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

N695049108

FACILITY: General Motors LLC-Lansing Delta Township		**SRN / ID:** N6950
LOCATION: 8175 Millett Highway, LANSING		**DISTRICT:** Lansing
CITY: LANSING		**COUNTY:** EATON
CONTACT: Brian Borzenski , Environmental Engineer		**ACTIVITY DATE:** 06/11/2019
STAFF: Robert Byrnes	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: FY 2019 Scheduled Inspection.		
RESOLVED COMPLAINTS:		

On 6/11/2019, I visited the GM Delta Assembly plant to conduct a compliance inspection. The visit included Brian Borzenski – Plant Environmental Representative for air and covered section 1 of MI-ROP-N6950-2014a, Jessica Alderton and Melissa Phipps were also present.

SECTION 1:

EU-Electro coat

An electro coat dip tank followed by an electro coat curing oven. VOC emissions from both are controlled by an ELPO Thermal Oxidizer. After electro coat and prior to the primer surfacer system, manual wet sanding of the vehicle may be performed to correct minor imperfections in the prime coat. The electro coat sand operation is located in the paint shop and emissions from this operation are sent through a filter and vented back into the plant.

The facility uses the supplier (BASF) product specification sheet VOC contents to determine the VOC emissions. They do not do a Method 24 analysis on the typical resins and pastes as the material VOC contents don't change much by batch. The VOC contents are also low for the waterborne e-coat materials. The coating supplier provides a monthly report showing the VOC contents, the percent volume solids, and the amount in gallons used for the resin, paste, thinner additives and biocide added. The following is a summary of the EU-Electro coat emission limits and the actual emissions are below their respective limits for the month of April 2019. The VOC calculations were reviewed and a copy of the records are attached to this report.

Pollutant	Permit Limit	Actual Emissions April 2019
VOC	**0.04 Lbs VOC/GAC**	**0.02 Lbs VOC/GAC**
VOC	**67.9 Lbs per day**	**6.0 lbs per day**
VOC	**8.8 tons per 12 month rolling time period**	**1.5 tons per 12 month rolling time period**

EU-Guide coat

A powder guide coat (primer surfacer) spray booth followed by a guide coat curing oven. The spray booth is equipped with electrostatic applicators or with equivalent technology with comparable or better transfer efficiency. The spray booth is equipped with a filter system to catch powder overspray and to recirculate air through the system. VOC and particulate emissions from the oven are now controlled by a Regenerative Thermal Oxidizer (RTO). However, no control credit is taken. The particulate emission rate and the VOC outlet rate in ppm was recently evaluated as required in PTI 209-00E on 8/29/17. The facility powders vehicles in both the grey and white colors.

The facility uses the product (Seibert Powder) specification sheets for the VOC contents and the auto protocol to determine the mass VOC emissions. The coating supplier provides a monthly report showing the amount in gallons used and the VOC information. The following is a summary of the EU-Guide coat emission limits. There

are no limits in the permit for the Guide coat emission unit. See attachments to this report for details on the emission calculations.

Pollutant	Permit Limit	Actual Emissions April 2019
VOC	NSPS Limit 1.4 KGS/LSA	0.01 KGS/LSA
VOC	No Permit Limit	3.75 tons per 12 month rolling time period

EU-Sealers and Adhesives

Various sealers, adhesives, and fillers are applied in the body shop, the paint shop, and the general assembly areas. None of these operations are directly vented to the outside atmosphere. All sealers were applied in the manual fashion, no automated robots were utilized.

Two suppliers provide usages at the end of each month with on site representatives. The usages for the rest of the materials are done by setting usage equal to purchased due to the high volume of materials used. The usages of all materials are compiled at the end of each month. The VOC contents of the materials are obtained from the supplier's information. Method 24 was initially done by the suppliers, but is not done on every batch. The method 24 analysis is updated when the formulation gets changed. The following is a summary of the EU-Sealer and Adhesives emission limits. See attachments to this report for details on the emission calculations.

Pollutant	Permit Limit	Actual Emissions April 2019
VOC	0.3 Lbs VOC/Gal (minus water)	0.21 lbs VOC/Gal (minus water)
VOC	863.1 lbs VOC/day	316.3 lbs VOC/day
VOC	97.0 tons per 12 month rolling time period	61.41 tons per 12 month rolling time period
PM	0.11 lbs/1000 lbs	0.002 lbs/1000lbs (as confirmed 8/2017 stack testing)
PM10	1.1 pph	.02 pph (as confirmed 8/2017 stack testing)
PM2.5	1.1 pph	.02 pph (as confirmed 8/2017 stack testing)

PM emission limits were verified during stack testing conducted on 8/29 and 8/30/217. VOC emissions were also tested for informational purposes only. Results for VOC emissions were 0.3 pounds per hour.

EU-Glass Installation

In General Assembly, primer and adhesive materials are applied to the windshield and back glass openings and/or to the glass itself. The glass is then mounted to the vehicle. None of these operations are vented to the outside atmosphere.

The usages are for the materials are done by setting usage equal to materials purchased due to the high volume of material used. The usages of all materials are compiled at the end of each month. The VOC contents of the materials are obtained from the supplier's information. Method 24 was initially done by the supplier's, but it is not done on every batch. The method 24 analysis is updated when the formulation gets changed. The following is a summary of the EU-Glass Installation emission limits. See attachments to this report for details on the emission calculations.

Pollutant	Permit Limit	Actual Emissions

		April 2019
VOC	0.4 Lbs VOC/Gal (minus water)	0.11 lbs VOC/Gal (minus water)
VOC	174.8 lbs VOC/day	17.4 lbs VOC/day
VOC	22.6 tons per 12 month rolling time period	2.89 tons per 12 month rolling time period

EU-Foam

This emission unit has discontinued use since the launch of new 2018 vehicles using the underbody sealer robots. This system was previously a two-part polyurethane foam deadener system will be injected into the hollow areas of each vehicle (i.e. such as the hinge pillars). The foam materials was applied using an applicator flow gun.

EU-Vehicle Fuel Fill

Each new vehicle will be filled with various fluids such as power steering fluid, antifreeze, transmission fluid, engine oil, windshield washer fluid, refrigerant, and gasoline. All vehicles being filled with gasoline shall be equipped with an Onboard Re-Fueling Vapor Recovery System (ORVR) to control VOC emissions.

Fuel fill emissions are the only sources of VOC from the materials used in this area. The emissions are calculated using an emission factor * the amount added to each vehicle (4.8 gallons per vehicle) * the number of vehicles produced each month. The following is a summary of the EU-Vehicle Fuel Fill emission limits. See attachments to this report for details on the emission calculations.

Pollutant	Permit Limit	Actual Emissions April 2019
VOC	0.5 tons per 12 month rolling time period	0.2 tons per 12 month rolling time period

EU-Start Up/Roll Test

This emission unit has been removed from the ROP because it is now considered a mobile source of emissions according to EPA.

EU-Natural Gas

Natural gas burning will take place in the ovens, the paint booth air supply houses, the two thermal oxidizers, and miscellaneous support equipment installed under this permit. Note: a separate permit will cover installation of boilers for heating and cooling requirements.

VOC and NOx emissions from EU-Natural Gas are calculated using an emission factor * the amount of natural gas used each month. The following is a summary of the EU-Natural Gas emission limits. See attachments to this report for details on the emission calculations.

Pollutant/Material limit	Permit Limit	Actual Emissions April 2019
Natural gas usage	991 MMCF per 12 month rolling time period	751.292 MMCF per 12 month rolling time period
VOC	2.7 tons per 12 month rolling time period	2.07 tons per 12 month rolling time period
NOx	39.1 tons per 12 month rolling time period	30.05 tons per 12 month rolling time period

EU-Phosphate

The 5 stage phosphate system consists of two parts – pre-phosphate washers, which essentially act as a car wash, which is meant to remove oil and grease from the bodies and the main phosphate tanks, which adds micro-crystals to the sheet metal surface. None of the materials used in the phosphate system contain any VOCs or volatile HAPs.

The usages are for the materials are tracked each month. The usages of all materials are complied the end of each month. The VOC contents of the materials are obtained from the supplier's (PPG) information. Method 24 was initially done by the suppliers and/or by looking at the formulation sheets, but it is not done on every batch. The method 24 analysis is updated when the formulation gets changed. There are no emission limits for EU-Phosphate as the materials shall not contain any VOC. There are no NSPS boilers for this emission unit as the hot water is provided by the Central Utilities Complex (CUC).

EU-Sound Damp

Also known as Liquid Applied Sound Deadener (LASD) which is an acoustical sound dampening product that is applied using robotic equipment. There are no VOC emissions, PM emissions nor any stacks associated with this process. The process is located between E-coat and Guide coat.

The usages for the materials are tracked each month by the material supplier and a report is provided to GM which is the data is included in the VOC reports. The material usages are also included in the MACT calculations. A tip cleaner product is also included as part of this process. A copy of the Sound Damp material usage information is attached to this report.

EU-Body Shop

In the body shop, sheet metal components are welded together to form the vehicles. Other miscellaneous resistance spot welding, MIG welding and metal grinding operations are performed throughout the body shop. None of the body shop operations are directly vented to the outside atmosphere. Some sealers and adhesives are used in assembling the body components. Material usages for this category are tracked under the sealer and adhesive emission unit.

FG-Topcoat

A topcoat spray booth followed by a topcoat oven. There is a heated flash-off area located between the basecoat portion of the booth and the clear coat portion of the booth. Basecoat will be applied manually or robotically using air atomized guns on cut-in areas. Basecoat is then applied to the body using robots equipped with electrostatic applicators. The first and second coats of exterior clear coat (clear or red tinted clear) are applied with electrostatic applicators. The clear coat observation zone maybe used for backup/manual spraying when needed. The manual zone would use air atomized applicators. Each section of the topcoat booth is equipped with a water wash system to control particulate emissions from paint overspray. The water wash system utilizes the floatation method to remove paint solids from the booth water. The VOC emissions from the heated flash-off area and the oven are controlled by Topcoat Thermal Oxidizer. This topcoat thermal oxidizer in series with the carbon adsorption unit also controls the VOC emissions from the automatic clear coat sections of the topcoat booths.

The topcoat process consisted of two parallel coating lines. Each line has a feather duster, 19 robots of which 16 are for painting and 3 are openers. The last 4 painters are used less than the others as they are only used for applying White Diamond Tri-coat materials. There is no manual painting performed at this facility. The following is a summary of the FG-Topcoat emission limits. See attachments to this report for details on the emission calculations.

Pollutant	Permit Limit	Actual Emissions April 2019

VOC	**12.24 Lbs VOC/GACS (NSPS Limit)**	**7.84 Lbs VOC/GAC**
VOC	**5.42 Lbs VOC/GACS**	**2.61 lbs VOC/GACS Max daily for the month of April**
VOC	**4516 lbs VOC/day**	**1172 lbs VOC/day highest day April 6th, 2019**
VOC	**583.6 tons per 12 month rolling time period**	**148.1 tons per 12 month rolling time period**

Method 24 is performed by the coating supplier (BASF) on each batch of coating. The supplier also determines the percent volume solids, density and provides monthly usage information to Karen for compiling the records

A copy of the annual auto protocol review was obtained for the 2018 & 2019 calendar year (completed 8/9/18 & 6/9/19). No significant changes have been made since the most recent performance tests conducted in September 2016 for Transfer Efficiency, February 2019 for CE, RE and DE. The thermo couples for the abatement equipment were recently calibrated on March 8, 2019. The PM, PM10 and PM2.5 emission rates for the Sealer RTO were verified during the August 2017 stack test.

According to the protocol review document all the updated test values have been entered as inputs to the protocol calculations effective the date of test conclusion. A copy of the 2018 & 2019 auto protocol reviews are attached to a hard copy of this report.

FG-Solvents

EU-Purge - This operation is the purging of the paint lines and spray guns within the paint spray booths. The clear coat automatic paint robots are to purge into cups to collect the purge materials. When purging takes place within the controlled clear coat sections of the topcoat booths, the add-on VOC control equipment shall be in place and operating properly. Basecoat purge is collected by the internal line purge collection system. A tank in the mix room collects the purge solvents. Usage/purchase records are used with waste manifest records are used to complete the mass balance VOC calculations. These activities will involve the use of VOC containing materials and acetone.

EU-Other Solvents - These activities consist of booth cleaning, miscellaneous cleaning activities, body wipe, and materials added to the water wash particulate control systems. These activities will involve the use of VOC containing materials and acetone.

The following is a summary of the FG-Solvents emission limits. See attachments to this report for details on the emission calculations.

Pollutant	Permit Limit	Actual Emissions April 2019
VOC	**1325 lbs VOC/day**	**225 lbs VOC/day**
VOC	**161.9 tons per 12 month rolling time period**	**46.6 tons per 12 month rolling time period**
Acetone	**698.9 Lbs per day**	**61.6 Lbs per day**
Acetone	**84.3 tons per 12 month rolling time period**	**8.7 tons per 12 month rolling time period**

Copies of the FG-Solvent calculations are also in the attached report. Method 24 is not typically performed on solvents with 100% VOC. The formulation VOC content of each material it normally used. The chemical manager provides the usage information to be included in the VOC reports each month.

FG-Repair

EU-Spot Repair
Four dry filter spot repair spray booths. The booths are equipped with air atomized applicators or equivalent

technology with comparable or better transfer efficiency.

EU-Final Repair
Dry filter final repair spray booth, a small mix room enclosure and a general area for all other paint repairs. The booth is equipped with air atomized applicators or equivalent technology with comparable or better transfer efficiency.

The 4 dry filter spot repair booths are in the paint building while the final repair booth and some open repair areas are in the final assembly building. Basecoat and clear coat materials are taken from the mix room usually in quart size containers. The facility also utilized spray cans with cut through primers and small paint tubes. Usage information is obtained from both the mix room take records, chemical manager paint inventories and from the general assembly area. Formulation data from the supplier is used for the VOC content and mass VOC emission calculations. BASF also supplies a catalyst for BC/TC paints to cure at a lower temperature. The following is a summary of the FG-Repair emission limits. See attachments to this report for details on the emission calculations.

Pollutant	Permit Limit	Actual Emissions April 2019
VOC	4.8 lbs VOC/gallon minus water as applied	4.55 lbs VOC/gallon
VOC & Acetone	212.2 lbs VOC/day	2.89 lbs VOC/day
VOC & Acetone	11.0 tons per 12 month rolling time period	0.76 tons per 12 month rolling time period

FG-Tanks

EU-Gas Tank 1, EU-Gas Tank 2, EU-AF Tank 1, EU-AF Tank 2, EU-PR Tank 1, EU-Meth Tank 2, EU-TF Tank, EU-BF Tank, EU-PSF Tank. The following is a summary of the FG-Tanks emission limits. See attachments to this report for details on the emission calculations.

Pollutant	Permit Limit	Actual Emissions April 2019
VOC & Acetone	50.9 lbs VOC/day	8.78 lbs VOC/day
VOC & Acetone	9.3 tons per 12 month rolling time period	1.49 tons per 12 month rolling time period

FG-MACT

Each new, reconstructed, or existing affected source as defined in Title 40 of the Code of Federal Regulations (CFR), Part 63.3082, that is located at a facility which applies topcoat to new automobile or new light duty truck bodies or body parts for new automobiles or new light duty trucks; AND/OR in which you choose to include, pursuant to 40 CFR 63.3082(c), any coating operations which apply coatings to new other motor vehicle bodies or body parts for new other motor vehicles; parts intended for use in new automobiles, new light duty trucks or new other motor vehicles; or aftermarket repair or replacement parts for automobiles, light duty trucks or other motor vehicles; and that is a major source, is located at a major source, or is part of a major source of emissions of hazardous air pollutants (HAPs) except as provided in 63.3081(c). This includes equipment covered by other permits, grandfathered equipment, and exempt equipment.

A review of the MACT summary report for January 2019 through April 2019 shows compliance with the respective limits. A copy of the MACT summary report is attached and the actual emissions were as follows:

Pollutant	Permit Limit	Actual Emissions April 2019
HAP–PS, Topcoat, Install, Final	0.5 lbs HAP/GSA	0.30 lbs HAP/GSA

Repair		
HAP – Sealers and Adhesives	**0.01 Lbs HAP/Lb material**	**0.00 Lbs HAP/Lb material**
HAP–Foam and Deadener	**0.01 Lbs HAP/Lb material**	**0.00 Lbs HAP/Lb material**

FG-OLD

Organic Liquid Distribution (OLD) (non-gasoline) MACT is for operations at major sources of HAP emissions. Specifically, these conditions cover existing (construction pre dates April 2, 2002) liquid storage tanks which hold more than 5,000 gallons but less than 50,000 gallons and/or new liquid storage tanks which hold more than 5,000 gallons but less than 10,000 gallons of methanol/windshield washer fill solvents that are dispensed to newly assembled vehicles.

This FG only has notification obligations if the tank is replaced or reconstructed within the size requirements in the ROP.

FG-Facility

FG-Facility is a flexible group of requirements which apply to all emission units which are in the Body Shop, Paint Shop, Final Assembly and other areas pertaining to the building and assembly of automobiles. The only condition under this flex group is the production rate shall not exceed 74 jobs per hour. A review of the jobs per was done during this inspection from January 7, 2019 through May 27, 2019. All week's hourly production rates were well below the 74 jobs per hour limit. Production was between 45.1 and 51.7 jobs per hour for that time frame.

Process/Operation Restriction	Permit Limit	Actual Production Rate Month of April 2019
Production Rate	**74 jobs per hour**	**Approx. 50.5 jobs per hour average**

FG-Cold Cleaners

Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278 and Rule 281(h) or Rule 285(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. The Body, Paint and General Assembly areas currently have 22 parts washers as of April 2019. A list of cold cleaners is included with the hard copy of this report.

RTO, Concentrators

A review of the control equipment parameters was conducted during the site inspection and the following parameters were recorded:
Topcoat RTO Chamber #1 Temp: 1537 deg. F (Set Point 1540 deg F)
Topcoat RTO Chamber #2 Temp: 1543 deg. F (Set Point 1540 deg F)
Cold Face #1 Temp: 233 deg. F
Cold Face #2 Temp: 230 deg F
149 second valve timing
Exhaust Temp: 292.5 deg. F
Inlet Temp: 199.1 deg F
Gas meter 7,788 CFH
RTO Ex. 48 Hz
CV 84%

ELPO RTO
RTO Chamber #1 Temp: 1527 deg. F (Set Point 1540 deg F)
Exhaust Fan: 60.0 Hz
Inlet Temp: 330 deg F
Gas meter 1,000 CFH
CV 22%

Concentrator	Number 1	Number 2
Wheel Fan	20 Hz	20 Hz
Desorb Supply	283.8 deg F	282.0 deg F
Outlet	96.7 deg F	96.7 deg F
Adsorb inlet	86.7 deg F	86.1 deg F
Pressure drop	1.2 " wc	1.2 " wc
Booth Exhaust	69.2 deg F	69.2 deg F
Motor	57.3 Hz	57.3 Hz

These values all indicated the control equipment was operating as intended and in compliance with the ROP requirements. Review of abatement equipment maintenance was conducted during this inspection. The previous inspection covered the 2014 maintenance records. Copies of the abatement equipment maintenance records were obtained for 2018. A review of this data showed the date, PM maintenance number or the reason for repair. The thermocouples were calibrated on 4/13/2018.

Emergency Engines

The facility currently has 3 emergency fire pump engines at the facility which are subject to MACT ZZZZ. 2 of the engines are diesel Compression Ignition (CI) engines and 1 is a Spark Ignition (SI) engine. Monthly engine hour meter readings were obtain for each engine for January through May 2019. Non-emergency hours were 14.3 for Fire Pump 1, 10.8 hours for Fire Pump 2 and 8.3 hours General Assembly Emergency Generator for the 2019 year thus far. Maintenance, testing and inspection records were obtained for each engine as they were all completed in April and May of 2019.

SECTION 2:
Central Utilities Complex (CUC)

During this inspection the CUC portion of the facility was not inspected. The CUC facility is responsible for providing the body, paint and assembly plant with reverse osmosis water, compressed air, heated and chilled water. The facility also accepts the waste water from those plants and is responsible for cooling the welder water. The facility utilizes various electric air compressors, RO water generators, chillers, cooling towers and the 3 natural gas fired boilers.

Typically, only 1 of the 3 natural gas fired boilers (rated at 93.5 mmBTU/hr) operates at any given time as they are very much oversized. CUC emission records were obtained and the emissions for April of 2019 were as follows:

Pollutant/Process/Operational Restriction	Permit Limit	April 2019
NOx	12.3 tons per 12 month rolling time period	3.04 (previously 2.83) tons per 12 month rolling time period
Million Cubic Feet per Year	491 MMCFT/year	60.802 (previously 113.36) MMCFT/yr
Million Cubic Feet per Hour	0.28 MMCFT/hr	Not found in records provided

Note: the emission records for FG-Natural Gas appear to have the incorrect emission limit 39.1 tpy NOx while the permit has12.3 tpy NOx. Also, the emission record shows 30.05 tpy of NOx however this appears to be off by a factor of 10 and based upon a 100 lbs NOx/mmcf I arrived at NOx emissions of 3.04 tpy. A copy of the CUC emission records are attached to the hard copy of this report.

Boiler MACT

The three boilers mentioned above are subject to Boiler MACT DDDDD. I did not obtain a copy of the

maintenance record and the burner tuning report as previously done. I also did not visit the CUC facility to observe the Boilers during this inspection.

Conclusion

The site inspection concluded with a discussion with Jessica and Brian covering the inspection. There were no outstanding issues at the GM Delta Township assembly plant and based upon my review at this time, the GM Delta Township Assembly Plant was in compliance with all their ROP obligations in MI-ROP-N6950-2014 which was issued on August 18, 2014.

NAME _____ DATE 7/8/19 SUPERVISOR B. M.