouse emissions once every five year or more frequently upon the request of AQD. No less than 30 days prior to each 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. Testing was performed in 2013 and 2010.
IV. REPORTING	
Reports and Schedules	IN COMPLIANCE - Reports submitted timely
V. OPERATIONAL PARAMETERS	
<p>The permittee shall not process more than 10,950 heats per 12-month rolling time period as determined at the end of each calendar month.</p> <p>IN COMPLIANCE – According to the records, 12 month rolling at the end of December 2016 was 1,458,340/250 tons/heat = 5833 heats. Note, the heats limit is derived from dividing the tons of steel by 250 tons/heat.</p> <p>The permittee shall not process more than 2,737,500 tons of steel per 12-month rolling time period as determined at the end of each calendar month.</p> <p>IN COMPLIANCE – According to the records, 12 month rolling at the end of December 2016 was 1,458,340 tons.</p> <p>The permittee shall not operate the vacuum degassing operations unless the process flare, baghouse, and water condenser cooling system are installed, maintained, and operated in a satisfactory manner.</p> <p>IN COMPLIANCE – Equipment appears to be maintained based on records of maintenance and VE readings documenting no VE's.</p> <p>The permittee shall not operate the ladle metallurgy additive handling system unless the baghouse is installed, maintained, and operated in a satisfactory manner.</p> <p>IN COMPLIANCE – Based on VE records and maintenance records, the baghouse appears to be installed and maintained and operated properly.</p>	
VI. OTHER REQUIREMENTS	
NA	

Iron and Steel MACT - Vacuum degassing is exempt per the definition of ladle metallurgy in 63.7852.

EG2BOP-FLUX-SYS The Flux System Operations include the flux (Lime) material handling and ancillary equipment. A MAP dated August 28, 2012 is in place. Various inspection records were presented during the inspection. I did not determine compliance for this emission unit.

SECTION 3 TUBE CITY IMS

TABLE E-03.01 SLAB SCARFING MACHINE OPERATIONS EMISSION UNIT/PROCESS GROUP REQUIREMENTS	
EMISSION GROUP	EGSLABSCARFING The Slab Scarfing Machine under International Mill Services, Inc has a design capacity of 300,000 lbs./hour, natural gas fired at 2,400 scf/hour located at the 80-inch

	hot mill facility.				
Flexible Grouping ID	NA				
I. DESIGN PARAMETERS					
A. Pollution Control Equipment	Baghouse				
B. Stack/Vent Parameters	NA				
Stack/Vent ID	a. Minimum Height (feet)	b. Maximum Exhaust Dimension (inches)	c. Temp. (°F)	d. Air Flow Rate (acfm)	Applicable Requirement
SVSLABSCARFER DID NOT EVALUATE	95	72	NA	NA	R336.1901
C. Other Design Parameters					
NA					
II. MATERIAL USAGE/EMISSION LIMITS					
A. Material	Maximum Usage Rate				
Natural gas	<p>The permittee shall not use more than 2,400 cubic feet of natural gas per operating hour in EGSLABSCARFING based on a rolling 12-month period.</p> <p>IN COMPLIANCE. See attached records. Highest average is about 1370 cf/hour.</p>				
B. Pollutant	Maximum Emission Limit				
Particulate Matter	<p>1) 0.004 grain per dry standard cubic foot of exhaust gases per hourly average. 2) 3.77 pounds per hour. 3) 14.45 tons per year.</p> <p>UNKNOWN. A stack test is needed and will be required within a short timeframe once the ROP renewal is finalized. At this time, MAERS report lists 1995 pounds of emissions for 2016 for PM10. The basis of the emission factor is unclear. I have requested additional information.</p>				
Opacity	25% - IN COMPLIANCE. Certified VE readings indicate no exceedances of the opacity limit. Note, it is on a 1.5-minute basis.				
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	<p>The permittee shall record and keep the following information and shall be made available to AQD upon request:</p> <p>1. Monthly record of the amount of natural gas in cubic feet per hour per 12 month rolling time</p>				

	<p>period as determined at the end of each calendar month.</p> <p>2. The total hours of operation per day.</p> <p>3. The total hours of operation per 12 month rolling time period as determined at the end of each calendar month.</p> <p>IN COMPLIANCE. See attached records.</p>
	<p>4. The permittee shall record the pressure drop across the slab scarfer machine fabric filter collector weekly. A pressure drop between 5 and 9 shall be considered normal which can be changed upon approval by the AQD District Supervisor. The permittee shall initiate appropriate maintenance activity on the baghouse if the pressure drop exceed the normal range which is not a deviation.</p> <p>IN COMPLIANCE. Based on a spot check of the records, pressure drop is between the required range.</p>
3. Other Monitoring and/or Recordkeeping	<p>1. The permittee shall perform a non- certified visible emission observation of the baghouse stack at least once a month during slab scarfing activity. The permittee shall initiate appropriate corrective action upon observation of visible emissions and shall keep a written record of each required observation and corrective action taken.</p> <p>2. The permittee shall perform a Method 9 certified visible emission observation of the baghouse stack at least once every four months during slab scarfing activity using Reference Method 9A. The permittee shall initiate corrective action upon observation of visible emissions exceeding the applicable visible emission limits of this permit and shall keep a written record of each required observation and corrective action taken.</p> <p>IN COMPLIANCE. VE's are conducted at the required frequencies as demonstrated through the records presented during the inspection. No corrective actions have been necessary.</p>
<p>B. TESTING/RECORDKEEPING (R 336.1213(3)) In Addition to General Requirements in Part A</p>	
1. Parameter to be Tested/ Recorded	NA
2. Method/Analysis	NA
3. Frequency and Schedule of Testing/Recordkeeping	NA
<p>IV. REPORTING</p>	
Reports and Schedules	<p>1. Prompt reporting of deviations pursuant to Condition 24 of Part A. 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.</p>

	IN COMPLIANCE. Reports are submitted timely.
V. OPERATIONAL PARAMETERS	
<p>IN COMPLIANCE with 1-4 below. Hours of operation for 2016 were 3989. Spot check of daily records while on site indicated daily hours are below 21. Baghouse is installed with pressure drop gauges per compartment and overall. Pressure drop is above required minimum for 2016 and 2017 values.</p> <ol style="list-style-type: none"> 1. The permittee shall not operate EGSLABSCARFER for more than 21 hours per day nor 7,665 hours per year. 2. The permittee shall equip and maintain EGSLABSCARFER with a baghouse. 3. The permittee shall not operate EGSLABSCARFER unless a gauge which measures the pressure drop across the baghouse is installed and operating properly. 4. The permittee shall maintain a minimum pressure drop of 4 inches water gauge across the baghouse for the EGSLABSCARFER. 	
VI. OTHER REQUIREMENTS	
NA	

EXEMPT EQUIPMENT

I did not observe any exempt equipment during this inspection.

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS

No fugitive dust issues related to the operations evaluated in this report.

MAERS REPORT REVIEW

I did not request any edits to the emissions estimates in the 2016 MAERS report for these emission units.

FINAL COMPLIANCE DETERMINATION

At this time, it appears that the facility is in compliance with the conditions evaluated in this report.

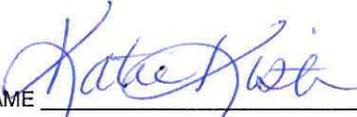
Follow up items:

BLD set points that trigger an alarm

Flare testing

Slab scarfer testing

Opacity limit for the flux system

NAME 

DATE 7/25/17

SUPERVISOR W.M.