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

B701371290

FACILITY: Huron Casting, Inc (Blue Diamond Steel Casting)		**SRN / ID:** B7013
LOCATION: 7050 HARTLEY ST. & 125 STURM RD, PIGEON		**DISTRICT:** Bay City
CITY: PIGEON		**COUNTY:** HURON
CONTACT: Daryl Mendrick , EHS Director		**ACTIVITY DATE:** 03/21/2024
STAFF: Gina McCann	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: FCE inspection of MI-ROP-B7013-2018a		
RESOLVED COMPLAINTS:		

I (glm) performed a scheduled inspection of Huron Casting Inc. and Blue Diamond Steel Casting LLC on March 21, 2024. I was accompanied by Dillon King, EQA, from the Bay City office. During the inspection we toured the Blue Diamond Steel Casting LLC (BDSC) portion of the stationary source and viewed the control devices associated with the Huron Casting Inc. (HCI) portion. At the time of the inspection the facility was in compliance with MI-ROP-B7013-2018a and all applicable and enforceable state and federal regulations.

Source and Regulatory Discussion

Huron Casting Inc is one stationary source consisting of two steel foundries, Blue Diamond Steel Casting LLC (BD), located at 125 Sturm Road, Pigeon, Michigan and Huron Casting Inc (HC), located adjacent at 7050 Hartley Street, Pigeon, Michigan. In 2008, the facility obtained PTI No. 129-08 for the installation of a second steel foundry, Blue Diamond Steel Casting LLC (BD), on a contiguous property at 125 Sturm Road, Pigeon, Michigan. With the installation of the BD portion of the facility under PTI No. 129-08, the company created a major source of emissions under the PSD regulations due to potential emissions of carbon monoxide (CO) greater than 100 tons per year (tpy). In 2016, the facility entered Administrative Consent Order (ACO) 4-2017 to resolve the PSD violation. The ACO was effective for six years and upon completion of the ACO terms was terminated on February 21, 2024.

Process Description

The facility melts metals in one of several electric induction furnaces to produce a steel casting. When the melting process is complete the molten metal is tapped (by tilting and pouring through a spout on each furnace) and poured into a ladle. From the ladle, the metal is poured into molds and the castings are allowed to cool.

The molds consist of two parts, the outer molds and inner cores, both of which are made of sand and chemical binders. The sand is a source of particulate emissions and the binder is a source of volatile organic compound (VOC) emissions. The amounts of both sand and binder used in the process are directly related to the amount of metal melted and poured. Emissions occur in the mold making and core making processes and later when the molds and cores are removed from the cooled castings.

When the castings have cooled, the sand molds and cores are removed from the castings by physical processes including pulling, prying, shotblast, and shakeout. The sand is reclaimed through destruction of the binder material in high temperature natural gas fired calciners.

Additional metal particulate emissions are generated in the casting cleaning and finishing processes which include cutting with saws or torches and grinding.

During the walk through of the Blue Diamond plant we viewed the hear treat oven that was installed in 2018 under permit exemption R 336.1282(2)(a)(i). The unit uses water as a quench.

Additional changes at the plant included installation of baghouse 71124 in 2023 to draw from an additional pick-up point from the line that loads molds into pans. The change was made for operators comfort and recirculates back into the building. This change was made under permit exemption R 336.1285(2)(f) which allows installation or construction of air pollution control equipment for an existing process or process equipment if the control equipment itself does not actually generate a significant amount of criteria air contaminants as defined in R 336.1119(e) or a meaningful increase in the quantity of the emissions of toxic air contaminants or a meaningful change in the quality and nature of toxic air contaminants.

Source-Wide Conditions

Title V permit, MI-ROP-B7013-2018a requires the facility to meet source-wide emission limits as listed in the emission limits table. Below is a comparison of the emission limits to the 12-month rolling time period, in ton per year (tpy), as determined at the end of February 2024.

Pollutant	Limit (tpy)	February 2024 (tpy)
PM10	59.6	33.58
PM2.5	11.9	6.25
VOC	98.0	5.52
Individual HAPs	8.9	0.75 (toluene)
Aggregate HAPs	22.4	2.61
CO	345.6	126.44

Special condition (S.C.) II.1. restricts the facility from melting more than 144,000 tons of metal per year based on a 12-month rolling time period as determined at the end of each calendar month. S.C. VI.2. is the associated monitoring and recordkeeping requirement that requires the facility to keep records of metal melted in tons per month, as required by SC II.1, II.2, and II.3. For the 12-month rolling time period ending February 2024 the facility melted 46,721 tons of steel.

S.C. II.2 restricts Huron Castings Inc. from melting more than 72,000 tons per year of steel based on a 12-month rolling time period, as determined as the end of each calendar month. S.C. VI.2. is the associated monitoring and recordkeeping requirement that requires the facility to keep

records of metal melted in tons per month, as required by SC II.1, II.2, and II.3. For the 12-month rolling time period ending February 2024, 23,185 tons of steel were melted.

S.C. II.3 restricts Blue Diamond Steel Casting from melting more than 72,000 tons per year of steel based on a 12-month rolling time period, as determined as the end of each calendar month. S.C. VI.2. is the associated monitoring and recordkeeping requirement that requires the facility to keep records of metal melted in tons per month, as required by SC II.1, II.2, and II.3. For the 12-month rolling time period ending February 2024, 23,535 tons of steel were melted.

S.C. II.4. restricts natural gas usage to less than 1,026 MMcf per year based on a 12-month rolling time period, as determined as the end of each calendar month. S.C. VI.6. is the associated monitoring and recordkeeping requirement that requires the facility to keep records monthly and 12-month rolling records of natural gas usage rates, as required by SC II.4. For the 12-month rolling time period ending February 2024 was 340.77 MMcf.

S.C. II.5 restricts the facility from processing more than 3,870 tons of binder per year based on a 12-month rolling time period calculated at the end of each calendar month. S.C. VI.7. is the associated monitoring and recordkeeping requirement that requires the facility to keep records monthly and 12-month rolling records of binder usage rates, as required by SC II.5. For the 12-month rolling time period ending February 2024 was 1,141 tons.

S.C. III.1. restricts operation of each emission unit that is subject to an emission limit more than 7,000 hours per year based on a 12-month rolling time period as determined at the end of each calendar month. S.C. VI.5. is the associated monitoring and recordkeeping requirement that requires the facility to keep records monthly and 12-month rolling time period operating hour records for each emission unit that is subject to an emission limit, as required by S.C. III.1. For the 12-month rolling time period ending February 2024 hours of operation ranged from 941 hours for EU-08 at Huron to hours to 5,953 hours for EU-SHELLCALCINER at the Blue Diamond side.

S.C. III.2. restricts operation of the facility's 29 baghouses unless a unless a malfunction abatement plan (MAP) as described in Rule 911(2), has been submitted to the AQD District Supervisor within 180 days of permit issuance, and is implemented and maintained. The facility had an approved MAP on file with the Department that reported an acceptable pressure drop reading is between 1 inches of water column (" W.C.) and 9 "W.C. for all baghouses. The facility has removed the pressure drops from the MAP and a letter was sent requesting to add back in. This condition states, the permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. Each emission unit requires the pressure drop to be observed daily and therefore the MAP should have an appropriate range identified. Pressure drops were observed during the inspection and are discussed under each respective emission unit.

<u>Huron Castings, Inc.</u>

HCI was founded in 1976. It has the capability to produce shell molded steel castings in a weight range from 3-500 lbs. Operations began at the Huron Casting Inc facility over 40 years ago. Over time, the facility has been modified and new equipment has been added. Operations at the facility include raw materials handling, sand mixing, mold and core production, melting, casting,

finishing, welding, grinding, testing, packaging, and shipping. All melting furnaces at the facility are electric induction furnaces.

EU-01

A-line east pouring line, Mag drum and shot air wash controlled by Baghouse #774 (20,000 dry standard cubic feet per minute (dscfm).

EU-01 has limitations that restrict PM and PM10 and visible emissions. Compliance with the emission limits are demonstrated through monitoring to demonstrate proper operation of the baghouse. The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

The pressure drop across the baghouse is required to be monitored and recorded on a daily basis. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. During the inspection the pressure drop was 3.6 "W.C. and the bag leak detection light was green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

EU-02

Vibramill, A-line Shake-out sand elevator and conveyor, A-line shot leg, controlled by Baghouse #788 (20,000 dscfm pulse jet type).

After the parts are forged from A-line (EU-01) and cooled, the sand casting is removed via this unit. This emission unit consists of a vibramill, for shaking and breaking the sand apart, and associated conveyor and elevator which transfers the spent sand via a shot leg to a calciner to be reclaimed.

EU-02 has limitations that restrict PM and PM10 and visible emissions. Compliance with the emission limits are demonstrated through monitoring to demonstrate proper operation of the baghouse. The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

The pressure drop across the baghouse is required to be monitored and recorded on a daily basis. According to the facility's MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. During the inspection the pressure drop was 4.0 "W.C. and the bag leak detection light was green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

EU-TORCHES1-18

Cutting torches #1-18. These are mainly used to cut risers, spurs, etc. from the finished piece. It provides a rough finish to the part.

EU-1-18 has limitations that restrict PM and PM10 and visible emissions. The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

EU-05

Vibramill shot air wash, B-line east end pouring line. Particulate emissions are controlled by Baghouse #791 (42,000 dscfm reverse air type)

EU-05 has limitations that restrict PM and PM10 and visible emissions. Compliance with the emission limits are demonstrated through monitoring to demonstrate proper operation of the baghouse. The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

The pressure drop across the baghouse is required to be monitored and recorded on a daily basis. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. During the inspection the pressure drop was 3.8 "W.C. and the bag leak detection light was green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

EU-06

Sand coating/handling and reclaim operations controlled by baghouse #787 (20,000dscfm reverse air type).

EU-06 has limitations that restrict PM and PM10 and visible emissions. Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations, monitoring of the temperature in the calcining furnace and analyzing spent sand for loss of resin.

S.C. II.1. restricts the loss of resin to one percent based on total weight for the resin coated sand in the mold/core making process from pouring through shakeout. S.C. VI.3. is the associated monitoring and recordkeeping requirement that requires the facility on an annual basis, during the month of May, independently verify by analysis the phenol content of each of the binders which were used in the previous month of April and that the loss of binder is no more than one percent in spent mold/core sand. Test results for 2023 were received on June 27, 2023 and indicated compliance with this limit. The test is performed on chunks of molded sand before the steel is poured into the mold. (2.48% and 2.58%). The loss on ignition (LOI) test is then performed on black sand which is the sand that falls away from the cast part after it was poured and cooled (1.98%). The verification is confirmed by subtracting 1.98 from 2.58 for a result of 0.60% binder loss.

The pressure drop across the baghouse is required to be monitored and recorded on a daily basis. According to the facility's MAP, an acceptable pressure drop reading is between 1"W.C.)

and 9 "W.C. During the inspection the pressure drop was 1.6 "W.C. and the bag leak detection light was green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

S.C. III.2 of MI-ROP-B7013-2018a requires the calcining furnace to maintain a minimum temperature of 1200F while in operation. At the time of the inspection the calciner was not in operation and has not been for the last couple of years.

The facility is required to independently verify, during the month of May, by analysis the phenol content of each of the binders which were used in the previous month of April and that the loss of binder is not more than one percent in spent mold/core sand. Test results for 2023 were received on June 27, 2023 and indicated compliance with this limit.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

EU-07

Sand coating/handling and reclaim operations, Vibramill. Emission controlled by BH #484 and #1001 (total air flow 20,000 dscfm reverse air type).

EU-07 has limitations that restrict PM and PM10 and visible emissions. Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations, monitoring of the temperature in the calcining furnace and analyzing spent sand for loss of resin.

S.C. III.1. restricts operation of EU-07 unless the associated baghouse is installed, maintained, and operated in a satisfactory manner. S.C. VI.1. is the associated monitoring and recordkeeping requirement that requires the plant to monitor the pressure drop across the baghouse and record on a daily basis. During the inspection the pressure drop was 1.2 "W.C. and 3.8 "W.C. for baghouses 484 E and 484 W, respectively. The bag leak detection lights were green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

S.C. III.2 of MI-ROP-B7013-2018a requires the calcining furnace to maintain a minimum temperature of 1200F while in operation. At the time of the inspection the calciner was operating at 1400F. I reviewed records for February 2024, May 2023, and October 2023. When the process was in operation, the calciner met the minimum temperature of 1200F.

Likewise, to EU-06, the facility is required to independently verify, during the month of May, by analysis the phenol content of each of the binders which were used in the previous month of April and that the loss of binder is not more than one percent in spent mold/core sand. Test results for 2023 were received on June 27, 2023 and indicated compliance with this limit.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

EU-08

Cut-off saws #1-9, grinders #1-13, 7 to 12 hand grinders and 7 welders. Particulate emissions are controlled by BH #616 (40,000 dscfm, reverse air type) and exhausts to the in-plant environment.

EU-08 has limitations that restrict PM and PM10 and visible emissions. Compliance with the emission limits are demonstrated through monitoring to demonstrate proper operation of the baghouse. The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

The pressure drop across the baghouse is required to be monitored and recorded on a daily basis. According to the facility's MAP, an acceptable pressure drop reading is between 1"W.C. and 9 "W.C. During the inspection the pressure drop was 3.2 "W.C. The bag leak detection lights were green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

EU-09

Shot blast equipment. Emissions controlled by BH #618 (25,000 dscfm reverse air type).

EU-09 has limitations that restrict PM and PM10 and visible emissions. Compliance with the emission limits are demonstrated through monitoring to demonstrate proper operation of the baghouse. The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

The pressure drop across the baghouse is required to be monitored and recorded on a daily basis. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. During the inspection the pressure drop was 3.2 "W.C. The bag leak detection lights were green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

EU-10A

Sand leg and mag drum, shot legs, vibratory mold dumper/conveyor, used for shakeout activities. Particulate emissions are controlled by BH #864 (32,000 dscfm dust collector) and BH #776 (24,000 dscfm dust collector).

EU-10A has limitations that restrict PM and PM10 and visible emissions. Compliance with the emission limits are demonstrated through monitoring to demonstrate proper operation of the baghouse. The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

The pressure drop across the baghouse is required to be monitored and recorded on a daily basis. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 inches of water column "W.C. and 9 "W.C. During the inspection the pressure drop was 4.0 "W.C. and 4.4 "W.C. for baghouses 864 and 776, respectively. The bag leak detection lights were green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

FG-POUR

This flexible group consists of the following emission units:

EU-POURINGA:

Three (3) electric induction furnaces, Pouring line A and ancillary equipment controlled by Baghouse #790 (30,000 dscfm reverse air type) exhausts to the in-plant environment.

EU-POURINGB:

Three electric induction furnaces, Pouring line B and ancillary equipment controlled by Baghouse #554 (42,000 dscfm pulse jet type and Baghouse #553 (32,000 dscfm pulse jet type) exhausts to the in-plant environment.

Emissions are controlled by three (3) separate baghouses and all exhausted to the in-plant environment.

FG-POUR has limitations that restrict PM, PM10 and PM2.5 emissions. Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations.

In addition, the NESHAP ZZZZ requires performance tests to demonstrate compliance with all applicable PM or total metal HAP emissions limits in 40 CFR 63.10895 for a metal melting furnace or group of all metal melting furnaces no less frequently than every 5 years and each time the permittee elects to change an operating limit or make a process change likely to increase HAP emissions. The NESHAP restricts PM emissions to 0.1 lb per ton of metal charged. The last test was performed December 13-16, 2022. The table below shows the results of that test.

Source	Sample	Date	Time	Air Flow Rate DSCFM (1)	Particulate Concentration Lbs/1000 Lbs, Dry (2)	Particulate Mass Rates	
						Lbs/Hr (3)	Lbs/Ton of Charge (4)
Pouring Line A	1	12/13/22	21:35-23:15	34,093	0.00072	0.110	0.066
	2	12/14/22	08:16-09:59	36,531	0.00052	0.086	0.053
	3	12/14/22	10:28-12:10	35,744	0.00044	0.070	0.043
	Average			**35,456**	**0.00056**	**0.089**	**0.054**
Pouring Line B	1	12/13/22	09:27-11:11	42,086	0.0023	0.44	0.089
	2	12/13/22	11:42-13:22	42,113	0.0028	0.52	0.093
	3	12/13/22	13:54-15:37	41,952	0.0026	0.48	0.092
	Average			**42,050**	**0.0026**	**0.48**	**0.091**

(1) DSCFM = Dry Standard Cubic Feet Per Minute (STP = 68 °F & 29.92 in. Hg).
(2) Lbs/1000 Lbs, Dry = Pounds Of Particulate Per Thousand Pounds Of Exhaust Gas On A Dry Basis
(3) Lbs/Hr = Pounds Of Particulate Per Hour
(4) Lbs/Ton of Charge = Lbs Of Particulate per Ton of Metal Charged. Calculated using melt rates supplied by Huron Casting. Melt Rates can be found in Appendix B.

The pressure drop across the baghouses are required to be monitored and recorded on a daily basis. According to the facility's approved MAP, an acceptable pressure drop reading is between 1"W.C. and 9 "W.C. During the inspection the pressure drop was 5.0 "W.C., 3.6, and 3.0 "W.C. for baghouses 790, 553, and 554, respectively. The bag leak detection lights were green, indicating proper operation of the systems. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leaks.

FG-MOLDLINE

Molding machines # 1-26 and cutting torches #19-22. No control. A-line west end pouring line A-line cooling room; BH #789 (32,000 dscfm). West end pouring line B, B-line cooling room; BH #792 (47,000 dscfm). All equipment exhausts through SV-03. Baghouses are shaker type.

This flexible group consists of EU-MOLDLINE-A, EU-MOLDLINE-B, EU-MOLDLINE-C, EU-TORCHES19 -22, EU-03A and EU-03B.

Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations and limitations on amount of binder used.

The pressure drop across the baghouses are required to be monitored and recorded on a daily basis. According to the facility's approved MAP, an acceptable pressure drop reading is between 1" W.C. and 9 "W.C. During the inspection the pressure drop was 2.4 "W.C. and 4.6 "W.C. for baghouses 789 and 792, respectively. The bag leak detection lights were green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

Binder usage is restricted to not more than 1,480 tons per year based on a 12-month rolling time period, as determined at the end of each calendar month. Binder usage for the 12-month rolling time period ending February 2024 was 439 tons.

S.C. II.2. limits the maximum phenol content of any of the binder used for coating sand to less than 1.1 percent by weight. The facility is required to independently verify, during the month of May, by analysis the phenol content of each of the binders which were used in the previous month of April and that the loss of binder is not more than one percent in spent mold/core sand. Test results for 2023 were received on June 27, 2023 and indicated compliance with this limit.

FGMACTZZZZZ

According to the O&M plan required by the NESHAP, the facility is required to perform calibrations on the broken bag detectors every 90 days. The manufacturer requires preventative maintenance every 90 days, and the plant was conducting every 180 days instead. A couple of calibration periods were missed. I viewed the most recent calibrations performed and it appears equipment was within calibrations during these events. During the plant tour, there were a couple of bag leak detection lights that were not on, see discussion under each individual emission unit. The daily log for March 21, 2024, did not identify inoperable lights, though we viewed inoperable lights during the inspection. A violation notice was not sent this time, because the facility corrected the O&M plan and preventative maintenance schedules to ensure calibrations would be performed every 90 days.

Blue Diamond Steel Castings

The Blue Diamond portion of the facility has a shell mold line that uses three 8-ton capacity electric induction furnaces for a design melting capacity of approximately 200 tons per day. It also has a no-bake line which uses two 8-ton capacity electric induction furnaces and one electric arc ladle reheat station plus a vacuum degassing unit for a design melting capacity of approximately 200 tons per day. Operations at the facility include raw materials handling, sand mixing, mold and core production, melting, casting, finishing, welding, grinding, testing, packaging, and shipping. All of the melting and heat treat furnaces at the facility are electrically heated. There are no fuel combustion emissions from electric furnaces.

Source-Wide Conditions

For regulatory purposes, the two foundries are one stationary source. Operations at the facility includes raw materials handling, sand mixing, mold and core production, melting, casting, finishing, welding, grinding, testing, packaging, and shipping. All the melting furnaces at the facility are electric induction furnaces.

Title V permit, MI-ROP-B7013-2018a requires the facility to meet source-wide emission limits as listed in the emission limits table. The source-wide emission limits are for the entire facility and the emissions from Huron Castings, Inc. and Blue Diamond Steel Castings are combined to determine compliance with these limits.

Source-wide conditions were discussed at the beginning of this report.

EU-NBFURNACE

The no-bake furnace line consists of (3) three electric induction furnaces: two 8-ton capacity melt furnaces, one electric arc ladle reheat station, and a vacuum degassing unit for an expected melting capacity of 200 tons per day. The furnaces are controlled by an 80,000 cfm baghouce (BH #22) with the exhaust re-circulated to an area behind the furnace hoods.

The no-bake furnace has PM, PM10 and PM2.5 emission limits. Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations. In addition, the NESHAP ZZZZ requires performance tests to demonstrate compliance with all applicable PM or total metal HAP emissions limits in 40 CFR 63.10895 for a metal melting furnace or group of all metal melting furnaces no less frequently than every 5 years and each time the permittee elects to change an operating limit or make a process change likely to increase HAP emissions. The NESHAP restricts PM emissions to 0.1 lb per ton of metal charged. The last test was performed December 13-16, 2022. The table below shows the results of that test.

Source	Sample	Date	Time	Air Flow Rate DSCFM (1)	Particulate Concentration Grains/DSCF (2)	Particulate Mass Rates	
						Lbs/Hr (3)	Lbs/Ton of Charge (4)
No Bake Furnace	1	12/14/22	15:19-16:59	48,957	0.00008	0.033	0.0061
	2	12/15/22	09:27-11:11	48,118	0.00006	0.027	0.0052
	3	12/15/22	11:45-13:26	47,812	0.00012	0.047	0.0094
	Average			**48,296**	**0.00009**	**0.036**	**0.0069**
Shell Furnace	1	12/16/22	07:26-09:06	39,655	0.00009	0.029	0.0064
	2	12/16/22	09:35-11:14	39,183	0.00014	0.047	0.0103
	3	12/16/22	11:47-13:27	39,377	0.00004	0.012	0.0026
	Average			**39,405**	**0.00009**	**0.029**	**0.0064**

(1) DSCFM = Dry Standard Cubic Feet Per Minute (STP = 68 °F & 29.92 in. Hg).
(2) Grains/DSCF = Grains Of Particulate Per Dry Standard Cubic Foot Of Exhaust Gas
(3) Lbs/Hr = Pounds Of Particulate Per Hour
(4) Lbs/Ton of Charge = Lbs Of Particulate per Ton of Metal Charged. Calculated using melt rates supplied by Huron Casting. Melt Rates can be found in Appendix B.

The pressure drop across the baghouses are required to be monitored and recorded on a daily basis. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. During the inspection the pressure drop was 5.2 "W.C. The bag leak detection lights were green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

The facility is required to track monthly records of tons of steel melted for EU-NBFURNACE per special condition VI.2. For the month of February 2024, the no-bake furnace melted 225.7 tons of steel.

S.C. VI.3. requires the facility to monitor and record, the negative pressure using a magnehelic gauge at the inlet side of the baghouse BH-01 for EU-NBFURNACE on a daily basis during operation of EU-NBFURNACE to verify that the hood system capture velocity as designed is achieved in practice. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were negative for the records viewed.

EU-NBMOLD

The mold making process that blends the sand and binder, prepares and cures the molds, and sets the mold out on the casting lines. This emission unit is not controlled.

The facility is required to track the monthly and yearly binder usage rate and shall not process more than 1,500 tons of binder per year in EU-NBMOLD based on a 12-month rolling time period calculated at the end of each calendar month. For the 12-month rolling time period ending February 2024 the binder usage was 620.3 tons.

EU-SHELLFURNACE

The shell furnace line consists of three 8-ton capacity electric induction furnaces for an expected melting capacity of 200 tons per day. The furnaces are controlled by a 50,000 cfm baghouse (BH-06) with the exhaust re-circulated back into the furnace hoods.

Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations and a source-wide material limit on the tons of steel melted.

The pressure drop across the baghouses are required to be monitored and recorded on a daily basis. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. During the inspection the pressure drop was 3.8 "W.C. The bag leak detection lights were green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. The system is equipped with a visual alarm. A green light means the system is operating properly and a red light indicates that the alarm has been triggered. At the time of the inspection, the light was green.

EU-NBTORCHES

No-bake cutting torches with the exhaust emitted into the cutting area.

The permit does not have emission limits or monitoring associated with this unit. The compliance check in not discharging directly into ambient air. At the time of the inspection the facility was in compliance with this requirement.

EU-SHELLTORCHES

Shell cutting torches with the exhaust emitted into the cutting area.

The permit does not have emission limits or monitoring associated with this unit. The compliance check in not discharging directly into ambient air. At the time of the inspection the facility was in compliance with this requirement.

EU-FINISHING

The finishing process consists of grinders, shot blast, cut-off saws, wheelabrators, and welders. The process is controlled by a 30,000 cfm baghouse (BH-10) with the exhaust re-circulated back into the finishing area.

Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations.

The pressure drop across the baghouses are required to be monitored and recorded on a daily basis. According to the facility's approved MAP, an acceptable pressure drop reading is between 1" W.C. and 9 "W.C. During the inspection the pressure drop was 4.4 "W.C. The bag leak detection lights were green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

FG-BDSV01

This flexible group consists of EU-NBPOURAND COOL, the no-bake pouring and cooling room consists of a pouring hood and enclosed cooling room which is controlled by a 40,000 cfm baghouse (BH-02) and EU-SHELLCOOL. The shell cooling room encloses cast molds on a conveyor and is controlled by a 40,000 cfm baghouse (BH-07). Emissions are exhausted through stack SV-01.

FG-BDSV01 has PM, PM10 and PM2.5 emission limits. Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations.

The pressure drop across the baghouses are required to be installed and operating properly. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. During the inspection the pressure drop was 3.6 "W.C. and 5.2 for BH-02 and BH-07, respectively. The bag leak detection lights were green, indicating proper operation of the system. I reviewed records for February 2024, May 2023, and October 2023. Pressure differentials were within the appropriate range for the records reviewed.

The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

FG-BDSV02

Emission units exhausted through stack SV-02. EU-SHELLCALCINER: The calciner is used to destroy the binder material in the mold facing and core sand from the shell line by heating it to 1,200° F (minimum) before the sand is returned to the shell sand system for recycling. The calciner is controlled by a 15,000 cfm baghouse (BH-09). EU-SHELLMOLD, the mold making process that blends the sand and binder, prepares and cures the molds, and sets the molds out on the casting lines. The emissions from this process are captured with a hood with a flow rate of

71,000 cfm. Includes 22 core machines which emit to the in-plant environment and two natural gas fired heat treat furnaces. Each heat treat furnace is rated at 9.9 MMBTU/hr.

FG-BDSV02 has PM, PM10 and PM2.5 emission limits.

Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations and limitations on tons of binder used per year in EU-SHELLMOLD portion of FG0BDSV02.

The facility is required to track the monthly and yearly binder usage rate and shall not process more than 840 tons of binder per year in EU-SHELLMOLD portion of FG-BDSV02, based on a 12-month rolling time period calculated at the end of each calendar month. For the 12-month rolling time period ending February 2024 the facility used 534 tons of binder.

The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

The pressure drop across the baghouses are required to be installed and operating properly. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. At the time of the inspection the differential pressure on BH-09 was 4.8 "W.C.

The EU-SHELLCALCINER portion of FG-BDSV02 shall not operate unless a minimum temperature of 1,200F is maintained. During the inspection the shell calciner was not in operation. I reviewed records for February 2024, May 2023, and October 2023. Temperatures were above 1300F for this time period. The setpoint for the temperature is 1250F.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

FG-BDSV03

Emission units exhausted through stack SV-03. EU-NBCALCINER: The calciner is used to destroy the binder material in the mold facing and core sand from the no-bake line by heating it to 1,200° F (minimum) before the sand is returned to the no-bake sand system for recycling. The calciner is controlled by a 6,500 cfm baghouse (BH-03). EU-NBSAND: The no-bake sand system includes the vibramill, sand cooler, shakeout, cooling conveyor, sand tanks, and elevators. The sand system is controlled by a 40,000 cfm baghouse (BH-04).

The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

FG-BDSV03 has PM, PM10 and PM2.5 emission limits. Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations.

The facility is required to track the monthly and yearly binder usage rate and shall not process more than 1,550 tons of binder per year in FG-BDSV03, based on a 12-month rolling time period calculated at the end of each calendar month. For the 12-month rolling time period ending February 2024 the facility used 4.65 tpy.

The pressure drop across the baghouses are required to be installed and operating properly. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. At the time of the inspection the differential pressure on BH-04 was 2.4 "W.C. and BH-03 was not in operation. BH-03 is associated with the no-bake calciner, which is used as a backup.

The EU-NBCALCINER portion of FG-BDSV03 shall not operate unless a minimum temperature of 1,200F is maintained. During the inspection the equipment was not operating I reviewed records for February 2024, May 2023, and October 2023. During the periods of operation, the calciner maintained a temperature above 1200F.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

FG-BDSV04

Emission units exhausted through stack SV-04. EU-SHELLSAND is the shell sand system that includes the mechanical reclaim, dumper, shakeout conveyor, shot sand screen, vibramill, bucket elevators, and sand tanks. The sand system is controlled by a 35,000 cfm baghouse (BH 08). EU-SHELLPOUR: This unit includes the pourline, shot separator, and shot cooler. All activities are controlled by a 50,000 cfm baghouse (BH-05).

The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

FG-BDSV04 has PM, PM10 and PM2.5 emission limits. Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations.

The facility is required to track the monthly and yearly binder usage rate and shall not process more than 840 tons of binder per year in FG-BDSV04, based on a 12-month rolling time period calculated at the end of each calendar month. For the 12-month rolling time period ending February 2024 the facility used 59.2 tpy.

The pressure drop across the baghouses are required to be installed and operating properly. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. At the time of the inspection the differential pressure on BH-05 was 4.0 "W.C. and BH-08 was 5.2 "W.C.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

FG-BDSV05

Emission units exhausted through stack SV-05. EU-SHELL2POUR: This unit includes the pourline, shot separator, and shot cooler. All activities are controlled by a 50,000 cfm baghouse (BH-18).

EU-SHELL2COOL: The shell cooling room encloses cast molds on a conveyor and is controlled by baghouses BH-19A and BH-19B, 30,000 dscfm each. EU-SHELL2SAND: The shell sand system includes the mechanical reclaim, dumper, shakeout conveyor, shot sand screen, vibramill, bucket

elevators, torch stations, and sand tanks. The sand system is controlled by a 40,000 cfm baghouse (BH 17).

FG-BDSV05 has PM, PM10 and PM2.5 emission limits. Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations.

The ROP restricts visible emissions to below 5 percent opacity. Monthly non-certified visible emissions are required monthly. No visible emissions were noted during the inspection.

FG-BDSV04 has PM, PM10 and PM2.5 emission limits. Compliance with the emission limits are demonstrated through monitoring of proper baghouse operations.

The facility is required to track the monthly and yearly binder usage rate and shall not process more than 840 tons of binder per year in FG-BDSV04, based on a 12-month rolling time period calculated at the end of each calendar month. For the 12-month rolling time period ending February 2024 the facility used 59.2 tpy.

The pressure drop across the baghouses are required to be installed and operating properly. According to the facility's approved MAP, an acceptable pressure drop reading is between 1 "W.C. and 9 "W.C. At the time of the inspection the differential pressure on BH-17 was 3.2 "W.C. and BH-19A was 1.8 "W.C and BH-19B was 2.8 "W.C.

The facility is required to have a bag leak detection system on this equipment and shall operate it appropriately. At the time of the inspection the bag leak indicator, showed there was no leak.

FG-Rule 290

This flexible group covers any emission unit that emits air contaminants and is exempt from the requirements of Rule 201, pursuant to Rules 278, 278a and 290. The facility has some heat treat furnaces that utilize this exemption. The HAP emissions from this unit shall be included in the source-wide HAPs recordkeeping. They currently are only tracked separately.

PTI 187-19 Emergency Generator

Huron Castings installed an MTU diesel generator (EUEMERGENCY) under PTI 187-19. This unit is a 3,353-horsepower diesel-fired emergency engine with a 4.77-liter displacement. Startup of the unit was stated by staff to be in June 2021. This permit will be rolled into the ROP during the next renewal.

This emission unit is subject to hourly NOx, CO, and PM emission limits. EUEMERGENCY is a Tier 2 certified engine. Since the unit is a certified engine, compliance with the emission limits is met through satisfactory operation of the unit. Based on the observations made at the time of the inspection and follow up review, these emission limits are assumed to be being met.

Per SC II.1, the permittee shall burn only diesel fuel, in EUEMERGENCY with the maximum sulfur content of 15ppm (0.0015 percent) by weight. A purchase order of diesel fuel used was requested and provided indicating that the fuel meets this sulfur content limit.

Per SC III.1-2, the permittee shall not allow EUEMERGENCY to exceed 100 hours per calendar year for maintenance checks and readiness testing and emergency demand response. The permittee

may operate EUEMERGENCY up to 50 hours per calendar year for non-emergency situations, but those hours are to be counted towards the 100 hours per calendar year for maintenance and testing and emergency demand response, as allowed in 40 CFR63.6640(f)(2). The unit was run a total of 5:54 hours in 2023. The only time it appears the unit runs is for maintenance purposes. After further review, the company appears to be meeting the hour restrictions for the emergency engine.

Per SC III.3, the permittee shall install, maintain, and operate EUEMERGENCY according to the manufacturer written instructions, or procedures developed by the owner/operator and approved by the engine manufacturer, over the entire life of the engine. Based on the observations made, it appears the unit overall is being operated properly.

Per SC III.4, if the permittee purchased a certified engine, according to procedures specified in 40 CFR Part 60 Subpart IIII, for the same year model, the permittee shall meet several requirements listed in this condition. At this time, it is assumed the company is operating the emergency engine in a satisfactory manner to be considered a certified engine.

Per SC III.5-6, the permittee shall not operate EUEMERGENCY for more than 500 hours per a 12-month rolling time period and no more than 200 hours per month. As discussed above and after review of monthly records provided, the company is well within the permitted limit for monthly and 12-month rolling time period hours of operation.

Per SC IV.1, the permittee shall equip and maintain EUEMERGENCY with a non-resettable hour's meter to track the operating hours. During the inspection, EUEMERGENCY was observed but not in operation. A non-resettable hour's meter was observed and read 29:48. This is consistent with the records provided.

Per SC IV.2, the nameplate capacity of EUEMERGENCY shall not exceed 2,500 kW, as certified by the equipment manufacturer. A nameplate was observed at the time of the inspection on the emergency engine and read 2,250 kW.

Per SC VI.1, the permittee shall keep for certified engines records of the manufacturer certification documentation. A certificate of conformity was noted attached to the PTI application for this permit.

Per SC VI.2a, for a certified engine the permittee shall keep records of the manufacturer's emission-related written instructions, and records demonstrating that the engine has been maintained according to those instructions, as specified in SC III.4. Records were requested and provided since the startup of the engine. After further review, the records provided appear acceptable.

Per SC VI.3-5, the permittee shall keep track of hours of operation, records of manufacturer documentation indicating the unit meets the applicable emission limitations in NSPS Subpart IIII, and records of the diesel fuel sulfur content. As discussed above, records had been requested and reviewed for select time periods. After further review, it appears that the company is keeping track of the applicable items.

Per SC VII.1-2, within 30 days after completion of the installation of EUEMERGENCY, the company shall notify the AQD District Supervisor in writing of the completion of the activity. Additionally,

within 30 days following the initial startup, the company shall verify if the emergency generator shall be operated in a certified or non-certified manner. The company notified AQD staff on June 18, 2021, that the unit was ready for operation and that the unit would be operated in a certified manner. This appears acceptable.

NAME Gina L. McCann DATE 4-30-2024 SUPERVISOR Gina L. McCann