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

A164168693

FACILITY: General Motors Lansing Grand River Assembly		**SRN / ID:** A1641
LOCATION: 920 TOWNSEND ST., LANSING		**DISTRICT:** Lansing
CITY: LANSING		**COUNTY:** INGHAM
CONTACT: Brent Cousino , Senior Environmental Engineer		**ACTIVITY DATE:** 08/08/2023
STAFF: Matthew Karl	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: FY23 Site inspection as part of FCE.		
RESOLVED COMPLAINTS:		

Facility Contacts:

Brent Cousino, Environmental Supervisor, brent.cousino@gm.com 810-813-4775

Jeff Hummel, jeffery.hummel@gm.com

Patrick Doyle, patrick.1.doyle@gm.com

EGLE AQD Staff:

Matt Karl, Senior Environmental Quality Analyst, karlm@michigan.gov 517-282-2126

Bob Byrnes, Lansing District Supervisor, byrnes@michigan.gov 517-275-0439

David Rauch, Environmental Quality Analyst, rauchd2@michigan.gov 517-216-0423

Purpose:

On July 26, 2023, a request for information/records was emailed to GM staff Brent Cousino and an announced site inspection was arranged. On August 8, 2023, I (Matt Karl), Bob Byrnes and David Rauch performed a site inspection of the General Motors LLC (GM) Lansing Grand River Assembly as part of a full compliance evaluation to determine compliance with the requirements of MI-ROP-A1641-2017 and PTI No. 54-17. We arrived on site around 9am. We watched the visitor safety video and were then escorted around the facility by GM staff members Brent Cousino, Jeff Hummel and Patrick Doyle. During our site inspection we visited the Paint Shop building, the General Assembly Building and the Fuel Lab. We reviewed the records that were previously requested on site. We departed the facility around 2:30pm. Brent Cousino emailed the requested records on August 11, 2023. A review of those records and the conditions of the permits is included below.

Protocol Review/Testing:

A review of the 2021 and 2022 Annual review of Operating Conditions Relative to Oven Solvent Loading, Capture Efficiency (CE), Destruction Efficiency (DE) / Removal Efficiency (RE) and Transfer Efficiency (TE) showed the following test results below. The results are in line with what

was previously observed during the last inspection on September 30, 2021, and has had the CE/DE/RE results updated based on testing conducted in July 2022. Copies of these documents are filed on Content Manager.

Oven Solvent Loading

Coating Type	Date Completed	Completed By	Test Values (lbs. VOC/Gal Solid Applied)
Basecoat Solid – Oven	4/1/16 thru 4/8/16	BASF	0.04
Basecoat Metallic – Oven	4/1/16 thru 4/8/16	BASF	0.55
Basecoat Solid – Heated Flash	4/1/16 thru 4/8/16	BASF	3.48
Basecoat Metallic – Heated Flash	4/1/16 thru 4/8/16	BASF	3.75

There have been no significant changes in coating technology or processing since the OSL testing that was conducted in 2016.

Capture Efficiency

Equipment	Date Completed	Completed By	Test Values (%)
Guidecoat Booth	7/12/22 thru 7/14/22	Montrose	13.5
Guidecoat Oven	7/12/22 thru 7/14/22	Montrose	69.2
Clearcoat Booth	7/12/22 thru 7/14/22	Montrose	54.0
Clearcoat Oven	7/12/22 thru 7/14/22	Montrose	15.0

Destruction Efficiency

Equipment	Date Completed	Completed By	Test Values (%)
Topcoat Booth DE	7/12/22 thru 7/14/22	Montrose	97.5
Topcoat Oven DE	7/12/22 thru 7/14/22	Montrose	95.0

The carbon concentrator had a RE of 81.6% of VOCs. The CE values listed above have been adjusted downward to reflect this value.

There have been no significant changes in coating technology, processing or RTOs since the CE/DE/RE testing that was conducted in July 2022.

Transfer Efficiency

Equipment	Date Completed	Completed By	Test Values (%)
Guidecoat	5/31/16 thru 6/3/16	JLB	76
Basecoat Metallic	5/31/16 thru 6/3/16	JLB	61
Basecoat Solid	5/31/16 thru 6/3/16	JLB	62
Clearcoat	5/31/16 thru 6/3/16	JLB	61

There have been no significant changes in coating technology or processing since the TE testing that was conducted in 2016.

Regenerative Thermal Oxidizer (RTO) No. 1 (South):

The RTO No. 1 is located on the south side of the Paint Shop building and is used to control VOC emissions from EU-Electrocoat, which consists of the electrocoat dip tank and the electrocoat curing oven. It also controls emissions from the EU-Guidecoat curing oven, and the EU-Topcoat1 and EU-Topcoat2 curing ovens. RTO No. 1 was last tested on July 12, 2022 and the results indicated a VOC destruction efficiency (DE) of 95.0%. Actual operating parameters recorded at 11:34am during the inspection were as follows:

Oxid. Inlet Temperature: 310°F (previously observed at 305, 310, 313°F)

Oxid. Outlet Temperature: 363°F (previously observed at 380, 369, 390°F)

Oxid. Combustion Chamber Temperature: 1559°F (previously observed at 1609, 1641, 1591°F)

The RTO No. 1 operating temperature records were reviewed for June 2023. The document "06-2023 RTO Temperature Assessment" is available on Content Manager. The combustion chamber temperature was well above the permit requirement of 1400°F. All combustion chamber temperature readings appeared above 1500°F during production. The RTO No. 1 was not operated during no production weekends from Saturday 6/3 at 00:54 to Monday 6/5 at 02:26, Friday 6/9 at 04:48 to Monday 6/12 at 02:10, Friday 6/16 at 02:54 to Monday 6/19 at 02:36, Friday 6/23 at 10:34 to Monday 6/26 at 02:16.

On Friday 6/30 at 07:30 the facility went into the end of the month/July 4th shutdown. It was noted that the combustion chamber thermocouple started having errant readings on 6/30 at approximately 09:30 and later stopped recording. This was noted during the daily inspection on 6/30. The thermocouple was replaced and the temperature reading validated on Sunday 7/2 before restarting production.

A third-party company, Durr Environmental, Inc. performs semi-annual inspections and preventative maintenance on the RTO. The last semi-annual inspection was conducted on January 27, 2023. During this inspection the differential pressure across the RTO No. 1 was noted as 17.50" water column (w.c.). Previously this differential pressure was noted as 18.5", 18.8" and 13.8" w.c. Also, during this semi-annual inspection, it was noted that "Both VFD looks clean. Note VFD #1 in new install 6/30/20. Recommend replace VFD #2 when possible GM has spare onsite." During a review of the South RTO logbook, on 8/7/23 it was noted that a deviation of 33 minutes was recorded where the RTO was offline due to a VFD (variable fan drive) fault. The deviation noted that GM was looking into the issue with the manufacturer. This deviation will be reported in the next ROP semi-annual report (July 1-December 31, 2023).

<u>RTO No. 2 and rotary carbon concentrators (RCC) (North):</u>

The RTO No. 2 is located on the north side of the Paint Shop building and is used to control emissions from Zone 1 of the automatic bells section of EU-Guidecoat and the automatic clearcoat sections of the topcoat booths and the flash off oven area of EU-Topcoat1 and EU-Topcoat2. Two parallel rotating carbon concentrator (RCC) units use carbon adsorption to capture the VOCs from the high volume, low VOC concentration exhaust stream and then transfers these VOCs to a smaller volume, heavily concentrated air stream via desorption. The concentrated VOCs are then routed to the RTO No. 2 for destruction. The RTO No. 2 and RCC system was last tested on July 12, 2022. The results of testing indicated that the RTO No. 2 achieved a VOC destruction efficiency (DE) of 97.5% and that the RCC achieved a VOC reduction efficiency (RE) of 81.6%. Actual operating parameters were recorded at 11:16am during the inspection:

Oxid. Inlet Temperature: 260°F (previously 305, 310, 313°F)

Oxid. Outlet Temperature: 355°F (previously 380, 369, 390°F)

Oxid. Combustion Chamber Temperature: 1562°F (previously 1609, 1641, 1591°F)

The RTO No. 2 operating temperature records were reviewed for June 2023. The document "06-2023 RTO Temperature Assessment" is available on Content Manager. The combustion chamber temperature was well above the permit requirement of 1400°F. All combustion chamber temperature readings appeared above 1500°F during production. The set point for the combustion chamber temperature is 1550°F. The RTO No. 2 was not operated during no production weekends from Saturday 6/3 at 02:54 to Monday 6/5 at 02:20, Friday 6/9 at 06:50 to Monday 6/12 at 02:12, Friday 6/16 at 04:58 to Monday 6/19 at 02:42, Friday 6/23 at 05:18 to Monday 6/26 at 02:18. On Friday 6/30 at 07:30 the facility went into the end of the month/July 4th shutdown.

The RTO No. 2 desorb supply temperatures were reviewed for June 2023. The RCC desorb temperature was well above the permit requirement of 235°F. All RCC desorb supply temperature readings appeared above 250°F during production. The RCC was not operated during no production weekends from Saturday 6/3 at 02:40 to Monday 6/5 at 02:56, Friday 6/9 at 06:36 to Monday 6/12 at 02:52, Friday 6/16 at 04:40 to Monday 6/19 at 03:18, Friday 6/23 at 05:02 to Monday 6/26 at 02:50. On Friday 6/30 at 07:12 the facility went into the end of the month/July 4th shutdown.

A third-party company, Durr Environmental, Inc. performs semi-annual inspections and preventative maintenance on the RTO No.2 and RCC system. The last semi-annual inspection was conducted on January 27, 2023. During this inspection the differential pressure across the RTO No. 2 was noted as 16.10" water column (w.c.). Previously this differential pressure was noted as 16.1", 13.6" and 13.0" w.c.

For the RCC, it was noted that "the common inlet ductwork before the KCR units the has excessive rust and corrosion recommend fixing issues. The Concentrator unit floor paint is mostly gone and excessive rust need to fix issue before holes are in the floor from corrosion."

The RCC also has monthly inspections conducted on it. The document "RCC Visual Inspection June 2023" was reviewed and is available on Content Manager. The rotary carbon concentrator wheel pressure drop was noted as 1.6" w.c. for RCC#1 and 1.4" w.c. for RCC#2. The pressure drop was previously noted in the range of 0.3 to 1.7" w.c.

<u>Paint Shop building:</u>

The phosphate process is used to clean the vehicle bodies and prepare them for the painting process. The phosphate process is conducted through a series of ten (10 tanks). Tank nos. 1 and 2 are cleaner stages that utilize soap, tank nos. 3a and b use city water for rinse, tank no. 4 is a conditioner tank. Tank no. 5 adds the nickel/zinc phosphating solution, tank no. 6 is for rinse. Tank no. 7 is sealer and tank nos. 8a and b are for rinse. The electrocoat paint operation (ELPO/e-coat) process is contained in emission unit EU-Electrocoat. It consists of a fully enclosed dip tank which has a capacity of 112,000 gallons, is 112 feet long and is temperature controlled to 79°F, with an enclosure tunnel that vehicle bodies pass through before going up into the e-coat oven. Sealers covered under the emission unit EU-Sealers&Adhes are applied to the vehicle bodies. The vehicle bodies are wet sanded and solvent wiped, with the solvent wiping being covered under emission unit EU-OtherSolvents. The vehicle bodies then proceed to the guidecoat spray booths covered under emission unit EU-Guidecoat.

EU-Guidecoat:

EU-Guidecoat consists of a guidecoat spray booth that uses 6 side and overhead automatic electrostatic bell applicators to apply solvent borne primers to the vehicle bodies and is followed by a curing oven.

FG-Topcoat (EU-Topcoat1 and EU-Topcoat2):

The topcoat process consists of 2 identical parallel topcoat lines using water borne basecoats and solvent borne clearcoats. The lines each consist of a feather duster, a BC robot section (4 painters, 1 opener), a BC bell section (6 side and overheads), a BC robot section (6 painters), a manual section, a heated flash for basecoat. The clearcoat portion of the line consists of a CC robot bell section (6 side and 3 overheads) then (4 side and 3 overhead bells), an observation zone with back up manual sprayers not currently being utilized and finally a cure oven. The whole guidecoat and topcoat spray booth sections utilized all automated sprayers unless a manual is needed for quality or issues with existing robots.

The topcoat system uses a hydro purge with additive for the BC sections. No purge is collected due to the high water content and it goes straight to the booth water. No VOC credit is taken for hydro purge as they do not send it off as waste. The clear coat booths have purge cups for the robots and the bell purge is collected internally form the bell system. Only the bell cups are released into the booth water. Cleaning for both the base coat and clear coat booths is done with a high pressure water sprayer. Cleanup is minimized by utilizing masking and petroleum jelly like protective coatings which are washed into the booth water when finished/cleaning.

AUTO MACT/ FG-MACT / FG-MACTIIII-AUTOASSEMBLY:

This flexible group contains the conditions for the federal standards for 40 CFR Part 63, Subpart IIII – National Emission Standards for Hazardous Air Pollutants (NESHAP) for surface coating of automobiles and light-duty trucks. It covers emission units EU-Electrocoat, EU-Guidecoat, EU-Topcoat1, EU-Topcoat2, EU-Sealers&Adhes, EU-GlassInstall, EU-Deadener, EU-Foam, EU-

FinalRepair1, EU-FinalRepair2, EU-FinalRepair3, EU-FinalRepair4, EU-SpotRepair1, EU-SpotRepair2, EU-SpotRepair3.

The facility is submitting MACT IIII Semi-Annual Compliance Reports as required. The last report received was for July 1, 2022 through December 31, 2022 and indicated compliance with all requirements. Compliance option 63.3091(b) was chosen as e-coat materials do not contain reportable HAP. No deviations were reported.

The MACT HAP Report – Summary was reviewed for July 2022 through June 2023. A copy is available on Content Manager. As shown in the table below, the facility is compliance with MACT IIII HAP emission limits.

Emission Unit(s)	MACT Limit	Actual Emissions Per Month July 2022-June 2023
Primer Surfacer/Topcoat/ Windshield Install/Final Repair	1.10 lbs HAP/GSA	0.03-0.04 lbs HAP/GSA
Sealers and Adhesives	0.010 lbs HAP/lb Material	0.000 lbs HAP/lb Material
Deadener	0.010 lbs HAP/lb Material	0.000 lbs HAP/lb Material

Lbs HAP/GSA = Pounds of HAP generated / gallons solids applied

Lbs HAP/Lbs Material = Pounds of HAP generated / pounds of material used

GM uses the compliance method specified in 63.3091(b) which is the combined emissions from primer surfacer, topcoat, final repair, glass bonding primer and glass bonding adhesives. Electrodeposition is excluded from the grouping per 63.3092(a) since it contains no more than 1.0 percent by weight of any organic HAP and no more than 0.1 percent by weight organic HAP which is a carcinogen. Final repair emissions were reviewed, and the facility uses the assumed transfer efficiency (TE) of 40% as allowed by 40 CFR 63.3161(h).

VOC and NOx Emissions Report:

A review of the VOC and NOx emissions report for the second quarter of 2023 was conducted. All processes associated with the painting and assembling of automobiles were included in the tons per month and tons per year calculations. A copy of the report is available on Content Manager.

Q2 2023 Emissions Report

Emission Unit	Pollutant	Units	April-23	May-23	June-23
Electrocoat	VOC	Tons/month	0.15	0.14	0.18
	VOC	Tons/year	1.9	1.8	1.8
Guidecoat	VOC	Tons/month	0.6	0.8	0.8
	VOC	Tons/year	13.6	11.8	10.0
Topcoat	VOC	Tons/month	5.37	7.61	5.48
	VOC	Tons/year	78.4	80.0	79.0
Sealers and Adhesives	VOC	Tons/month	0.70	0.87	0.93
	VOC	Tons/year	10.2	10.4	10.3
Glass Installation	VOC	Tons/month	0.05	0.05	0.06
	VOC	Tons/year	0.7	0.7	0.7
Deadener	VOC	Tons/month	0.00	0.00	0.00
	VOC	Tons/year	0.00	0.00	0.00
Foam	VOC	Tons/month	0.07	0.08	0.06
	VOC	Tons/year	1.10	1.11	1.13
Vehicle Fuel Fill	VOC	Tons/month	0.004	0.005	0.006
	VOC	Tons/year	0.06	0.06	0.06
	VOC	Tons/month	0.060	0.043	0.030

Combustion Sources	VOC	Tons/year	0.617	0.622	0.625
	NOx	Tons/year	20.72	20.95	21.06
Solvents	VOC	Tons/month	1.83	3.08	1.54
	VOC	Tons/year	31.8	32.4	31.1
Repair	VOC	Tons/month	0.02	0.04	0.02
	VOC	Tons/year	0.4	0.4	0.4
Storage Tanks	VOC	Tons/month	0.27	0.40	0.52
	VOC	Tons/year	4.6	4.6	4.6
Vehicle Production		Jobs/month	4547	6106	5549
		Jobs/12-months	62365	62473	61905

FG-Facility/Source Wide Conditions:

Compliance with the emission limits and material limits under FG-Facility/Source Wide conditions was reviewed for June 2023. The facility appeared to be in compliance with the permitted emission limits. The Natural Gas Readings for Air Permit record was also reviewed to determine compliance with the source wide material use limit for natural gas. The facility appeared to be in compliance with the permitted material limit. See the table below:

Special Condition/Pollutant	Limit	Time Period	Actual Emissions	Compliance Status
I.1 VOC	606 tons/year	12-month rolling	140 tons/year	Compliance
I.3 VOC	5.73 pounds/job	12-month rolling	4.52 pounds/year	Compliance
I.4 NOx	36.5 tons/year	12-month rolling	21.06 tons/year	Compliance

II.1 Nat. Gas	769 MMcf/year	12-month rolling	395.46 MMcf/year	Compliance

FG-Coldcleaners:

This flexible group consists of any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278, Rule 278a, and Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

A copy of all cold cleaners operated at the facility was obtained "FE016-LGR Parts Washer", which is available on Content Manager. The Paint Shop, Body Shop, Logistics (LOC), General Assembly (GA), LGS, CUC, and Building 66 have a total of 19 parts washers. The complete list showed location information, model, owner, responsible supervisor, solvent name, solvent type, drying rack, mechanically assisted cover, interface dimensions, air/vapor interface, exemption, installation data, solvent/cleaner information, and freeboard ratio.

Odors:

There have been no recent odor complaints for this facility.

Body Shop building:

A walk through of the Body Shop building was not conducted during this site inspection. Previously, various door panels, hoods, body parts, etc. were being welded and assembled throughout this building. The Body Shop building contains various welding and laser brazing operations which are exempt under Rule 285(2)(i) which exempts equipment for brazing, soldering, welding or plasma coating from the requirement of Rule 201(1) to obtain a permit to install (PTI). The welding operations are controlled by Torit cartridge filters and exhaust into the in-plant environment. Two laser welders are operated in complete enclosures and are vented internally as well. Various sealers are used in various operations to seal body panels which are being assembled prior to proceeding to the Paint Shop building. The sealer emissions are included with other sealer usages accounted for under emission unit EU-Sealers&Adhes.

Stamping Plant building and Logistics Optimization Center (LOC) building:

A walk through of the Stamping Plant building and LOC building was not conducted during this site inspection. Previously, it was observed that the Stamping Plant building contains operations for the stamping of body panels for Camaro and Cadillac models. Various operations weld, seal and complete body part assemblies in this building. Sealer material usage is covered under emission unit EU-Sealers&Adhes. The LOC building stores and distributes Camaro and Cadillac modules and parts for final assembly.

MACT ZZZZ – Emergency Engines:

There are currently 7 emergency engine/generator sets at the facility. The RICE MACT hours records were obtained for all 7 emergency engine/generator sets, and copies are available on Content Manager. The 12-month rolling hours of operation were below 50 hours for each individual engine. Each engine record shows the hour meter start, the hour meter end, total hours, hours for maintenance and testing, hours for non-emergency, emergency hours, total non-emergency hours for the year and 12-month rolling hour total. The majority of the runtime on these engines is for maintenance and testing. The ELPO generator @ CUC, the GA generator, and the LOC generator ran during a substation shutdown on 4/6/23 from between 12.4 and 15.4 hours. The LOC generator also ran for 6.6 hours on 3/24/23 during a planned utility interruption.

Fuel Lab:

During this site inspection we performed a walkthrough of the fuel lab. During the walkthrough, it was noted that the fuel lab contained several test cells that operate on a continuous basis to test fuel tank design and performance. We requested an exemption demonstration via Rule 278a. Brent Cousino submitted a "Lansing Fuels Lab Air Permit Exemption and Potential to Emit Memo", which is available on Content Manager. To summarize the memo, the operations at the fuel lab are exempt under Rule 291. The annual VOC emissions were calculated as worse-case fuel vapor loss of Tier II Fuel and High Volatility Fuel as follows:

Tier II Fuel (usage x VOC content) : 160 gallons x 6.1315 lbs VOC / gallon = 981 lbs VOC

High Volatility Fuel (usage x VOC content) : 20 gallons x 6.9371 lbs VOC / gallon = 138 lbs VOC

Based on this, the maximum VOC emissions per year would be 1,119 lbs VOC. This is below the 5 ton per year limit specified in Table 23 of Rule 291(2) for VOC.

Conclusion:

Based on the site inspection and the records review, it appears that General Motors LLC – Lansing Grand River Assembly is in compliance with all applicable requirements contained in permits MI-ROP-A1641-2017 and PTI No. 54-17.

NAME Matthew K. Kaml DATE 8/22/23 SUPERVISOR BB