July 20, 2022

Division of Air Pollution Control
ATTN: Knoxville Environmental Field Office
3711 Middlebrook Pike
Knoxville, Tennessee 37921

Re: Heraeus Metal Processing, LLC
Permit 570857
SAR Correction (October 1, 2020 – March 31, 2021)

To Knoxville EFO,

Heraeus Metal Processing, LLC submits this correction to the previously submitted semiannual report for the period of October 1, 2020, through March 31, 2021. There are no changes to the compliance status of any condition.

Reason for Correction:

During preparation of the production and emission logs for the most recent semiannual report, Heraeus identified incorrect information in the logs submitted with previous reports. Heraeus changed production tracking software in January 2021. Certain permit conditions and emission logs are based on the production data from the new system. Production data is pulled from the system in a large report which is then sorted and consolidated using filters and pivot tables. This separates the production data for different sources and process steps, and it allows it to be input into the appropriate production and emission compliance logs.

Heraeus found that there were mistakes in the data ranges used to extract information for the pivot tables and in the applied filters. These mistakes impacted the reported data from January 2021 through September 2021, so this semiannual report period was affected. Heraeus reprocessed all affected production and emission data using the corrected data ranges and filters. The data has been included in the attached semiannual report correction.

Affected Conditions and Logs:

Though there are changes to the data, these corrections do not change the compliance status of any condition or limit. For more information regarding the changes, see Appendix C. The following conditions and logs are corrected in the attached semiannual report:

- E4-3: Source 01 Material Input
- E5-1: Source 04 Material Input
- E9-3: Source 12 Material Input
- Appendix A – VOC and HAP Logs:
    - Monthly HAP's Log (Condition E3-6) – January – March 2021
    - Annual HAP's Log (Condition E3-6)
    - Source 01 Emission Log (Condition E4-5 / E4-8)
    - Source 12 Emission Log (Condition: E9-11)

If you have any questions concerning this report, please contact Andrew Morgan at 423-346-1065 or my consultant Shea Cofer at 615-418-1414.

Respectfully,

Norbert Ritschel
Senior Vice President and Plant Manager

SEMI-ANNUAL REPORT CERTIFICATION

Facility Owner/Company Name: Heraeus Precious Metals North America, LLC

Facility Address: 1975 Knoxville Highway, Wartburg, TN

Emission Source Reference Number: 65-0049

Title V Permit Number	Reporting Period	Report Deadline
570857 AA1: 4/9/2020 AA2: 1/15/2021	October 1, 2020 through March 31, 2021	May 30, 2021

This report is required pursuant to TNAPCR 1200-03-09-.02(11)(e)1.(iii).

RESPONSIBLE OFFICIAL CERTIFICATION

I, the undersigned, am the responsible official as defined in TAPCR 1200-3-9-.02 (11)(b)21. of the Title V source for which this document is being submitted. I hereby certify, based on the information and belief formed after reasonable inquiry, that the statements made and data contained in this document are true, accurate, and complete.

Signature:  .

Name: Norbert Ritschel.

Title: Vice President and Plant Manager.

Date: 7/26/2022.

SEMI-ANNUAL REPORT CERTIFICATION
Heraeus Precious Metals North America, LLC
Emission Source Reference No. 65-0049

Discussion of Administrative Amendment During Reporting Period:

Administrative Amendment #2: This amendment is based on the application letter dated November 24, 2020. It adds a scrubber to source 13 and increases the furnace hourly process capacity. It corrected the annual process capacity in Permit Condition E13-5. The scrubber is to increase collection of valuable material, and is considered inherent process equipment, so it is not included in the CAM plan. The conditions of Source 13 were affected; however this source has not yet been started.

Section I

Monitoring and Recordkeeping required by Permit Conditions *(including identification of all instances of deviations and identification of excursions and/or exceedances among the deviations)*:

I. E3-2
II. E3-6(MM3)
III. E4-3
IV. E4-4(MM4, AA1)
V. E4-4(MM1, AA1)(b)(1)
VI. E4-4(MM1, AA1)(c)(1)
VII. E4-5(MM1) & E4-8
VIII. E5-1
IX. E5-2(MM2)
X. E6-3 and E6-4(MM2)
XI. E7-2
XII. E7-3
XIII. E7-4(MM4)
XIV. E7-5(MM2)
XV. E7-5(MM2)(c)(2)
XVI. E8-1
XVII. E9-3(MM1)
XVIII. E9-4(MM3)
XIX. E9-5(MM3)
XX. E9-11(MM3)
XXI. E13-3(AA2)
XXII. E13-4(AA2)
XXIII. E13-5(AA2)

I. **Permit Condition: E3-2:** The permittee shall assure compliance with the opacity standard by utilizing the opacity matrix dated June 18, 1996, as amended September 11, 2013.

Visible Emissions Evaluations (VEEs) conducted in accordance with the opacity matrix on the dates shown below have been submitted with the previous Semi-Annual Report(s). The next VEE's will be conducted within one year of the Title V permit expiration, or by utilizing the opacity matrix.

Emission Source	Date of VEE	Highest 6-Minute Average
Source 01	11/16/2017	3.13%
Source 04	11/16/2017	0 %
Source 06	Not in Service	--
Source 09	<10 tpy each emission – Not required	--
Source 11	No. 2 fuel burning source – Not required	--
Source 12	4/26/2019	0%
Source 13	Not started up yet.	--

Source 01 was modified per MM4, but additional VEE's are not required for the cooling chamber and reburn furnace baghouse according to the opacity matrix because their potential to emit is <10 TPY.

There were no discrepancies or deviations during this reporting period.

II. **Permit Condition: E3-6(MM3):** The permittee shall assure compliance with the facility wide HAP limit of 9.9 tons per year for each individual HAP and 24.9 tons per year for all HAPs combined.

The HAPs log is included in Appendix A.

There were no discrepancies or deviations during this reporting period.

III. **Permit Condition: E4-3:** The total raw material input to this source (01) shall not exceed 18,395 tons during any period of twelve (12) consecutive months. Material input is summarized in the table below.

Month	Material Input (lbs)	Material Input (Tons per rolling 12 months)
10/2020	214,715	978
11/2020	161,244	984
12/2020	35,969	930
1/2021	49,506	881
2/2021	117,317	817
3/2021	159,343	784

There were no discrepancies or deviations during this reporting period.

IV. **Permit Condition: E4-4(MM4, AA1)**– Recordkeeping of surrogate monitoring and the use of pollution control equipment (quench tank, packed column, thermal oxidizer, packed tower scrubber

and baghouse) is required to assure compliance with the particulate emission limit of 6.5 lb/hr. All required records are maintained on site in suitable permanent form and are available for inspection by the TNAPC.

Source 01 Cooling Chamber and Reburn Furnace Baghouse

Time Period	Minimum Pressure Drop	Comments
10/2020	0.5" (10/12/20)	None
11/2020	0.4" (11/16/20)	See deviation below.
12/2020	0.5" (12/1/20)	None
1/2021	0.5" (1/11/21)	None
2/2021	0.9" (2/1/21)	None
3/2021	0.9" (3/15/21)	System was restarted on 3/8 between shifts. One reading of 0.0" was recorded during the shutdown and a follow-up reading of 1.1" after startup.

Deviations during this report period are recorded below.

Deviation Number	Deviation Date	Deviation Description	Duration of Deviation (hrs)	Comments
1	11/16/20	Low pressure drop reading.	8	None

EXPLANATION OR PROBABLE CAUSE FOR DEVIATION:

1. *Manual pressure drop reading was 0.4" while the permit limit is 0.5". The slightly low reading was likely due to the baghouse cleaning cycles or operator error reading the gauge.*

CORRECTIVE ACTIONS OR PREVENTATIVE MEASURES IMPLEMENTED:

1. *Operator was retrained in the minimum pressure drop and directed to inform maintenance in any event of a reading below the permit limit.*

IDENTIFICATION OF EXCURSIONS AND/OR EXCEEDANCES AMONG THE DEVIATIONS:

1. *This was an excursion from the permit limit, but no exceedance is expected. The pressure drop is checked each shift, and the previous and next shifts recorded pressure drops above the permit limits. The baghouse continued to operate and collect particulate during the deviation.*

V. Permit Condition: E4-4(MM4, AA1)(b)(1) – The continuous monitoring equipment shall monitor the following operating parameters: scrubber liquor flow rate, in gallons per minute; and scrubber liquor pH, in standard pH units (pH ≥ 8.5, and flow ≥ 100 gpm). Deviations during this report period are recorded below.

Source 01 Scrubber Summary

Time Period (mo/yr)	Minimum pH	Minimum Flow (gpm)	Comments
10/2020	8.52 (10/16/20)	218 (10/9/20)	None
11/2020	8.60 (11/10/20)	-4 (11/23/21)	- Low flow readings on 11/23 was due to a paddle wheel sensor malfunction, so no deviation. The paddle wheel was replaced.
12/2020	8.77 (12/2/20)	295 (12/10/20)	None

1/2021	8.03 (1/25/21)	-5 (1/11/21)	- Low pH on 1/25 was due to a probe malfunction. The probe was replaced. 3-hr average is within permit limits, so no deviation. pH was above permit limits for all other times when processing. - There was a scrubber flow malfunction on 1/11 for 3 hours, but processing was stopped until it was resolved, so no deviation. Flow was above permit limits for all other times when processing.
2/2021	8.62 (2/27/21)	259 (2/28/21)	None
3/2021	8.76 (3/31/21)	-5 (3/1/21)	- Low Flow reading on 3/1 lasted approximately 3 hours and was resolved by maintenance. This was a short equipment malfunction, so it is not a deviation.

There were no deviations during the reporting period.

VI. **<u>Permit Condition: E4-4(MM4, AA1)(c)(1)</u>** – The continuous monitoring equipment shall monitor the combustion temperature of the thermal oxidizer. (Temperature ≥ 1400 F)

Oxidizer Temperature Summary

Time Period	Minimum Temperature (F)	Comments
10/2020	1463 (10/23/20)	Manual logs referenced for 12am-8am on 10/1/20. See Deviation 1 below
11/2020	1130 (11/14/20)	See Deviations 2 and 3, which occurred on 11/14 and 11/21. All other three-hour averages during processing met permit requirements.
12/2020	1399 (12/2/20)	Low temperature on 12/2. The 3-hr average is above the permit limit, so this is not a deviation.
1/2021	1409 (1/26/20)	None
2/2021	1466 (2/16/21)	None
3/2021	1412 (3/19/21)	None

Deviations during this report period are recorded below.

Deviation Number	Deviation Date	Deviation Description	Duration of Deviation (hrs)	Comments
1	10/1 12am – 8am	Continuous temperature was not recorded in Historian during production.	8	This is a short continuation and conclusion of the connectivity deviation which was addressed in the last semi-annual report. Hourly manual logs used to evaluate compliance during this period. No excess emissions occurred during the deviation.
2	11/14	The last 3-hour average before shutdown was below the permit limits.	1	No excess emissions occurred during the deviation.
3	11/21	The last 3-hour average before shutdown was below the permit limits.	1	No excess emissions occurred during the deviation.

EXPLANATION OR PROBABLE CAUSE FOR DEVIATION:

1. *Oxidizer temperature data was not saved in the Historian system. There was a remote hardware replacement of a server. The port for incoming temperature data did not properly reboot with the server.*
2. *Investigation reveals that it is most likely operator error, either a misnoted shutdown time or an early shutdown of the oxidizer.*
3. *(Same as Deviation 2)*

CORRECTIVE ACTIONS OR PREVENTATIVE MEASURES IMPLEMENTED:

1. *The incoming oxidizer temperature data was moved to a different port on the same switch which resumed data collection in the Historian system.*
2. *The operator was retrained in oxidizer documentation and operation.*
3. *(same as Deviation 2)*

IDENTIFICATION OF EXCURSIONS AND/OR EXCEEDANCES AMONG THE DEVIATIONS:

1. *This is an excursion from the continuous monitoring requirement, but not an excursion from the oxidizer temperature requirements. Hourly manual logs demonstrate compliance of oxidizer temps during this 8 hour data loss, so no exceedance occurred.*
2. *This was a 1-hr excursion from the 3-hr temperature limit, however it was not an exceedance because there was no VOC content in the processed materials.*
3. *(Same as Deviation 2)*

Source 01 Operational Hours

Date	Historian Down (hrs)	Source Operation Down (hrs)	% Manual Data Not Available for Each 8hr Period	Explanation
10/1 12am – 8am	8	0	0	Historian data was not recorded for oxidizer temp. Manual logs used for this period. See E4-4 Deviation for details.
10/2 9pm – 10/5 5am	0	56	0	Not processing
10/9 10pm – 10/12 7am	0	57	0	Not processing
10/16 8pm – 10/19 4am	0	55	0	Not Processing
10/23 10pm – 10/26 5am	0	54	0	Not Processing
10/30 1pm – 11/2 5am	0	64	0	Not Processing
11/4 6pm – 11/10 10pm	0	148	0	Not processing
11/14 10pm – 11/16 6pm	0	32	0	Not processing
11/21 10pm – 11/23 5am	0	31	0	Not processing
11/25 10pm – 11/30 9am	0	107	0	Not processing
12/4 11pm – 12/7 4pm	0	65	0	Not processing
12/10 12am – 12/10 9am	0	9	0	Not processing
12/11 7am – 1/1 12am	0	497	0	Not processing
1/1 12am – 1/11 12am	0	240	0	Not processing
1/15 9pm – 1/19 4am	0	79	0	Not processing
1/22 11pm – 1/25 5am	0	54	0	Not processing
1/29 10pm – 2/1 4am	0	54	0	Not processing
2/5 11pm – 2/8 6am	0	54	0	Not processing
2/12 10:05pm – 2/16 1pm	0	111	0	Not processing
2/19 12am – 2/22 4am	0	76	0	Not processing
2/24 10pm – 2/27 2am	0	52	0	Not processing
3/5 10:30pm – 3/8 4am	0	53.5	0	Not processing
3/12 8pm – 3/15 4am	0	56	0	Not processing

Date	Historian Down (hrs)	Source Operation Down (hrs)	% Manual Data Not Available for Each 8hr Period	Explanation
3/19 10pm – 3/22 4am	0	54	0	Not processing
3/26 11pm – 3/29 10am	0	59	0	Not processing

Except for the 8hr deviation stated above, Historian always operated during the operational report period, fulfilling the 95% requirement in the CAM plan**.** Manual records were recorded 100% of the report period.

VII. Permit Condition: E4-5(MM1) and E4-8: Volatile organic compounds (VOC) emitted from this source shall not exceed 10.89 tons during any period of twelve consecutive months. Compliance with this limitation shall be assured with recordkeeping of surrogate monitoring and the use of pollution control equipment (quench tank, packed column, thermal oxidizer, packed tower scrubber, and baghouse). The logs required in condition E4-4 and E4-8 shall be used to certify compliance with this condition.

VOC and HAP Emissions Logs for this report are available for review in Appendix A of this report.

Deviations for this period are reported in the tables above.

VIII. Permit Condition: E5-1: The total raw material input to this source shall not exceed 8,069 tons during any twelve (12) consecutive months. Material input is summarized in the table below.

Month	Material Input (lbs)	Material Input (Tons per rolling 12 months)
10/2020	149,832	681
11/2020	97,074	698
12/2020	44,920	673
1/2021	26,344	624
2/2021	32,864	576
3/2021	42,364	548

There were no discrepancies or deviations during this reporting period.

IX. Permit Condition: E5-2(MM2): Particulate matter emitted from this source shall not exceed 3.41 pounds per hour (lb/hr) on a daily average basis.

Compliance Method: Compliance with this emission limitation shall be assured by maintaining a minimum pressure drop across the filter media of 0.25 inches of water column. The pressure drop shall be recorded daily while this source is operating. This log shall be used to assure compliance with this condition and in the reporting requirements of Condition E2 of this permit and must be retained for a period of not less than five years. Reports and certifications shall be submitted in accordance with Condition E2 of this permit.

Ball Mill Baghouse Pressure Drop Summary

Time Period	Minimum Pressure Drop			Comments
	Low Grade BH	High Grade BH	Tray Roast BH	
10/2020	2.0” (10/1/20)	1.0” (10/6/20)	1.5” (10/1/20)	None

Time Period	Minimum Pressure Drop			Comments
	Low Grade BH	High Grade BH	Tray Roast BH	
11/2020	1.5" (11/12/20)	0.5" (11/1/20)	1.5" (11/2/20)	None
12/2020	2.0" (12/1/20)	1.0" (12/1/20)	1.5" (12/1/20)	None
1/2021	2.0" (1/4/21)	1.0" (1/4/21)	1.0" (1/11/21)	None
2/2021	1.0" (2/22/21)	0.5" (2/7/21)	1.5" (2/1/21)	None
3/2021	2.0" (3/1/21)	0.5" (3/8/21)	1.0" (3/22/21)	None

There were no deviations during the reporting period.

X. Permit Conditions E6-3 and E6-4(MM2): - This Source (Crucible Furnace) did not operate during the reporting period of April 1, 2020 through September 30, 2020.

XI. Permit Condition E7-2: Only natural gas may be used as fuel.
The source did not operate during the reporting period.

XII. Permit Condition E7-3: The total raw material input to this source shall not exceed 1,500 pounds per hour on a daily basis. The table below shows the maximum lb/hr input for each month.

Time Period	Maximum Raw Material Input (lb/hr)	Comments
10/2020	N/A	Not processing.
11/2020	N/A	Not processing
12/2020	N/A	Not processing
1/2021	N/A	Not processing.
2/2021	N/A	Not processing
3/2021	N/A	Not processing

There were no discrepancies or deviations during this reporting period.

XIII. Permit Condition E7-4(MM4): Particulate matter emitted from this source shall not exceed 0.02 grains per dry cubic foot of stack gases corrected to 70ºF and 1 atmosphere (0.23 pounds per hour (lb/hr)).

Compliance Method: Compliance with this emission limitation shall be assured by maintaining a minimum pressure drop across the filter media of 0.5 inch of water column. The pressure drop shall be recorded daily while this source is operating. This log shall be used to assure compliance with this condition and in the reporting requirements of Condition E2 of this permit and must be retained for a period of not less than five years. Reports and certifications shall be submitted in accordance with Condition E2 of this permit.

Rotary Baghouse Pressure Drop Summary

Time Period	Minimum Pressure Drop (inches H_2O)	Comments
10/2020	N/A	Not processing
11/2020	N/A	Not processing
12/2020	N/A	Not processing
1/2021	N/A	Not processing
2/2021	N/A	Not processing
3/2021	N/A	Not processing

There were no discrepancies or deviations during this reporting period.

XIV. Permit Condition E7-5(MM2): Volatile organic compounds (VOC) emitted from this source shall not exceed 3.0 tons during any period of twelve consecutive months.

The source did not operate during the reporting period.

VOC and HAP Emissions Logs for this report are available for review in Appendix A of this report.

There were no discrepancies or deviations during this reporting period.

XV. Permit Condition E7-5(MM2)(c)(2): The continuous monitoring equipment shall monitor the combustion chamber temperature of the furnace.

Note: Equipment is set up to prevent loading of material unless the furnace is at or above permitted temperature.

Rotary Combustion Chamber Temperature Summary:

Time Period	Minimum Temperature (F)	Comments
10/2020	N/A	Not processing.
11/2020	N/A	Not processing.
12/2020	N/A	Not processing.
1/2021	N/A	Not processing.
2/2021	N/A	Not processing.
3/2021	N/A	Not processing.

There were no discrepancies or deviations during this reporting period.

Source 09 Operating Hours

Date	Historian Down (hrs)	Source Operation (hrs)	% Manual Data Not Available for Each 8hr Period	Explanation
10/2020	0	N/A	N/A	Not processing.
11/2020	0	N/A	N/A	Not processing.
12/2020	0	N/A	N/A	Not processing.
1/2021	0	N/A	N/A	Not processing.
2/2021	0	N/A	N/A	Not processing.
3/2021	0	N/A	N/A	Not processing.

XVI. Permit Condition E8-1: Emergency engine operating hours restricted. Maintain a log of operating hours.

There were no discrepancies or deviations during this reporting period. Summary table is included in Appendix B.

XVII. Permit Condition E9-3(MM1): Raw material input limit of 5,111 tons during 12 consecutive months.

Month	Material Input (lbs)	Material Input (Tons per rolling 12 months)
10/2020	46,809	292
11/2020	46,950	300
12/2020	24,904	293
1/2021	17,363	278
2/2021	64,998	293
3/2021	65,096	291

There were no discrepancies or deviations during this reporting period.

XVIII. Permit Condition E9-4(MM3): Particulate matter emitted from this source shall not exceed 4.96 pounds per hour (lb/hr) based on daily average basis.

Compliance Method: The permittee shall assure compliance with the particulate matter emission limitation by keeping the pressure drop across the baghouse equal to or above 1.3 inches of water. The control equipment shall be operating at all times when the source is operating. The pressure drop for the baghouse shall be recorded once daily when the source is in operation. The days when the source does not operate shall be noted. For lower pressure drop reading(s) resulting from replacement of bags, the permittee shall record the deviation(s) as such in their daily records. Due allowance will be made for lower pressure drop reading(s) which follow replacement of bags provided the permittee establishes to the satisfaction of the Technical Secretary that these lower readings resulted from the replacement of bags.

Source 12 Baghouse Pressure Drop Summary

Time Period	Minimum Pressure Drop ("H_2O)	Comments
10/2020	2.4 (10/22/20)	None
11/2020	2.0 (11/6/20)	None
12/2020	2.5 (12/7/20)	None
1/2021	2.4 (1/6/21)	None
2/2021	2.4 (2/5/21)	There was a malfunction on 2/11 which temporarily resulted in a low pressure reading, but it was promptly fixed by maintenance
3/2021	3.0 (3/6/21)	None

XIX. Permit Condition E9-5(MM3): Volatile organic compounds (VOC) emitted from this source shall not exceed 32.11 tons during any period of twelve consecutive months.

Compliance Method: Compliance with this limitation shall be assured with recordkeeping of surrogate monitoring and the use of pollution control equipment (afterburner). The logs required in Conditions E9-

4(MM3) and E9-8(MM3) shall be used to certify compliance with this condition. Certifications shall be submitted in accordance with Condition E2.

Source 12 Afterburner Temperature Summary

Time Period	Minimum Temperature (F)	Comments
10/2020	1511 (10/5)	None
11/2020	1500 (11/18)	None
12/2020	1444 (12/3)	None
1/2021	1463 (1/12)	None
2/2021	1366 (2/19)	Low temperatures recorded close to startup. The 3 hr average is above permit limit, so this is not a deviation.
3/2021	1404 (3/3)	None

There were no discrepancies or deviations during this reporting period.

Operational Hours – Source 12 Tray Furnaces with Afterburner

Date	Historian/ Control Equipment Down (hrs)	Source Operation Down (hrs)	% Manual Data Not Available for Each 8hr Period	Explanation
10/3-4, 10-11, 15-18, 22, 24-25, 27, 31	0	312	0	No Production
11/1, 6-8, 13-15, 22, 26-29	0	288	0	No Production
12/6-7, 11-31	0	264	0	No Production
1/1-3, 5, 7, 9-11, 13, 15-19, 23-24, 27-31	0	504	0	No Production
2/1, 2/5, 2/6, 2/7, 2/8, 2/12 – 2/15, 2/20 – 2/22, 2/25, 2/27, 2/28	0	360	0	No Production
3/1, 6-7, 13-15, 20-21, 27-29	0	264	0	No Production
Total	0	1,992	0	None

Note: Source does not standardly operate outside of 7am – 6pm

XX. **Permit Condition E9-11(MM1)(MM3):** Calculate actual quantities of VOC and organic HAPs emitted in a log.

VOC and HAP emission calculations for this source are included in Appendix A.

XXI. **Permit Condition E13-3(AA2)** - The total raw material input to this source shall not exceed 12.5 tons during any period of twelve (12) consecutive months.

This source has not started up.

XXII. Permit Condition E13-4(MM3) Particulate matter emitted from the Rhodium-Oil Furnace shall not exceed **0.3** pounds per hour (lb/hr) based on a daily average.

Compliance Method: The permittee shall assure compliance with the PM emission limitations by operating, maintaining, and inspecting the air pollution control devices (APCD) as follows:

(a) The permittee shall comply with **Conditions E3-3 and E3-4** of this permit.
(b) Compliance with this requirement shall be assured through the use of baghouse to control particulate emissions. Within **30** days of start-up of this source, the permittee shall begin taking daily pressure drop readings for the baghouse. The first thirty (**30**) days of pressure drop (inches of water column) readings shall be compiled in a log. The designated person(s) shall note any relevant baghouse conditions/problems/concerns when recording the values. This data shall be submitted to the Division, along with a proposed minimum pressure drop for the baghouse, no later than **15** days following the **30** days of readings. The minimum pressure drop value for compliance assurance will be incorporated into the permit.
(c) After incorporation of the minimum pressure drop value into the permit, compliance with the specified particulate emission limit shall be assured by maintaining the required minimum pressure drop value for the baghouse. The pressure drop value shall be recorded once daily when the source is in operation. Days when the source is not operating shall be noted. For lower pressure drop reading(s) resulting from replacement of bags, the permittee shall record the deviation(s) as such in their daily records. Due allowance will be made for lower pressure drop reading(s) which follow replacement of bags, provided the permittee establishes to the satisfaction of the Technical Secretary that these lower readings resulted from the replacement of bags. All data, including all required calculations, must be entered in the log no later than 7 days from the end of the day for which the data is required.

This source has not started up.

XXIII. Permit Condition E13-5(AA2) - Volatile organic compounds (VOC) emitted from the Rhodium-Oil Furnace shall not exceed **12.5** tons during any period of twelve consecutive months.

Compliance Method: The permittee shall assure compliance with the VOC emission limitation by complying with the heat input capacity restriction and the raw material input limit and by operating, maintaining, and inspecting the air pollution control devices (APCD).

This source has not started up.

SEMI-ANNUAL REPORT CERTIFICATION

Heraeus Precious Metals North America, LLC
Emission Source Reference No. 65-0049

Section II

Identification of all instances of deviations from ALL PERMIT REQUIREMENTS.

No deviations have occurred from the requirements in Conditions E1(MM3), E1(MM3, AA1), E2, E3-1 through E3-5, E3-7, E3-8, E4-1(MM4), E4-2(MM1), E4-6(MM4), E4-7, E4-9(MM4), E6-1, E6-2, E6-5, E6-6, E6-7, E7-1, E7-6, E7-7, E8-2 through E8-10, E9-1(MM3), E9-2(MM3), E9-6, E9-7(MM3) through E9-10(MM1), E13-1(MM3), E13-2(MM3), E13-6(MM3), E13-7(MM3) and relevant conditions of Section A and B and all conditions of Section D.

There were no other instances of deviations from the rest of the permit conditions or requirements.

APPENDIX A

Permit Condition E3-6, E4-5, E4-8, E7-5, E9-11

VOC & HAP Logs

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
October 2020

Process Source	Arsenic *7440-38-2* (lbs/month)	Cobalt 7440-48-4 (lbs/month)	Chromium 7440-47-3 (lbs/month)	Nickel 8049-31-8 (lbs/month)	Lead 7439-92-1 (lbs/month)	Selenium 7782-49-2 (lbs/month)	*Tetrachloroethene 127-18-4* (lbs/month)	Mercury (lbs/month)	Cadmium (lbs/month)	Antimony (lbs/month)	Methanol (lbs/month)	Benzene 71-43-2 (lbs/month)	Ethylbenzene (lbs/month)
65-0049-01	0.07	8.39	0.01	32.29	9.49	0.00	0.00	0.00	0.17	0.00	3.33	0.00	0.00
65-0049-04	0.00	0.37	0.00	1.44	0.42	0.00	0.00	0.00	0.01	0.00	0.15	0.00	0.00
65-0049-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-12	0.00	3.39	0.30	28.57	3.40	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
Total	0.07	12.16	0.31	62.30	13.31	0.00	0.00	0.00	0.25	0.00	3.48	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
October 2020

Xylene (lbs/month)	Toluene 108-88-3 (lbs/month)	Cumene (lbs/Month)	P-Cresol (lbs/Month)	Isophorone (lbs/month)	HCl (lbs/month)	Naphthalene (lbs/month)	Biphenyl (lbs/month)	Phenol 108-95-2 (lbs/month)	Total HAP Emissions (lbs/month)	Pounds Processed
0.00	0.00	0.00	0.00	0.00	13.39	0.00	0.00	0.00	67.14	214,715
0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.00	3.00	149,832
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.73	46,809
0.00	0.00	0.00	0.00	0.00	13.99	0.00	0.00	0.00	105.86	411,356

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
November 2020

Process Source	Arsenic *7440-38-2* (lbs/month)	Cobalt 7440-48-4 (lbs/month)	Chromium 7440-47-3 (lbs/month)	Nickel 8049-31-8 (lbs/month)	Lead 7439-92-1 (lbs/month)	Selenium 7782-49-2 (lbs/month)	*Tetrachloroethene 127-18-4* (lbs/month)	Mercury (lbs/month)	Cadmium (lbs/month)	Antimony (lbs/month)	Methanol (lbs/month)	Benzene 71-43-2 (lbs/month)	Ethylbenzene (lbs/month)
65-0049-01	0.49	10.86	0.11	10.41	14.48	0.00	0.00	0.00	0.13	0.13	12.18	0.00	0.00
65-0049-04	0.02	0.43	0.00	0.41	0.58	0.00	0.00	0.00	0.01	0.01	0.48	0.00	0.00
65-0049-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-12	0.00	2.48	0.00	20.69	2.48	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00
Total	0.51	13.77	0.11	31.51	17.53	0.00	0.00	0.00	0.25	0.14	12.67	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
November 2020

Xylene (lbs/month)	Toluene 108-88-3 (lbs/month)	Cumene (lbs/Month)	P-Cresol (lbs/Month)	Isophorone (lbs/month)	HCl (lbs/month)	Naphthalene (lbs/month)	Biphenyl (lbs/month)	Phenol 108-95-2 (lbs/month)	Total HAP Emissions (lbs/month)	Pounds Processed
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.79	161,244
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94	97,074
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.76	46,950
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	76.49	305,268

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
December 2020

Process Source	Arsenic *7440-38-2* (lbs/month)	Cobalt 7440-48-4 (lbs/month)	Chromium 7440-47-3 (lbs/month)	Nickel 8049-31-8 (lbs/month)	Lead 7439-92-1 (lbs/month)	Selenium 7782-49-2 (lbs/month)	*Tetrachloroethene 127-18-4* (lbs/month)	Mercury (lbs/month)	Cadmium (lbs/month)	Antimony (lbs/month)	Methanol (lbs/month)	Benzene 71-43-2 (lbs/month)	Ethylbenzene (lbs/month)
65-0049-01	0.00	9.18	55.58	34.75	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-04	0.00	0.18	1.07	0.67	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-12	0.00	0.40	0.00	3.45	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	9.75	56.66	38.87	1.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
December 2020

Xylene (lbs/month)	Toluene 108-88-3 (lbs/month)	Cumene (lbs/Month)	P-Cresol (lbs/Month)	Isophorone (lbs/month)	HCl (lbs/month)	Naphthalene (lbs/month)	Biphenyl (lbs/month)	Phenol 108-95-2 (lbs/month)	Total HAP Emissions (lbs/month)	Pounds Processed
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.91	35,969
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94	97,074
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.27	24,904
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	107.12	157,947

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
January 2021

Process Source	Arsenic *7440-38-2* (lbs/month)	Cobalt 7440-48-4 (lbs/month)	Chromium 7440-47-3 (lbs/month)	Nickel 8049-31-8 (lbs/month)	Lead 7439-92-1 (lbs/month)	Selenium 7782-49-2 (lbs/month)	*Tetrachloroethene 127-18-4* (lbs/month)	Mercury (lbs/month)	Cadmium (lbs/month)	Antimony (lbs/month)	Methanol (lbs/month)	Benzene 71-43-2 (lbs/month)	Ethylbenzene (lbs/month)
65-0049-01	0.00	0.00	0.00	0.36	1.11	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.00
65-0049-04	0.00	0.00	0.00	0.10	0.32	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00
65-0049-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-12	0.00	0.55	0.01	4.56	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.55	0.01	5.02	1.98	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
January 2021

Xylene (lbs/month)	Toluene 108-88-3 (lbs/month)	Cumene (lbs/Month)	P-Cresol (lbs/Month)	Isophorone (lbs/month)	HCl (lbs/month)	Naphthalene (lbs/month)	Biphenyl (lbs/month)	Phenol 108-95-2 (lbs/month)	Phosphorus (lbs/month)	Manganese Compounds (lbs/month)	Chlorine (lbs/month)	HF (lbs/month)	Dimethylformamide (lbs/month)	Total HAP Emissions (lbs/month)	Pounds Processed
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.84	49,506
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53	26,344
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	5.69	17,363
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,200
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	8.06	94,413

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
February 2021

Process Source	Arsenic *7440-38-2* (lbs/month)	Cobalt 7440-48-4 (lbs/month)	Chromium 7440-47-3 (lbs/month)	Nickel 8049-31-8 (lbs/month)	Lead 7439-92-1 (lbs/month)	Selenium 7782-49-2 (lbs/month)	*Tetrachloroethene 127-18-4* (lbs/month)	Mercury (lbs/month)	Cadmium (lbs/month)	Antimony (lbs/month)	Methanol (lbs/month)	Benzene 71-43-2 (lbs/month)	Ethylbenzene (lbs/month)
65-0049-01	0.00	0.00	0.00	0.38	0.76	0.00	0.00	0.00	0.38	0.00	87.87	0.00	0.00
65-0049-04	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00
65-0049-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-12	0.00	1.67	0.02	13.92	1.91	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
65-0049-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	1.67	0.02	14.30	2.67	0.00	0.00	0.00	0.41	0.00	88.45	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
February 2021

Xylene (lbs/month)	Toluene 108-88-3 (lbs/month)	Cumene (lbs/Month)	P-Cresol (lbs/Month)	Isophorone (lbs/month)	HCl (lbs/month)	Naphthalene (lbs/month)	Biphenyl (lbs/month)	Phenol 108-95-2 (lbs/month)	Phosphorus (lbs/month)	Manganese Compounds (lbs/month)	Chlorine (lbs/month)	HF (lbs/month)	Dimethylformamide (lbs/month)	Total HAP Emissions (lbs/month)	Pounds Processed
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.72	99.10	117,317
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	32,864
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.54	64,998
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.72	117.23	215,178

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
March 2021

Process Source	Arsenic *7440-38-2* (lbs/month)	Cobalt 7440-48-4 (lbs/month)	Chromium 7440-47-3 (lbs/month)	Nickel 8049-31-8 (lbs/month)	Lead 7439-92-1 (lbs/month)	Selenium 7782-49-2 (lbs/month)	*Tetrachloroethene 127-18-4* (lbs/month)	Mercury (lbs/month)	Cadmium (lbs/month)	Antimony (lbs/month)	Methanol (lbs/month)	Benzene 71-43-2 (lbs/month)	Ethylbenzene (lbs/month)
65-0049-01	0.14	39.21	0.14	39.57	42.03	0.00	0.00	0.00	0.64	0.28	50.09	0.00	0.00
65-0049-04	0.00	0.19	0.00	0.19	0.21	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
65-0049-06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65-0049-12	0.00	1.35	0.14	11.42	1.96	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00
65-0049-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.14	40.75	0.28	51.19	44.20	0.00	0.00	0.00	0.94	0.28	50.34	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Monthly HAP's Log
(65-0049 - Permit Condition E3-6)
March 2021

Xylene (lbs/month)	Toluene 108-88-3 (lbs/month)	Cumene (lbs/Month)	P-Cresol (lbs/Month)	Isophorone (lbs/month)	HCl (lbs/month)	Naphthalene (lbs/month)	Biphenyl (lbs/month)	Phenol 108-95-2 (lbs/month)	Phosphorus (lbs/month)	Manganese Compounds (lbs/month)	Chlorine (lbs/month)	HF (lbs/month)	Dimethylformamide (lbs/month)	Total HAP Emissions (lbs/month)	Pounds Processed
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	172.11	159,343
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	42,364
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	1.11	0.24	0.00	16.62	65,096
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	1.11	0.24	0.00	189.58	266,804

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC (HPMN)
Wartburg, Tennessee

Annual HAP's Log
(65-0049 - Permit Condition E3-6)

Month	Arsen*ic* *7440-38-2* (lbs/month)	Arsen*ic* *7440-38-2* (lbs/12-month)	Cobalt 7440-48-4 (lbs/month)	Cobalt 7440-48-4 (lbs/12-month)	Chromium 7440-47-3 (lbs/month)	Chromium 7440-47-3 (lbs/12-month)	Nickel 8049-31-8 (lbs/month)	Nickel 8049-31-8 (lbs/12-month)	Lead 7439-92-1 (lbs/month)	Lead 7439-92-1 (lbs/12-month)	Selenium 7782-49-2 (lbs/month)	Selenium 7782-49-2 (lbs/12-month)
Oct-20	0.07	5.51	12.16	171.39	0.31	14.00	62.30	874.28	13.31	152.50	0.00	5.64
Nov-20	0.51	5.99	13.77	181.29	0.11	14.11	31.51	789.66	17.53	166.03	0.00	5.64
Dec-20	0.00	5.87	9.75	96.94	56.66	65.50	38.87	744.36	1.84	151.00	0.00	5.64
Jan-21	0.00	3.55	0.55	96.79	0.01	65.50	5.02	740.12	1.98	142.25	0.00	2.67
Feb-21	0.00	3.03	1.67	97.17	0.02	65.37	14.30	686.40	2.67	139.35	0.00	2.17
Mar-21	0.14	2.82	40.75	134.99	0.28	61.21	51.19	595.61	44.20	178.87	0.00	2.17

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC (HPMN)
Wartburg, Tennessee

Annual HAP's Log
(65-0049 - Permit Condition E3-6)

Month	*Tetrachloroethene 127-18-4* (lbs/month)	*Tetrachloroethene 127-18-4* (lbs/12-month)	Mercury (lbs/month)	Mercury (lbs/12-month)	Cadmium (lbs/month)	Cadmium (lbs/12-month)	Antimony (lbs/month)	Antimony (lbs/12-month)	Methanol (lbs/month)	Methanol (lbs/12-month)	Benzene 71-43-2 (lbs/month)	Benzene 71-43-2 (lbs/12-month)
Oct-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.14	3.48	279.72	0.00	2.10
Nov-20	0.00	0.00	0.00	0.00	0.00	0.00	0.14	1.28	12.67	262.85	0.00	2.10
Dec-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03	0.00	224.54	0.00	2.10
Jan-21	0.00	0.00	0.00	0.00	0.47	0.47	0.00	1.03	0.00	205.26	0.00	2.10
Feb-21	0.00	0.00	0.00	0.00	0.41	0.87	0.00	0.79	88.45	243.52	0.00	2.10
Mar-21	0.00	0.00	0.00	0.00	0.94	1.81	0.28	0.96	50.34	263.39	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC (HPMN)
Wartburg, Tennessee

Annual HAP's Log
(65-0049 - Permit Condition E3-6)

Month	Toluene (lbs/month)	Toluene (lbs/12-month)	Xylene (lbs/month)	Xylene (lbs/12-month)	Ethylbenzene (lbs/month)	Ethylbenzene (lbs/12-month)	Cumene (lbs/Month)	Cumene (lbs/12-Month)	P-Cresol (lbs/Month)	P-Cresol (lbs/12-Month)	Isophorone (lbs/month)	Isophorone (lbs/12-month)
Oct-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nov-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jan-21	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb-21	0.41	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar-21	0.94	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC (HPMN)
Wartburg, Tennessee

Annual HAP's Log
(65-0049 - Permit Condition E3-6)

Month	HCl (lbs/month)	HCl (lbs/12-month)	Naphthalene (lbs/month)	Naphthalene (lbs/12-month)	Biphenyl (lbs/month)	Biphenyl (lbs/12-month)	Phenol (lbs/month)	Phenol (lbs/12-month)	Phosphorus (lbs/month)	Phosphorus (lbs/12-month)	Manganese Compounds (lbs/month)	Manganese Compounds (lbs/12-month)
Oct-20	13.99	29.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nov-20	0.00	29.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec-20	0.00	29.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jan-21	0.00	29.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb-21	0.00	29.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar-21	0.00	29.27	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC (HPMN)
Wartburg, Tennessee

Annual HAP's Log
(65-0049 - Permit Condition E3-6)

Month	Chlorine (lbs/month)	Chlorine (lbs/12-month)	HF (lbs/month)	HF (lbs/12-month)	Dimethylformamide (lbs/month)	Dimethylformamide (lbs/12-month)	Total HAP Emissions (lbs/month)	Total HAP Emissions (lbs/12-month)
Oct-20	0.00	0.00	0.00	0.00	0.00	0.00	105.9	1,547.5
Nov-20	0.00	0.00	0.00	0.00	0.00	0.00	76.5	1,470.4
Dec-20	0.00	0.00	0.00	0.00	0.00	0.00	107.1	1,338.1
Jan-21	0.03	0.03	0.00	0.00	0.00	0.00	8.1	1,300.9
Feb-21	0.00	0.03	0.00	0.00	9.72	9.72	117.2	1,291.5
Mar-21	1.11	1.14	0.24	0.24	0.00	9.72	189.6	1,293.9

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Permit No. 570857
Source 01
Condition: E4-5 / E4-8

2020

Month	Material Input (lbs)	Mat'l Input (Tons per rolling 12 months)	VOC Pounds	VOC (Tons per rolling 12 months)	Arsenic *7440-38-2* (lbs)	Cobalt 7440-48-4 (lbs)	Chromium 7440-47-3 (lbs)	Nickel 8049-31-8 Ni (lbs)	Lead 7439-92-1 (lbs)	Selenium 7782-49-2 (lbs)	Mercury (lbs)	Cadmium (lbs)	Antimony (lbs)
Oct-20	214,715	978	145.4	2.14	0.07	8.39	0.01	32.29	9.49	0.00	0.00	0.17	0.00
Nov-20	161,244	984	192.1	2.02	0.49	10.86	0.11	10.41	14.48	0.02	0.00	0.13	0.13
Dec-20	35,969	930	0.0	1.76	0.00	9.18	55.58	34.75	1.40	0.00	0.00	0.00	0.00

2021

Month	Material Input (lbs)	Mat'l Input (Tons per rolling 12 months)	VOC Pounds	VOC (Tons per rolling 12 months)	Arsenic *7440-38-2* (lbs)	Cobalt 7440-48-4 (lbs)	Chromium 7440-47-3 (lbs)	Nickel 8049-31-8 Ni (lbs)	Lead 7439-92-1 (lbs)	Selenium 7782-49-2 (lbs)	Mercury (lbs)	Cadmium (lbs)	Antimony (lbs)
Jan-21	49,506	881	5.6	1.64	0.00	0.00	0.00	0.36	1.11	0.00	0.00	0.36	0.00
Feb-21	117,317	817	466.4	1.52	0.00	0.00	0.00	0.38	0.76	0.00	0.00	0.38	0.00
Mar-21	159,343	784	288.5	1.44	0.14	39.21	0.14	39.57	42.03	0.00	0.00	0.64	0.28

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Permit No. 570857
Source 01
Condition: E4-5 / E4-8

2020

Month	Methanol (lbs)	Benzene (lbs)	Ethyl Benzene (lbs)	Xylene (lbs)	Toluene (lbs)	Cumene (lbs)	P-Cresol (lbs)	Isophorone (lbs)	HCl (lbs)	Phenol (lbs)	Naphthalene (lbs)	Total HAPs (lbs)	Total HAPs (Tons per rolling 12 months)
Oct-20	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.39	0.00	0.00	67.14	0.602
Nov-20	12.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.81	0.550
Dec-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.91	0.484

2021

Month	Methanol (lbs)	Benzene (lbs)	Ethyl Benzene (lbs)	Xylene (lbs)	Toluene (lbs)	Cumene (lbs)	P-Cresol (lbs)	Isophorone (lbs)	HCl (lbs)	Phenol (lbs)	Naphthalene (lbs)	Dimethylformamide (lbs)	Total HAPs (lbs)	Total HAPs (Tons per rolling 12 months)
Jan-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.84	0.47
Feb-21	87.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.72	99.10	0.46
Mar-21	50.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	172.11	0.47

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Permit No. 570857
Source 09
Condition: 7-5
Source 65-0049-09

2020

Month	Material Input (lbs)	Mat'l Input (Tons per rolling 12 months)	VOC Pounds	VOC (Tons per rolling 12 months)	Tetra-chloroethene 127-18-4 (lbs)	Mercury (lbs)	Cadmium (lbs)	Chromium (lbs)	Lead (lbs)	Nickel (lbs)	Benzene 71-43-2 (lbs)	Toluene (lbs)	Xylene (lbs)	Ethylbenzene (lbs)	Cobalt (lbs)	Naphthalene (lbs)	Biphenyl (lbs)	Total HAPs (lbs)	Total HAPs (Tons per rolling 12 months)
Jan-20	0.0	79.00	0.0	0.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.002
Feb-20	0.0	79.00	0.0	0.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.002
Mar-20	3,500.0	80.75	6.3	0.15	0.00	0.00	0.00	0.00	0.00	0.00	2.10	0.00	0.00	0.00	0.00	0.00	0.00	2.10	0.003
Apr-20	0.0	80.75	0.0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.003
May-20	0.0	80.75	0.0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.003
Jun-20	0.0	80.75	0.0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.003
Jul-20	0.0	80.75	0.0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.003
Aug-20	0.0	60.04	0.0	0.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.002
Sep-20	0.0	34.89	0.0	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.002
Oct-20	0.0	1.75	0.0	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.002
Nov-20	0.0	1.75	0.0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.001
Dec-20	0.0	1.75	0.0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.001
Total:	**3,500.0**		**6.29**		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.10**	

2021

Month	Material Input (lbs)	Mat'l Input (Tons per rolling 12 months)	VOC Pounds	VOC (Tons per rolling 12 months)	Tetra-chloroethene 127-18-4 (lbs)	Mercury (lbs)	Cadmium (lbs)	Chromium (lbs)	Lead (lbs)	Nickel (lbs)	Benzene 71-43-2 (lbs)	Toluene (lbs)	Xylene (lbs)	Ethylbenzene (lbs)	Cobalt (lbs)	Naphthalene (lbs)	Biphenyl (lbs)	Total HAPs (lbs)	Total HAPs (Tons per rolling 12 months)
Jan-21	0.0	1.75	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.001
Feb-21	0.0	1.75	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.001
Mar-21	0.0	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Apr-21		0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
May-21		0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Jun-21		0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Jul-21		0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Aug-21		0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Sep-21		0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Oct-21		0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Nov-21		0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Dec-21		0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000
Total:	**0.0**		**-**		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Permit No. 570857
Source 12
Condition: E9-11

2020

Month	Material Input (lbs)	Mat'l Input (Tons per rolling 12 months)	VOC Emissions from Process (Lbs)	VOC Emissions (Tons per rolling 12 months)	Arsenic 7440-38-2 (lbs)	Cobalt 7440-48-4 (lbs)	Chromium 7440-47-3 (lbs)	Nickel 8049-31-8 Ni (lbs)	Lead 7439-92-1 (lbs)	Selenium 7782-49-2 (lbs)	Mercury (lbs)	Cadmium (lbs)	Antimony (lbs)	Methanol (lbs)
Oct-20	46,809	292	0.00	0.00	0.00	3.39	0.30	28.57	3.40	0.00	0.00	0.07	0.00	0.00
Nov-20	46,950	300	0.00	0.00	0.00	2.48	0.00	20.69	2.48	0.00	0.00	0.11	0.00	0.00
Dec-20	24,904	293	1.31	0.00	0.00	0.40	0.00	3.45	0.41	0.00	0.00	0.00	0.00	0.00

2021

Month	Material Input (lbs)	Mat'l Input (Tons per rolling 12 months)	VOC Emissions from Process (Lbs)	VOC Emissions (Tons per rolling 12 months)	Arsenic 7440-38-2 (lbs)	Cobalt 7440-48-4 (lbs)	Chromium 7440-47-3 (lbs)	Nickel 8049-31-8 Ni (lbs)	Lead 7439-92-1 (lbs)	Selenium 7782-49-2 (lbs)	Mercury (lbs)	Cadmium (lbs)	Antimony (lbs)	Methanol (lbs)
Jan-21	17,363	278	0.00	0.00	0.00	0.55	0.01	4.56	0.55	0.00	0.00	0.00	0.00	0.00
Feb-21	64,998	293	0.00	0.00	0.00	1.67	0.02	13.92	1.91	0.00	0.00	0.03	0.00	0.00
Mar-21	65,096	291	0.00	0.00	0.00	1.35	0.14	11.42	1.96	0.00	0.00	0.29	0.00	0.00

HERAEUS PRECIOUS METALS NORTH AMERICA, LLC
Wartburg, Tennessee

Permit No. 570857
Source 12
Condition: E9-11

2020

Month	Benzene (lbs)	Ethyl Benzene (lbs)	Xylene (lbs)	Toluene (lbs)	Cumene (lbs)	P-Cresol (lbs)	Isophorone (lbs)	HCl (lbs)	Phenol (lbs)	Total HAPs (lbs)	Total HAPs (Tons per rolling 12 months)
Oct-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.73	0.16
Nov-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.76	0.17
Dec-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.27	0.17

2021

Month	Benzene (lbs)	Ethyl Benzene (lbs)	Xylene (lbs)	Toluene (lbs)	Cumene (lbs)	P-Cresol (lbs)	Isophorone (lbs)	HCl (lbs)	Phenol (lbs)	Phosphorus (lbs)	Manganese Compounds (lbs)	Chlorine (lbs)	HF (lbs)	Total HAPs (lbs)	Total HAPs (Tons per rolling 12 months)
Jan-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	5.69	0.17
Feb-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.54	0.17
Mar-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	1.11	0.24	16.62	0.17

APPENDIX B

Permit Condition E8-1

Emergency Engine Hours of Operation Log

HERAEUS METAL PROCESSING, LLC
Wartburg, Tennessee

1000 KW Emergency Generator
(Operating Log - Permit No. 570857)

Logs for Emergency Engine

Date	Emergency Operation (hr/mon)	Emergency Operation (hr/12 consecutive months)	Maintenance Checks and Readiness Testing (hr/mon)	Maintenance Checks and Readiness Testing (hr/12 consecutive months)	Non-Emergency Operation (hr/mon)	Non-Emergency Operation (hr/12 consecutive month)	Hours of Operation Total (hr/mon)	Hours of Operation Total (hr/12 consecutive month)
		Column A		Column B		Column C		Column D
Apr-2020		1.60	2.30	33.50		0.00	2.30	35.10
May-2020		1.60	2.40	33.30		0.00	2.40	34.90
Jun-2020		1.60	3.30	33.80		0.00	3.30	35.40
Jul-2020		1.60	2.40	32.70		0.00	2.40	34.30
Aug-2020		0.00	3.50	33.40		0.00	3.50	33.40
Sep-2020		0.00	2.80	32.70		0.00	2.80	32.70
Oct-2020		0.00	2.80	32.70		0.00	2.80	32.70
Nov-2020		0.00	3.50	32.70		0.00	3.50	32.70
Dec-2020		0.00	2.80	32.70		0.00	2.80	32.70
Jan-2021		0.00	0.40	30.80		0.00	0.40	30.80
Feb-2021		0.00	0.40	28.90		0.00	0.40	28.90
Mar-2021		0.00	1.70	28.30		0.00	1.70	28.30

APPENDIX C

Record of Corrected Data (July 2022)

SEMI-ANNUAL REPORT CERTIFICATION

Heraeus Precious Metals North America, LLC
Emission Source Reference No. 65-0049

Record of Corrected Data

The semiannual report was corrected and resubmitted in July 2022. There were no changes to the compliance of any condition. See the cover letter of this report for details. For reference, the conditions and logs that have been corrected are noted below.

Permit Condition: E4-3: The total raw material input to this source (01) shall not exceed 18,395 tons during any period of twelve (12) consecutive months. Material input is summarized in the table below.

Month	Material Input (lbs)	Material Input (Tons per rolling 12 months)
10/2020	~~214,715~~	~~978~~
11/2020	~~161,244~~	~~984~~
12/2020	~~35,969~~	~~1,002~~
1/2021	~~59,466~~	~~886~~
2/2021	~~95,485~~	~~811~~
3/2021	~~99,698~~	~~748~~

Permit Condition: E5-1: The total raw material input to this source shall not exceed 8,069 tons during any twelve (12) consecutive months. Material input is summarized in the table below.

Month	**Material Input (lbs)**	**Material Input (Tons per rolling 12 months)**
10/2020	~~149,832~~	~~681~~
11/2020	~~97,074~~	~~698~~
12/2020	~~44,920~~	~~673~~
1/2021	~~26,924~~	~~624~~
2/2021	~~35,375~~	~~577~~
3/2021	~~22,836~~	~~540~~

Permit Condition E9-3(MM1): Raw material input limit of 5,111 tons during 12 consecutive months.

Month	**Material Input (lbs)**	**Material Input (Tons per rolling 12 months)**
10/2020	~~46,809~~	~~292~~
11/2020	~~46,950~~	~~300~~
12/2020	~~24,904~~	~~293~~
1/2021	~~17,183~~	~~278~~
2/2021	~~28,238~~	~~274~~
3/2021	~~21,572~~	~~250~~

Record of Corrected Data (cont.)

Appendix A – VOC and HAP Logs

Monthly HAP's Log (Condition E3-6)
- January 2021
- February 2021
- March 2021

Annual HAP's Log (Condition E3-6)

Source 01 Emission Log (Condition E4-5 / E4-8)

Source 12 Emission Log (Condition: E9-11)