



June 28, 2022

Mr. Scott Miller
Michigan Department of Environment, Great Lakes, and Energy
Jackson District
Air Quality Division
301 East Louis Glick Highway Jackson, MI 49201

Re: Response to Violation Notice / Gerdaul Monroe Mill Facility ID No.: B7061

Mr. Miller,

Gerdaul Monroe Mill is providing this letter in response to a Violation Notice (VN) issued by the Department of Environment, Great Lakes, and Energy (EGLE) on June 7th, 2022, signed by Mr. Mike Kovalchick, regarding non-compliance with permit conditions outlined in MI-ROP-B7061-2016 (ROP) and PTI 75-18 (PTI). The non-compliance items specified in the VN stem from a review of stack test results submitted to EGLE on May 25th, 2022, as well as a March 22nd, 2022 records review conducted by Mike Kovalchick.

As stated in the VN, the non-compliances involved emissions exceedances and stack testing requirements associated with emissions units EUEAF and EULADLEPREHEAT2 and flexible group FGLMFVTD. The following outlines the non-compliances, their dates of occurrence, root causes, and proposed corrective actions. Events with a common root cause and corrective action plan are analyzed together.

NON-COMPLIANCE: PTI 75-18, EULADLEPREHEAT2 Condition V.
TESTING/SAMPLING 1.

EGLE Comments: Company failed to verify NO_x, SO₂, PM, PM₁₀, and PM_{2.5} emissions within 180 days after commencement of initial start-up of EULADLEPREHEAT2. To date, stack testing for this emission unit has yet to occur.

Response:

Date of occurrence: Gerdau notified EGLE that formal shake-out and final commissioning of the modifications permitted under PTI 75-18 were completed on September 24, 2021. This event likely has been on-going since March 23rd, 2022.

Root cause: PTI 75-18 provided an emission testing option for the ladle preheater whereby a bench test of emissions by the preheater's manufacturer would satisfy the emissions testing requirement. Gerdau Monroe coordinated with the ladle preheater manufacturer to conduct this bench testing. As the preheater unit was completed and shipped for installation, however, the testing was not done by the manufacturer, and despite Gerdau's efforts, the manufacturer would not conduct any testing as a pre-requisite for delivery. As a result, test data could not be generated prior to shipment or equipment installation.

In the absence of bench test data, emissions testing of the ladle preheater needed to be conducted in-place. The first opportunity to test this unit following commissioning of the new melt shop was October 2021. However, this ladle preheater is located in the path of molten metal in the melt shop, which creates a critical and potentially lethal safety risk during both the set-up and execution of a stack test by a testing company. Due to these significant safety issues, the ladle preheater may only be tested when the electric arc furnace is not in operation. As the performance and emission requirements for EULADLEPREHEAT2 are not tied to steel production, conducting this test during a melt shop outage is feasible.

Proposed action and timeline: Gerdau Monroe has added the testing of the ladle preheater to its deviation log and will submit a deviation report for this event in its next semi-annual deviation report.

Gerdau Monroe Mill proposes to conduct the ladle preheater stack test during the next planned outage in September 2022 when the furnace operations will be suspended for annual maintenance. During this down time, no molten steel will be processed in the area, mitigating the safety risk to the testing company and observers.

In prelude to this action, Gerdau has tasked Montrose Environmental with preparing a stack test plan for EULADLEPREHEAT2 for submittal to EGLE based upon testing requirements outlined in PTI 75-18. Gerdau expects to submit this stack test plan to EGLE by July 11, 2022 to provide EGLE with the required 60 days to review the plan prior to the expected testing date. Once EGLE approves the test plan, the test date will be determined. Gerdau will provide EGLE with a final report of this testing within 60 days after the ladle preheater stack test is completed.

NON-COMPLIANCE: PTI 75-18, EUEAF Condition V. TESTING/SAMPLING 1.

EGLE Comments: Company failed to verify PM10 and PM2.5 emissions within 180 days of startup. In this case, start-up was September 24, 2021. Stack testing conducted in March 2022 failed to include testing for the condensable portions of PM10 and PM2.5 emissions.

Response:

Date of occurrence: Gerdau Monroe notified EGLE that shake-out and final commissioning of the modifications permitted under PTI 75-18 were completed on September 24, 2021, which became the “start-up” date for the modified Melt Shop. The PTI requires stack testing for PM10 and PM2.5 emissions within 180 days of the start-up date, therefore, PM10 and PM2.5 emission testing was required no later than March 23, 2022. This event has been on-going since March 23, 2022.

Root cause: Gerdau requested a test plan from Montrose Environmental to complete the stack testing of the EAF / LMF operations as required under the ROP and PTI in the fall of 2021. These permits specify that particulate emissions for condensable PM be tested using method 202 in addition to method 5 for filterable PM. The method for condensable PM testing were called out in the Montrose test plan submitted to EGLE in October 2021 and confirmed in the approval letter issued by EGLE in November 2021.

During observation of the March 2022 stack test, the EGLE observer noted that Montrose had not set-up their test equipment to test for condensable PM. Upon a review of its test plan and the EGLE approval letter, Montrose determined they were solely responsible for failing to properly conduct the particulate matter testing.

Proposed action and timeline: Gerdau Monroe has added the stack test discrepancy to its deviation log and will submit a deviation report for this event in its next semi-annual deviation report.

Gerdau Monroe Mill proposes to conduct a new stack test to fulfill its PM10 and PM2.5 stack testing obligation. Montrose Environmental will prepare a test plan to complete the particulate matter testing including Method 202 for condensable PM. Gerdau anticipates submitting this test plan by July 29, 2022, to EGLE for approval. Gerdau has a planned Melt Shop outage from August 29 – September 17, 2022, and it will not be feasible to conduct the replacement stack test prior to the outage. Moreover, Gerdau requests time to restart and stabilize our process from the outage prior to conducting stack testing. Therefore, the earliest date this testing can be conducted is early October 2022. The final report will be provided to EGLE within 60 days of test completion.

NON-COMPLIANCE: PTI 75-18; FGLMFVTD Condition 1. EMISSION LIMITS. 9. SO2

EGLE Comments: PTI 75-18 limits SO2 emissions from FGLMFVTD to 45.22 tons per 12-month rolling period. Gerdau emission calculations indicate that 52 tons SO2 emissions were emitted for the May 2021 – April 2022 period. First exceedance was in April 2022.

Response:

Date of occurrence: First exceedance was April 2022. This non-compliance is on-going.

Root cause: See Non-Compliance below for details.

Proposed action and timeline: To address this non-compliance, a report will be sent to the EGLE district office monthly updating the 12-month rolling average SO₂ emissions. The report will be sent 30 days after the close of each month in accordance with current record keeping requirements in the ROP. In addition, based upon the results of the March 2022 stack test, Gerdau Monroe Mill anticipates that VOC emissions from FGLMFVTD will exceed the rolling 12-month VOC emissions beginning with the period ending June 2022. If this result is confirmed, the Gerdau Monroe Mill will provide notification to the EGLE district office that VOC emissions are in exceedance and provide update reports regarding rolling 12-month VOC emissions from FGLMFVTD along with the rolling 12-month SO₂ emissions from the flexible group. See discussion below regarding proposed action and timeline to address this non-compliance.

NON-COMPLIANCE¹:

PTI 75-18; FGLMFVTD Condition 1. EMISSION LIMITS. 8. SO₂
PTI 75-18; FGLMFVTD Condition 1. EMISSION LIMITS. 10. CO
PTI 75-18; FGLMFVTD Condition 1. EMISSION LIMITS. 14. VOC

EGLE Comments:

32.40 lb SO₂ /hour tested value. Emission limit is 13.05 lb SO₂ /hour. Considered on-going since October 2021.

20.65 lb CO /hour tested value. Emission limit is 18.55 lb CO /hour. Considered on-going since October 2021.

3.08 lb VOC/hour tested value. Emission limit is 1.63 lb VOC/hour. Considered on-going since October 2021.

Response:

¹ Non-Compliance events regarding SO₂, CO, and VOC at FGLMFVTD are discussed together.

Date of occurrence: Gerdau notified EGLE that formal shake-out and final commissioning of the modifications permitted under PTI 75-18 were completed on September 24, 2021. This event likely has been on-going since October 2021.

Root cause: The March 2022 stack testing was the first compliance test of the Melt Shop after completion and commissioning of the CAPEX modifications permitted under PTI 75-18. The primary intent of this testing was to test the functioning of the equipment and process to verify the assumptions used to establish the emission limitations in the PTI. A preliminary investigation and material balance of heats processed in the LMF during the stack testing indicates that the equipment was functioning normally, and no atypical use of alloys or additives occurred. A sulfur addition mass balance compared to the stack test data revealed that LMFVTD emissions were stoichiometrically greater than sulfur addition to the product in the LMF. A review of CO and VOC emissions does not indicate any malfunction or upset condition resulting in excess emissions of these pollutants. As the LMF / VTD system is not natural gas fueled, a direct source of these excess emissions is not apparent from this part of the process. Further investigation into LMF / VTD emissions continues as a function of further process improvement.

As a result of these preliminary findings, Gerdau Monroe Mill has reviewed the emissions from both the EAF and LMF, comparing the March 2022 stack test results to the expectations and limits established in PTI 75-18. As structured, the PTI does not consider joint EAF and LMF / VTD emissions under the defined FGMELTSHOP group. However, when the hourly emission rates from EUEAF and FGLMFVTD are combined, the overall emissions fall well below the sum of the hourly SO₂, CO and VOC emissions limitations established under PTI 75-18 for these emissions sources. In this circumstance, the EAF emissions were well within compliance with its limits in PTI 75-18 for all pollutants, while the LMF emissions were non-compliant.

This analysis bears further consideration as the Gerdau Monroe melt shop previously operated under combined emissions limits for the EAF and LMF baghouses under rule 201 using defined flexible group FGMELTSHOP in the previous PTI and most recent version of the ROP. The iterative modeling and negotiation involved in PTI 75 – 18 addressed a number of physical changes and improvements to the Melt Shop, while decoupling emissions at the EAF and LMF baghouses. During the PTI permitting process, Gerdau provided modeling and estimates for emissions from the processes served by the LMF baghouse based upon best available information. However, as we review the results of the March 2022 stack test, it appears that assumptions regarding the distribution of emissions from the common Melt Shop building and its roof monitors, as well as between the EAF and LMF baghouses may not be representative of the post-modification emissions observed from the baghouses, while a review of the combined emissions from these sources suggests the total magnitude of emissions was correct.

Proposed action & timeline:

Gerdau Monroe Mill believes that its EAF, LMF / VTD system, and the respective baghouses were operating properly and functioning within normal parameters during the March 2022 stack test. We believe the excess hourly SO₂, CO, and VOC emissions from the LMF baghouse were due to inaccurate assumptions in the allocation of emissions between different groups within the Melt Shop during the permitting process for PTI 75-18. Factors including the mass balance differences between sulfur addition at the LMF / VTD and sulfur emissions at the LMF baghouse suggest that Gerdau Monroe Mill needs to reevaluate its emissions estimates and modeling provided in support of PTI 75-18 and pursue an amendment to the PTI which establishes new combined emission limits for the EAF, LMF, VTD, ladle preheaters, and respective baghouses consistent with March 2022 post-modification stack testing. This potential amendment would be similar to the definition of emissions unit defined in the ROP but incorporating equipment and process changes developed under PTI 75-18.

If EGLE concurs, then Gerdau Monroe Mill will initiate a more in-depth modeling of post CAPEX melt shop emissions considering the lessons learned from previous PTI 75-18 efforts to determine an appropriate reallocation of emissions for the FGMELTSHOP emission group. We anticipate these efforts will continue through late August or September 2022. In tandem with this work, the Gerdau Monroe Mill will contact the EGLE Thermal-Chemical Process Unit to initiate a permit application pre-meeting to coordinate our efforts with EGLE to resolve these issues. Pending EGLE approval, we anticipate this meeting would occur in late August or September.

Assuming that new emissions allocations and modeling supports the recreation of the combined Melt Shop flexible group, and EGLE is supportive of this approach, Gerdau Monroe Mill will submit a PTI application to facilitate these changes. At this time, it is not possible to provide an exact timetable to complete these actions, however, we expect this process to take six to twelve months to complete, depending upon the permitting process ultimately pursued. Upon completion of a PTI amendment, Gerdau Monroe Mill would conduct a stack test. The testing would be designed to demonstrate compliance with the emission limitations established for the EAF and LMF baghouses in the amended PTI. A final stack test report would be provided to EGLE within 60 days of completion.

In sum, Gerdau acknowledges inconsistencies with the execution and outcome of the stack testing relative to the testing requirements specified in the ROP and PTI. As part of our commitment for continued cooperation with EGLE, as well as our commitment to environmental compliance at the site, Gerdau proposes the following actions to address these issues:

- Completion of the ladle preheater emissions test during an upcoming outage when safety concerns over its location in the molten metal pathway can be mitigated.
- A thorough investigation of the March 2022 stack test results to determine the root cause(s) of the LMF emissions exceeding the PTI limits.

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- A review of emission data and potential amendment of the PTI, with a focus on redefining Melt Shop emissions sources with appropriate combined Melt Shop limitations consistent with the previous ROP.
- Submittal of a new stack test plan for approval by EGLE once the investigation into LMF emissions is completed and a decision on a potential PTI application amendment has been finalized.
- Completion of a follow-up stack test to verify PM10 and PM2.5 emissions, including condensable particulate, from our Melt Shop.

If you have questions regarding this response or wish to discuss our proposed corrective actions, please do not hesitate to contact me. Gerdau strives to maintain compliance with regulations and to continue working constructively with EGLE.

Sincerely,



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cc: Mike Kovalchick / EGLE – AQD – Jackson District office
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Christopher Ethridge / EGLE – AQD – Section Manager
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Daniel Mussap / VP-GM – Gerdau Monroe Mill

Enclosures

Non-compliance	Action	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Onward	
PTI 75-18 Condition V. Testing / Sampling 1 Failure to verify Nox, SO2, PM, PM10 & PM2.5 w/in 180 days for EULADLEPREHEAT2	Develop and submit stack test plan		Target 7/15/22													
	EGLE review of stack test plan			60 day review												
	Complete stack test during annual outage				Target 9/15/22											
	Submit deviation report including stack test				Deadline 9/15/22											
	Submit final report to EGLE						Target 11/15/22									
PTI 75-18 Condition V. Testing / sampling 1 Failure to verify PM10 and PM2.5 emissions within 180 days of start up	Develop and submit stack test plan		Target 07/29/22													
	EGLE review of stack test plan			60 day review												
	Complete stack test post outage					Target 10/17/22										
	Submit final report to EGLE							Target 12/17/22								
PTI 75-18 Condition 1. Emissions limits 9. SO2 FGLMFVTD rolling 12-month average exceeds 45.22 limit	Submit monthly SO2 calculations to EGLE	Reporting concurrently with records keeping req. in PTI 75-18														
	Verify compliance of VOC calculations		Target 07/31/22													
	Add VOC calculations to report if warranted			Reporting concurrent with records keeping req. in PTI 75-18												
	Follow hourly exceedance actions	Please see corrective actions for SO2, VOC & CO hourly emissions														
PTI 75-18 Condition 1 Emission limits 8. SO2 Emission limits 10. CO Emission limits 14. VOC Hourly emission rate exceedance for the above named emissions	Investigation and mass balance of LMF / VTD emissions	On-going work														
	Start new emissions modeling for melt shop sources			60 day review												
	Kick-off meeting with EGLE permit group				Date TBD											
	Guided modeling & PTI application development					Date TBD with EGLE guidance										
	Initial PTI application to amend PTI 75-18									Feb TBD						
	Gerdau / EGLE review & negotiation of PTI application										March TBD					
	Stack test to verify PTI application														Date TBD	
	Final report submission to EGLE														Date TBD	