

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

A864831060

FACILITY: FORD MOTOR CO ROUGE COMPLEX		SRN / ID: A8648
LOCATION: 3001 MILLER RD, DEARBORN		DISTRICT: Detroit
CITY: DEARBORN		COUNTY: WAYNE
CONTACT: Mike Larson , Env. Rep. - Dearborn paint and Assy., Section 1		ACTIVITY DATE: 08/05/2015
STAFF: Robert Byrnes	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: 2015 Scheduled Inspection		
RESOLVED COMPLAINTS:		

On August 5, 2015 I visited the Ford Dearborn Assembly Plant to conduct an announced air quality inspection. I arrived at the facility at approximately 9:15 am and met with Tamberlyn Shell Reed, Mike Larson of Ford and Jay from GZA. The purpose of this inspection was to determine compliance with MI-ROP-A8648-2010a. No visible emissions were observed nor were any odors detected from the security parking lot. The Ford Dearborn Assembly Plant manufactures, paints and assembles Ford F-150 pick-up trucks. The facility is a major source of VOC/HAP and is cover by ROP MI-ROP-A8648-2010a.

Records were requested during the initial meeting and are included as attachments to this report. The records were provided at the closure meeting at the end of the inspection. The site inspection consisted of a walk through from the beginning of the paint shop phosphate system to the end of the topcoat coating line. We also observed the sealer/deadener application areas as well as the control devices for the guidecoat and topcoat equipment. Near the end of the inspection we briefly visited the final assembly building where I observed the final repair, fluid fill, roll test and windshield install processes.

Particulate Controls: Ecoat, Guidecoat, Topcoat, Blackout Wax, Repair

Throughout the ROP the facility is required to keep records of the dry filter inspections for EU-Ecoat, EU-Guidecoat, EU-Topcoat and FG-Repair. The purpose of these inspections is to assure the particulate overspray control is working properly and it then can be assumed the tested emission factors for these units remain valid and accurate. A copy of the June 2015 filter inspection records were obtained, the filter records show the following:

Process/Date	6/4/15	6/8/15	6/18/15	6/25/15
Spot Repair Decks (1-3)	Y	Y	Y	Y
E-coat Scuff	0.1 Previous (1.9)	0.1 Previous (1.9)	0.1 Previous (2.0)	0.1 Previous (1.3)
Topcoat (Repair) Scuff Booth	0.5 Previous (0.35)	0.5 Previous (0.35)	0.4 Previous (0.35)	0.4 Previous (0.35)
Prime Scuff Booth	0.9 Previous (1.2)	0.9 Previous (1.6)	0.95 Previous (1.6)	0.95 Previous (0.3)
Black-out Wax Booth	0.35 Previous (0.3)	0.35 Previous (0.3)	0.35 Previous (0.3)	0.35 Previous (0.3)
SPOVEN final building	Y	Y	Y	Y

Based upon a review of the records provided the e-coat, topcoat, prime scuff and black out booths and maintained by pressure drop readings and it appears filters have been changed or cleaned as the pressures rise and then drop after the cleaning and/or replacement. The spot repair and SPOVEN units simply just state "yes" the condition of the filters are acceptable. See Attachment "A" for more detailed information.

Copies of the weekly water wash verification check list was obtained for the Prime Booth, Enamel #1 and Enamel #2. The weekly verifications simply have Yes or No check boxes which indicate abnormal results were

reported to management, pressure drop readings have been reported, pump amperage and psi were checked and recorded, repairs were immediately reported and dates and reasons for any repairs were recorded.

However, the reports do not really provide any details as to what would have been reported if anything. Records are included for the weeks of 6/1, 6/8, 6/15, 6/22 and 6/28/15. Based upon a review of the records provided it appears the water wash particulate control system has been operated in a satisfactory manner. See Attachment "A" for more detailed information.

VOC Controls

The facility uses carbon wheel concentrators to concentrate VOC emissions from the topcoat auto booths. The concentrators then send the VOC laden air to a 3 cell RTO which also controls the emissions from the E-coat tank, E-coat cure oven, the prime cure oven and the topcoat cure ovens. Operating parameters have been established from performance tests which demonstrate the control devices are installed, maintained and operated in a satisfactory manner. The facility also uses a fluidized bed concentrator and an RTO to control the emissions from the prime coat auto booths. The 3 zones of the 3 cell RTO, the RTO chart recorder, Carbon wheel #1 & #2 Desorb Temperatures, The fluidized bed absorber, the prime coat oxidizer and the prime coat chart recorders were all calibrated on 6/29/2015. A copy of the latest dates of the O&M maintenance records. Copies were also obtained which shows the dates of the calibrations and are included in Attachment "B" of this report.

The following operational parameters were recorded during the day of the inspection:

Prime Abatement System

Adsorber differential pressure 1.78" wc (previous results, 1.91" on 5/15/13, 1.81" wc on 9/26/12)

Adsorber tray differential pressure 2.2" wc (previous results 2.00" on 5/15/13, 2.02" wc on 9/26/12)

Desorber tray differential pressure not observed (previous results 5.7" on 5/15/13, 5.7" wc on 9/26/12)

Desorber temps from top to bottom 94, 294, 607, 256 degree Fahrenheit (previous results 99, 343, 646, 257 degree Fahrenheit on 5/15/13, 152, 457, 509, 223 degree Fahrenheit on 9/26/12)

Oxidizer 1416 degree Fahrenheit (previous results 1417 on 5/15/13, 1426 degree Fahrenheit on 9/26/12)

Inlet temp 311 degree Fahrenheit (previous results, 315 degree F on 5/15/13, 299 degree Fahrenheit on 9/26/12)

0% natural gas valve, 65% dilution air

The following dates in the table below were part of the records which listed when the fluidized bed concentrator carbon beads were replaced:

Date	Type	Time Span between changes
January 21, 2013	Reactivated	
May 5, 2013	Reactivated	3 months, 1 week
October 30, 2013	Reactivated	6 months, 3 weeks
March 15, 2014	Reactivated	4 months, 2 weeks
July 19, 2014	Reactivated	4 months
December 13, 2014	Reactivated	5 months, 3 weeks
April 25, 2015	Reactivated	4 months, 2 weeks
August 2, 2015	Reactivated	3 months, 1 week

A copy of the carbon bead replacement record is included as Attachment "C" of this report.

Topcoat Abatement System

The Topcoat abatement equipment consists of 2 rotary carbon wheels followed by a 3 tower RTO. The main abatement systems controls the E-coat, prime, color 1 & 2 ovens which are sent directly to the RTO and the CC

1 & 2 bells and e-coat dip tank which are sent to the concentrator wheels and then the RTO for VOC abatement. The following operational parameters were recorded:

Concentrator Desorb 392 degree Fahrenheit (previous results, 361 on 5/15/13, 361 degree Fahrenheit on 9/26/12).

Concentrator Outlet Temperature 243 degrees Fahrenheit, Exhaust Temperature 86 degrees Fahrenheit.

RTO inlet temperature 284 degrees F (previous results 264 on 5/15/13, 260 degree Fahrenheit on 9/26/12)

Pressure drop -1.21" wc (previous results -1.59 on 5/15/13, -1.22" wc on 9/26/12)

Average chamber temperature 1451, degree Fahrenheit (previous results, 1412 on 5/15/13, 1429 degrees Fahrenheit on 9/26/12)

Outlet temperature 348 degree Fahrenheit (previous result 323 degree Fahrenheit on 5/15/13)

The recording devices on the oxidizers, concentrators and chart recorders were calibrated on 6/29/15. All control device parameters were very similar to previously observed values. Copies of monitored values were reviewed for the week of June 8, 2015 through June 14, 2015. There were 2 malfunction periods, one for 5 hours and 15 minutes and a second one for 50 minutes. June 13th and 14th were the weekend shutdown period. A copy of the control device operating parameters for the week of June 8, 2015 are included as Attachment "D" of this report.

Control Device Maintenance Reports & Maintenance Work Order Details

Part of the inspection involved collecting copies of the maintenance inspection records conducted 8/15/14 for the RTO, the prime thermal oxidizer, the rotary concentrators and the fluidized bed concentrator. Review of these records shows several areas of concern which I would consider not being in compliance with Rule 910 (missing carbon blocks, seals needing replacement, etc, see list below). Rule 910 states an air-cleaning device shall be installed, maintained and operated in a satisfactory manner and in accordance with these rules and existing law. Further the Work Order Details provided show to check the seals, carbon blocks as scheduled maintenance but the record indicates it is INPRG (in progress?) there are no initials or date when the items were complete and at the bottom is a box to check yes if parts are needed. It would seem if the carbon was missing parts would be needed? The areas of concern in the DURR inspection reports were as follows:

RTO 3 tower & Rotary Concentrators

- The low temperature device had an active fault during the DURR inspection. Their inspector stated "RTO is still operating and no low-temp fault on the current alarms screen? This issue needs to be resolved.."
- Need to look into the replacement or rebuild of the RTO valves.
- Burner #1 operates at a higher output than burner #2 and this does not appear normal.
- Burner #1 output 9-49%, Burner #2 output 0-9%
- Shutdown fault on the HMI screen is 1000F and alarm is at 1400F this is not normal and needs to be reviewed. This is a major concern because the fault should be at 1400F due to being out of compliance once you are below 1400.
- Inlet Damper #1 has 1" gap between blade and seat. Also all dampers have heavy particulate build up.
- Deformed thermocouple in tower #1, needs to be replaced.
- Vertical seals in concentrators need to be replaced.
- Concentrator #1 missing top section of blocks.
- Follow up suggestions were marked with an "X" in the box. Box is to be checked if follow-up sales contact is needed.

A request for a copy of the 2015 DURR report and a copy of any maintenance records that have been conducted between the 2014 and 2015 DURR reports was requested via a September 8, 2015 e-mail sent to Rob Streight and Tamerlyn Reed. Copies of the 2014 DURR report and 2014 maintenance reports are included as Attachment "E" with this report.

EU-Solvents

Original quarterly VOC reports from 2014 show 59,229 lbs VOC from solvent usage in September 2014. However, the latest report from 2nd quarter 2015 show the usage value to be zero for September 2014. The emission record is noted as "Monthly lb VOC/vehicle not calculated for September 2014 since no production occurred during month". These emissions need to be included in the compliance calculations. If the emission occurred they need to be record kept and reported. Not recording and/or reporting would be a violation of FG-Facility Special Conditions VI.1 and VI.2 (Rules 702(a), 205 and 40 CFR 52.21 (c) & (d)).

Ford was previously allowed some alternative reporting in 2010 at the Michigan Assembly plant. A draft copy of this letter is attached to this report. In that case all emissions were allowed to be averaged for 12 months of operating data (had a 6 month break in production). When I reviewed the emissions data with the excluded 59,229 lbs of VOC with 12 months of production data the resulting emissions would be 4.71 lbs VOC/job, not the reported emissions of 4.5 lbs VOC/job. Copies of the September 2014 and September 2015 VOC emission reports are included as Attachment "F" with this report.

A follow up e-mail was sent to Rob Streight and Tamberlyn Reed on September 8, 2015 requesting that Ford calculate the lbs VOC/job values including the September 2014 EU-Solvent emissions in the 11 months both prior to and after September 2014.

FG-Facility

A review of the most recent emission data for the month of June 2015 was reviewed for compliance with the emission and material limits in FG-Facility as follows:

Limit	Permit Limit	June 2015 Actual Emissions	Compliance?
VOC	897 tons per 12 month rolling time period	592.0 tpy	Yes
VOC	4.8 Lbs VOC/Job per 12 month rolling time period	4.7	Yes
NOx	79.5 tons per 12 month rolling time period	40.8 tons	Yes
PM 10	19.0 tons per 12 month rolling time period	8.3 tons	Yes
Natural Gas	1600 MMCF/12 month rolling time period	912 MMCF	Yes

A copy of the June 2015 emission reports can be found as Attachment "F" included with this report.

Auto-Protocol

Copies of the 2 latest auto protocol reviews were obtained for 2013 and 2014 (2015 review was in progress). Review of these reports showed no changes have been made which would require testing for capture efficiency or transfer efficiency. Because of the length of time since TE testing (2004 topcoat, 2008 guicecoat), OSL and capture testing, this testing should be conducted as soon as possible. It has also been a considerable time since the recent testing for destruction efficiency (2008) and removal efficiency (2001) and this should be re-tested as soon as possible. Previous discussion with Rob Streight at Ford indicated because of the recent robot changes and oven configuration due to the aluminum truck, all testing would be done in the spring of 2016. Final changes to the topcoat system will be completed during end of year shut down in 2015. At that point all changes will have been made and topcoat will be retested. Copies of the 2013 and 2014 Auto Protocol reviews can be found as Attachment "G" included with this report.

Conclusion:

In conclusion we had a brief follow up discussion on the days inspection. Several areas of concern were mentioned (see below) at the conclusion of the inspection and the following request was sent to Rob Streight and Tamberlyn Shell via e-mail on Friday August 8, 2015.

I would like to have a modeling demonstration provided that shows for up to a certain number of hours

operated (or all operating hours) without control that no air toxics screening level would be exceeded for the toxic air contaminants emitted from the facility. I would also like to know what the percentage of control equipment down time to paint shop operating time was for 2014.

- There was considerable opacity coming from the e-coat cure oven inside the plant. There was also some opacity coming from the topcoat enamel cure oven (not sure which one) as well. I would like an explanation as to what the causes might be and what will or has been done to address the smoke from the cure ovens.
- Primer Surface Capture Efficiency Testing was conducted in May 2015 but is not being used for compliance purposes in the VOC emission calculations. I would like to know what the effect is on the emissions (lbs VOC/job and tpy VOC) using the latest capture values. I would also like to see a current diagram of the robots, manual guns and the spray booths as used for painting.

Further additional concerns have arisen after review of the inspection records obtained August 5, 2015 and compliance reports within the DEQ/AQD files. An e-mail was sent to Rob Streight and Tamberlyn Shell on September 8, 2014 requesting more information.

On September 21, 2015 Tamberlyn Shell provided a detailed response to the 3 main questions. Copies of the 2015 DURR report were provided as well as an abatement summary document for 2014 describing the item identified as needing repair, which report it came from, citation to the exact location in the DURR report (item #, page #), action taken, evidence referencing to the documentation supporting the action and the date completed. Revised emission data which included all the purge and clean up solvents from September 2014 was included and the resulting Lbs VOC/Job emissions were at 4.7 lbs VOC per job with the permit limit being 4.8 Lbs VOC/job. Finally, it was agreed a separate meeting will be planned to discuss the dispersion modeling for instances when the facility is operating with the control equipment in bypass mode.

Conclusion

Based upon the information provided it appears the facility is in compliance with MI-ROP-A8648-2010a. However, there are 2 areas of concerns: The maintenance and testing of the RTO's and Concentrators for Destruction and Removal Efficiency. Given the maintenance concerns (seals, valves, missing carbon, media plugging, etc.) and the fact these units have not been tested in some time, these units might not be performing at the levels previously tested. The topcoat system was last tested in 2001 with a DE of 99.0% and a RE of 95.6%, both very efficient values. The Prime system was last tested in 2008 with a DE of 99.5% and a RE of 99.9%. Again, very high efficiency as compared to other control devices. Ford is required to test every 5 years unless a demonstration is made the previous tests remain valid and representative. Missing carbon blocks should be a significant enough change to warrant a test in my opinion. Future inspections and ROP renewal should take a closer review of the time between performance tests. Testing will likely occur in late 2015 or early 2016. The second area of concern is compliance with the 4.8 lbs VOC per job limit. Emission rates were provided including all purge and clean up solvents which showed 4.7 lbs VOC per job for June 2015. This number may be of concern when July and August 2015 data becomes available as this was not provided in the response. The recently conducted Primer Surfacer Capture Efficiency test results will also provide the most recent and accurate data which should help to lower the actual emissions reported from the facility.

NAME *Robert Streight*

DATE 9/24/15

SUPERVISOR *W.M.*