B2767
FY 2018 Sched Insp
ROP CMS.

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

B276746167

FACILITY: FCA US LLC WARREN TRUCK ASSEMBLY PLANT		**SRN / ID:** B2767
LOCATION: 21500 Mound Road, WARREN		**DISTRICT:** Southeast Michigan
CITY: WARREN		**COUNTY:** MACOMB
CONTACT:		**ACTIVITY DATE:** 08/08/2018
STAFF: Iranna Konanahalli	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: FY 2018 scheduled ROP CMS inspection of FCA US Chrysler's Warren Truck Assembly Plant		
RESOLVED COMPLAINTS:		

Warren Truck Assembly Plant (B2767)
a.k.a. Warren Dodge Truck Plant
FCA US, LLC
21500 Mound Road
Warren, Michigan 48091-4840

North American Industry Classification System (NAICS) Code: 336112

CAA Sec. 114(a): FCA received CAA Sec. 114(a) letter dated May 15, 2018. FCA (Mathew Read, Office of General Counsel) responded to this request on July 10, 2018, with an electronic document copies package (first installment) to Jillian Rountree, Esq. Regional Counsel, US EPA 5.

2015 ROP Renewal: Application No. 201500086 received on June 08, 2015

RO Permit Number: MI-ROP-B2767-2016, Effective December 6, 2016, Expires December 6, 2021. ROP Renewal Application is Due Between June 6, 2020 and June 6, 2021

Auto Protocol: "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light Duty Truck Topcoat Operations", EPA-450/3-88 -018 or as amended. FCA US (Chrysler) follows the protocol procedures for both NSPS MM (2M: prime coat, guide coat [aka primer surfacer] and topcoat operations installed / modified after October 5, 1979; the LAER permits were issued in 1984) and RACT Rule 336.1610. While NSPS MM calculations may use NSPS Table values for Transfer Efficiency (Table TE: substantially higher (90s) than those TE values achieved in practice anywhere(60s)), Rule 610 and LAER calculations must use tested TE values according to the Protocol. TE values have impact on LAER & NSPS emissions rates because the emissions rates are expressed in pounds (kilograms) per gallon (liter) of coatings solids applied or deposited; in other words, solids overspray is accounted for in this type of emissions rate unit.

Consent Order (CO) No. 11-1984: AQD Chief Dennis M. Drake terminated CO on June 9, 2002. CO resolved excessive Particulate Matter (PM) emissions violation for Boiler Nos. 3-5. Settlement $10,000.00.

Subject to (opt-out of control device requirements via use of HAP compliant coatings): Auto MACT, NESHAP / MACT 4I, 40 CFR, Part 63, Subpart IIII—National Emission Standards for Hazardous Air Pollutants: Surface Coating of Automobiles and Light-Duty Trucks (Federal Register / Vol. 69, No. 80 / Monday, April 26, 2004 / Rules and

Regulations/ Final Rule). Because FCA US (Chrysler) opted out of the post–11/15/90 NSPS (Auto NSPS MM was promulgated before 1990) or NESHAP / MACT federal regulations for control devices (e.g., RTO, TO) via compliance with Auto MACT by coatings formulations, the control devices are subject to CAM regulations (VOC).

Subject to: Compliance Assurance Monitoring (CAM) (40 CFR Part 64) for VOC control devices (e.g., RTO, TO). Page 54900 Federal Register / Vol. 62, No. 204 / Wednesday, October 22, 1997 / Rules and Regulations / Final rule; Final rule revisions /Compliance Assurance Monitoring (CAM). CAM is a part of enhanced monitoring and compliance certification for ROP / Title V sources under the Clean Air Act. Obviously, if the control devices (e.g., RTO, TO) were subject the auto MACT monitoring, the devices would be not be subject to CAM monitoring and the MACT's monitoring would be presumptive CAM. FCA US (Chrysler), like other Auto-manufacturers, chose to comply with the Auto MACT via coatings formulations without use of thermal oxidizers.

Subject to Major Source Boiler MACT 5D (reconsidered [2011] MACT 5D: Annual Tune-up or Pentennial / Quinquennial (1/5Yr) Tune-up if boiler is equipped with oxygen trim system, one time Energy Assessment (EA) or ISO 50001): Major Source Boiler NESHAP / MACT 5D, 40 CFR Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, Page 7138, Federal Register / Vol. 78, No. 21 / Thursday, January 31, 2013 / Rules and Regulations / Final rule; notice of final action on reconsideration. The December 23, 2011 proposed rule addressed specific issues and provisions the EPA identified for reconsideration. This summary of the final rule reflects the changes to 40 CFR, Part 63, subpart DDDDD (March 21, 2011 Final Rule) regarding those provisions identified for reconsideration and on other discrete matters identified in response to comments or data received during the comment period. All FCA Warren Truck's natural gas boilers, except Temp Boilers, are equipped with Oxygen Trim Systems. An Oxygen Trim System is a system of monitors that is used to maintain excess air (EA) at the desired level in a combustion device. A typical system consists of a flue gas analyzer for oxygen (O2) and / or carbon monoxide (CO) and a feedback signal to the combustion controller. In other words, an Oxygen Trim System is designed to continuously measure and maintain optimum air-to-fuel ratio in the combustion zone. If such system exists, annual tune-up is not required; however, pentennial / quinquennial (1/5Yr) tune-up is required. FCA does follow ISO 50001, Energy Management System for continuous improvement of energy performance, energy efficiency, energy consumption and for reduction of energy use, energy costs, greenhouse gas emissions (GHG), etc. If ISO 50001 is followed properly, one-time energy assessment (EA) is not required. Mr. Dan Omahen, Plant Manager, on March 30, 2016, submitted MACT 5D Notification of Compliance Status. Andrew Ragalyi submitted MACT 5D compliance statement dated March 14,2018, for two Temp Boilers (EU-TEMPBOILER1 & EU-TEMPBOILER2) to US EPA (tune-up on 05/23/2017 and burner inspection on05/08/2017).

Subject to: NSPS Dc, New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). Fuel oil is never used in the boilers. Only boilers installed after June 9, 1989, are subject to NSPS Dc.

NSPS Dc Revisions:

1. **72 FR 32759 = Page 32759 Federal Register / Vol. 72, No. 113 / Wednesday, June 13, 2007 / Rules and Regulations / Final Rule – to add compliance alternatives and to revise certain recordkeeping and reporting requirements.**

2. **74 FR 5091 = Page 5091 Federal Register / Vol. 74, No. 17 / Wednesday, January 28, 2009 / Rules and Regulations / Final Rule - to correct technical and editorial errors.**

The NSPS Dc revisions simplified the natural gas usage recordkeeping. ROP and MAERS natural gas recordkeeping satisfies NSPS Dc.

NSPS Db Boilers: Four (4) boilers (EU-BOILER3-6, > 100 MM BTU per hour, NG, , installed after June 19, 1984) appear to be subject to 40 CFR Part 60 Subpart Db, NSPS Db—Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units —each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hour)). 72 FR 32742, June 13, 2007, Federal Register / Vol. 72, No. 113 / Wednesday, June 13, 2007 / Rules and Regulations. The boilers are covered by Permit No. 188-01 (AQD Engineer: Charley) dated December 12, 2001. The permit did not incorporate NSPS Db. AQD will conduct further investigation for missed NSPS Db regulations.

Subject to: OLD NESHAP / MACT EEEE/ MACT 4E, 40 CFR Part 63, Subpart EEEE, National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (OLD)(Non-Gasoline); Page 5038 Federal Register / Vol. 69, No. 22 / Tuesday, February 3, 2004 / Rules and Regulations/ Final Rule; Page 42898 Federal Register / Vol. 71, No. 145 / Friday, July 28, 2006 / Rules and Regulations/ Final Rule - Amendments; notice of final action on reconsideration. 7,500 gallons / month > 5,000 gallons / month of purge solvent usage makes this facility subject to this NESHAP.

Subject to: Prevention of Significant Deterioration (PSD) (40 CFR 52.21) or Rule 336.1220 (during LAER review) / Rule 336.2902 (now) Major Offset Source depending upon attainment status.

Subject to: 40 CFR, Part 60, Subpart MM (NSPS MM or 2M)—Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations (NSPS MM) (45 FR 85415, December 24, 1980). NSPS MM applies to an automobile/ light duty truck assembly plant constructed or modified after October 05,1979. The permits were issued in 1984.

Subject to: Rule 336.1610. The Rule 610 compliance calculations must be done pursuant to "**Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light Duty Truck Topcoat Operations", EPA-450/3-88-018 or as amended.** FCA US does not perform NSPS MM calculations separately. Instead the Auto Protocol calculations are used to satisfy NSPS MM emission limits.

Not Subject to (cold-cleaners): NESHAP/ MACT T, area source National Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part

63, Subpart T; NESHAP/ MACT T); Correction; 29484 Federal Register / Vol. 60, No. 107 / Monday, June 5, 1995 / Rules and Regulations; amended National Air Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T); Final Rule; Page 25138 Federal Register / Vol. 72, No. 85 / Thursday, May 3, 2007 / Rules and Regulations. FCA does NOT use the MACT T listed halogenated HAP solvents (>5%w: methylene chloride (CAS No. 75-09-2), perchloroethylene (CAS No. 127-18-4), trichloroethylene (CAS No. 79-01-6), 1,1,1-trichloroethane (CAS No. 71-55-6), carbon tetrachloride (CAS No. 56-23-5), and chloroform (CAS No. 67-66-3)) in the cold-cleaners.

On August 01, 03,07 & 08, 2018, I conducted level-2 **FY 2018 scheduled ROP CMS inspection** of FCA US Chrysler's Warren Truck Assembly Plant, located at 21500 Mound Road, Warren, Michigan 48091-4840. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules and the RO Permit Number MI-ROP-B2767-2016.

Mr. Matthew W. Smith (Phone: 586-497-2444; Cell: 248-229-7018; E-mail: Smith Matthew 2 (FCA)), EHS Environmental Manager, assisted me.

Mr. Stuart Duncan (Phone: NA; Cell: 248-421-3906; E-mail: stuart.duncan@fcagroup.com), EHS Engineer, separated from FCA about 2016.

Mr. Brian D. Sayles (Phone: 586-497-3486; Fax: 586-497-6939; Cell: 586-524-5420; E-mail: saylesb@dteenergy.com), P.E., Utilities Services Manager, Chrysler Warren Truck, DTE Energy Services, was not present to assist with natural gas fired powerhouse.

Messrs. Kevin Waszak (Phone: NA; Cell: 248-224-5896; E-mail: NA), EHS Manager (about Aug 2013 moved to training center), Mark C. Werthman (Phone: 248-576-7377; Cell: NA; E-mail: mdw25@chrysler.com), CHMM, Manager, Corp. Regulatory Planning and Environmental Affairs, Scott Goeglein (Phone: 248-202-3705), EHS Manager, were not present.

About 2014, Mr. Mathew Smith (Phone: 586-497-2444; Cell: 248-229-7018; E-mail: mws54@chrysler.com), EHS Engineer, transferred to Sterling Heights Assembly Plant. About 2016, Mr. Smith returned to WTAP to replace Mr. Duncan.

Mr. Tom Thornton (Phone: 586-897-2444 at Dodge Truck and 586-978-6129 at Sterling Heights Assembly, Cell: 248-535-5845; E-mail: **tt158@chrysler.com**), Resident Environmental Specialist, Paint Operations, and Ms. Amy J. Berendt (Ph: 586-497-3143; Fax: 586-497-2512; E-mail: ajb75@Chrysler.com and amy.berndt@arcadis-us.com), Staff Engineer, separated from Environmental Duties at Chrysler WTA; but still with Chrysler. Ms. Berendt, before she was hired by Chrysler, used to work for Arcadis G&M of Michigan, LLC, 28550 Cabot Drive, Suite 500, Novi, Michigan 48377.

In 2010, Ms. Berendt replaced **Mr. Michael Check** (Phone: 586-497-3143; Fax: 586-497-2512; E-mail: michael.check@arcadis-us.com and mc1140@chrysler.com). Mr. Check

worked for Arcadis G&M of Michigan, LLC, 28550 Cabot Drive, Suite 500, Novi, Michigan 48377. Mr. Check replaced **Ms. Brenna Harden** (Phone: 248-994-2240; Fax: 248-994-2241; E-mail: brenna.harden@arcadis-us.com), Staff Engineer, a contract employee, who in turn replaced Ms. Sandy Lopez, who retired about 2008. Ms. Harden also worked for Arcadis G&M of Michigan, LLC, 28550 Cabot Drive, Suite 500, Novi, Michigan 48377.

Mr. Tim J. Nelson (Ph: 586-497-3486, Fax: 586-4976939, Cell: 586-634-0787), Utilities Services Manager, Chrysler Warren Truck, DTE Energy Services, separated from DTE about 2013.

About August 2007, Mr. S. Adekunle Sanni (Phone: 586-897-2444, Cell: 248-808-0121; E-mail: **sas48@chrysler.com**), Paint Environmental Specialist,replaced **Ms. Sandra A. Hoelzhammer** (Phone: 586-897-2444, Cell: 248-770-2279; E-mail: sah24@daimlerchrysler.com), Paint Operations AME, who transferred to Purchasing Department, and latter in CY2008 separated from Chrysler. Ms. Sandy Lopez (Ph: 586-497-3143, Cell: 734-485-7558) retired in CY2008. About June 2008, Mr. Tom Thornton (Phone: 586-897-2444 at Dodge Truck and 586-978-6129 at Sterling Heights Assembly, Cell: 248-535 -5845; E-mail: **tt158@chrysler.com**), Resident Environmental Specialist, Paint Operations replaced Mr. Sanni. However, in CY2009 after bankruptcy Mr. Sanni replaced Mr. Thornton, who transferred to Solid Waste Management Unit. Again, about November 2009, Mr. Thornton replaced Mr. Sanni.

In December 2010, Mr. Sanni replaced Ms. Kay Bedenis. Again, about 2011, Sanni is transferred to SHAP, Sterling Hts.

FCA US LLC Warren Truck Assembly Plant (FCA WTAP) is located at the northeast corner of 8 Mile Road and Mound Road in the city of Warren, Macomb County, Michigan. The plant is located in an industrial area with FCA Stamping and GM powertrain plants towards north on Mound Road (between 8 Mile and 10 Mile Roads). The plant receives stamped parts from FCA Stamping via tunnel at 9 Mile Road. The plant manufactures or assembles light-duty trucks. Prior to coating, the truck bodies are cleaned and pretreated to prepare vehicle bodies for painting: body cleaning and phosphate treatment. The principal emissions are volatile organic compounds (VOC), including hazardous air pollutants (HAP), from coating operations: primer (dip e-coat), primer surfacer (guide coat powder coating with practically nil emissions), topcoat, high bake reprocess, final repair, sealers and adhesives, miscellaneous solvents, etc. About 1984, the truck plant obtained construction (Permit-to-Install) permits pursuant to Rule 336.1220 for VOC Major Offset Sources in ozone non-attainment area. The permits required installation and operation of Lowest Achievable Emission Rate (LAER) technology for coating operations that emit VOC. The coating bake oven VOC emissions are controlled by five thermal oxidizers (one RTO for a dip e-coat bake oven and four thermal oxidizers for topcoat bake ovens). Paint overspray particulate emissions are controlled by downdraft water wash systems from topcoat booths and dry filter system from other operations such as final repair, repair deck, etc. The VOC emissions from topcoat coating booths are released to ambient air, via stacks on the roof, without destruction or removal using VOC control systems. While oven emissions account for 15% of VOC from painting, booth emissions account for 85% VOC. While smaller fraction oven emissions are controlled using thermal oxidizers, larger fraction booth emissions are not. The natural gas fired boilers (two portable temporary (FG-TEMPBOILERS: EU-TEMPBOILER1& EU-TEMPBOILER2) and four permanent (FG-BOILERS: EU-BOILER3-6)) that principally emit nitrogen oxides (NOx) provide steam for space heating and process needs. In winter, permanent boilers provide steam.

The assembly process begins with the framing of body by welding together various vehicle parts, such as doors, hoods, etc. After the body is framed, it then proceeds through a body cleaning and phosphate treatment step. An Electro Deposition Coating (E-Coat) dip painting process coats and primes the body surface in preparation for final paint finish. Powder coating is applied as primer surfacer and anti-chip. The powder coating anti-chip and powder coating primer surfacer are not a part of the RO permit. The application of topcoat painting finish is carried out through two identical parallel coating lines (Color1 & Color2). Tu-tone (4% of vehicles) and highbake reprocess (for repairs) lines are also present. Color1 (EU-COLOR-ONE), Color2 (EU-COLOR-TWO) and Highbake Reprocess (EU-REPROCESS) are part of topcoat (FG-TOPCOAT). In Highbake Reprocess (EU-REPROCESS) booth, part of truck needing substantial repairs is repainted. Cleaning and equipment purging is also associated with the coating operations. Several smaller coating operations, such as final repair, spot repair deck, etc., are also located throughtout the assembly plant. In addition, volatile organic compounds (VOCs) are emitted from coating processes, cleaning operations, and various other related processes.

When the original air quality permits were issued for the coating processes in 1984, Macomb County was designated as nonattainment area for ozone (O_3), but has been reclassified as attainment for Particulate Matter (PM). The plant met the definition of a "**major offset source**" and was subject to Rule 336.1220 (during LAER review) / Rule 336.2902 (now, >2008). The proper installation, operation and maintenance of the thermal oxidizers (aka incinerators) and regenerative thermal oxidizer for E-coat process (E-coat RTO), which were permitted under Lowest Achievable Emission Rate (**LAER**) permits, are still requirements under LAER. The LAER requirements cannot be relaxed pursuant to the federal Clean Air Act. To ensure that an incinerator is operated in accordance with the LAER requirements, the ROP requires the plant to monitor the temperature of each thermal oxidizer. Also, a minimum temperature requirement has been set for each thermal oxidizer based upon most recent Destruction Efficiency (DE) tests. It may be noted that proper DE requirements were not included during LAER review permits. However, the DE values are used in compliance calculations.

WTAP is considered a major source under 40 CFR Part 70 because the potential emission of criteria pollutant: Nitrogen Oxides (NOx), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC) are more than 100 tons per year and therefore exceed the major source thresholds. Under Section 112 of the Clean Air Act, a major source is defined as any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit any single hazardous air pollutant (HAP) more than 10 tons per year or aggregate HAPs more than 25 tons per year. For the purpose of applicability to Michigan's Renewable Operating Permit Program, Fiat-Chrysler Group's Warren Truck Assembly Plant is a major stationary source of HAPs, and is considered contiguous to the Chrysler Warren Office and Warehouse as well as to the Chrysler Warren Stamping Plant.

FCA WTAP is subject to many state and federal regulations:

PSD / LAER: WTAP is subject to Prevention of Significant Deterioration (PSD) (40 CFR 52.21) regulations because the stationary source has the potential to emit volatile organic compounds greater than 250 tons per year. Original permits for the assembly plant were

LAER permits and upon modification new permits will be LAER permits based upon ozone non-attainment status of Southeast Michigan.

NSPS:

1. Immersion cathodic e-coat primer (EU-UNIPRIME) and topcoat (EU-TUTONE, EU-COLOR-ONE, EU-COLOR-TWO and EU-REPROCESS) operations at the stationary source are subject to the Standards of Performance for Automobile Light-Duty Truck Surface Coating Operations promulgated in 40 CFR Part 60, Subparts A and MM.

2. Two portable temporary natural gas fired boilers (EU-TEMPBOILER1 and EU-TEMPBOILER2) and three of four permanent (installed after June 9, 1989) natural gas fired boilers (EU-BOILER3, EU-BOILER4 and EU-BOILER5) at the stationary source are subject to the Standards of Performance for Small Industrial Commercial-Institutional Steam Generating Units promulgated in 40 CFR Part 60, Subparts A and Dc. One of four natural gas fired boilers (EU-BOILER6) is not subject to this NSPS Dc standard as it was installed before June 10, 1989 (October 29, 1984).

3. One Fire Pump Emergency Engine (EU-ENG-FPH2) at the stationary source is subject to the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines promulgated in 40 CFR Part 60, Subparts A and IIII (4I). (FG-CI-RICE-NSPS4I<500)

NESHAP/MACT:

1. EU-UNIPRIME, EU-SOLVENT-WIPE, EU-SEALERS and ADHESIVE, EU-BLACKOUT-BOOTH, EU-TUTONE, EU-COLOR-ONE, EU-COLOR-TWO EU-REPROCESS (high-bake repair), EU-FINAL-REPAIR (low-bake spovens), EU-SPOT-REPAIR-DECK (1-12 stations with filters and carbon adsorption) at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Surface Coating of Automobiles and Light-Duty Trucks promulgated in 40 CFR Part 63, Subparts A and IIII (4I) (FG-AUTOMACT). FCA complies with auto MACT 4I via coating formulations without use of thermal oxidizers' VOC / HAP destruction credit in the calculations. Hence, FCA must implement CAM.

2. Methanol storage tanks at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Organic Liquids (non-gasoline) Distribution (OLD) promulgated in 40 CFR Part 63, Subparts A and EEEE (4E) (FG-OLDMACT).

3. Two portable temporary natural gas fired boilers (EU-TEMPBOILER1 and EU-TEMPBOILER2) and four permanent natural gas fired boilers (EU-BOILER3, EU-BOILER4, EU-BOILER5 and EU-BOILER6) at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Major Sources Industrial, Commercial, and Institutional Boilers and Process Heaters promulgated in 40 CFR Part 63, Subparts A and DDDDD (5D) (FG-BOILER-MACT5D). FCA may eliminate temp boilers to save on their rents.

4. Existing CI RICE Engines (EU-ENG-FPH1<500HP, EU-ENG-SMB1>500HP and EU-ENG-SMB2>500HP) at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines; New Source Performance Standards for Stationary Internal Combustion Engines (ICE) promulgated in 40 CFR Part 63, Subparts A and ZZZZ (4Z) (FG-CI-RICE-MACT4Z<500HP and FG-CI-RICE-MACT4Z>500HP).

CAM: Both dip cathodic e-coat primer (known as Uniprime EU-UNIPRIME) and topcoat (EU-COLOR-ONE EU-COLOR-TWO, EU-REPROCESS) in addition to EU-TUTONE operations at the stationary source are subject to the federal Compliance Assurance Monitoring (CAM) rule under 40 CFR Part 64. These emission units have a control device and potential pre-control emissions of Volatile Organic Compounds (VOC) greater than the major source threshold level. NESHAP/MACT 4I (40 CFR Part 63 Subpart IIII) is a post-11/15/1990 (April 26, 2004) presumptively acceptable CAM. However, the

permittee opts to show compliance with the Auto MACT HAP emission limits without taking HAP destruction credit pertaining to the oven thermal oxidizers via use of compliant coatings. Hence, custom CAM is a part of ROP. CAM monitoring conditions are found in EU-UNIPRIME, EU-TUTONE, and FG-TOPCOAT.

Rule 610 and Auto Protocol: The coating process is also subject to Rule 336.1610, which is considered Reasonably Available Control Technology (RACT) standard. Rule 336.1610 compliance calculations must be done pursuant to "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light Duty Truck Topcoat Operations", EPA-450/3-88-018 or as amended. The protocol determines the daily VOC emission rate (pounds of VOC per gallon of coating solids deposited), for complete automobile & light-duty truck topcoat operations. The protocol considers and describes how to determine the following factors, including the necessary testing and recordkeeping requirements:

1. Daily usage of each coating
2. VOC generated per gallon of each coating used
3. Volume solids content of each coating used
4. Daily weighted transfer efficiency of each coating used
5. Daily weighted bake oven exhaust control credit

The RO Permit consists of 9 emission units and 15 flexible groups (9 EU and 15 FG). The emission units are:

1. Mechanical body washer for cleaning light duty truck bodies (EU-MECH-WASHER)

2. Cathodic electro-deposition primer system (EU-UNIPRIME)

3. Solvent wipes and body cleaning operation (EU-SOLVENT-WIPE)

4. Sealers and adhesives applications (EU-SEALERS&ADHESIVE)

5. Blackout booth (EU-BLACKOUT-BOOTH). Idle and used an inspection area.

6. Topcoat on tutoned light duty truck bodies (EU-TUTONE)

7. Operations of filling fuel tanks and windshield washer solution reservoirs in new light duty trucks (EU-FLUID-FIL)

8. Final repair systems (EU-FINAL-REPAIR) with spovens (2).

9. Spot repair deck (EU-SPOT-REPAIR-DECK) with Monroe Environmental filters and carbon adsorption.

Paint sludge dryer (EGSLUDGE-DRYER), which has been, after CY2009, permanently shut down.

The flexible groups (15) are:

1. Topcoat and topcoat repair operation (FG-TOPCOAT). Two identical topcoat lines (EU-COLOR-ONE & EU-COLOR-TWO) and one high bake-repair operation (EU-REPROCESS). Tu-tone is associated with Color1 (but not Color2).

2. Two natural gas fired, trailer-mounted, 25 million BTU per hour heat input temporary boilers, portable and rented (FG-TEMPBOILERS: EU-TEMPBOILER1 & EU-TEMPBOILER1).

3. Four (4) natural gas fired boilers to produce steam (FG-BOILERS: EU-BOILER3-6)

4. One unleaded gasoline storage tank (FG–GASOLINE-TANKS: EU–UNLEADEDGAS1 (TK1 25,000 gal)). Above-ground storage tank with spill containment.

5. Operations including carpenter shop (maintenance tool shop – removed), etc. that are subject to Rule 331 (FG-RULE-331: EU-CARPENTERSHOP). Plasma cutting operation is removed.

6. Various emission units that have the same particulate requirements (FG-PM-MISC

7. Auto MACT (FG-AUTOMACT: EU-UNIPRIME, EU-SOLVENT-WIPE, EU-SEALERS&ADHESIVE, EU-BLACKOUT-BOOTH, EU-FINAL-REPAIR, EU-SPOT-REPAIR-DECK, EU-TUTONE, EU-COLOR-ONE, EU-COLOR-TWO, EU-REPROCESS).

8. Organic Liquid Distribution (OLD) MACT (FG-OLDMACT) for 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.

9. Boiler MACT 5D (FG-BOILER-MACT5D). Except temp boilers, all boilers are equipped with oxygen trim systems for increased thermal efficiency and complete combustion.

10. RICE MACT CI 266 HP < 500 HP, Emergency generator (FG-CI-RICE-MACT4Z<500HP).

11. RICE MACT (FG-CI-RICE-MACT4Z>500HP: EU-ENG-SMB1 (900 HP) and EU-ENG-SMB2 (900 HP))

12. RICE NSPS 4I. Fire Pump emergency engine (FG-CI-RICE-NSPS4I<500: EU-ENG-FPH2 (305 HP, 1/1/2011))

13. Cold cleaners (FG-COLD-CLEANERS)

14. Rule 201 exempt units pursuant to Rule 290 (FG-RULE-290)

15. Miscellaneous coating booths using less than 200 gallons of coatings per month (FG-RULE-287(c))

The company does not use any of the halogenated solvents regulated by Maximum Achievable Control Technology (MACT T) in the cold cleaners; therefore, the cold cleaners are not subject to the MACT standards for halogenated solvent cleaner (40 CFR 63 Subpart T).

Steam for plant process and heating is produced by four natural gas-fired boilers on site (FG-GAS-BOILERS). Portable boilers provide steam during non-heating season (summer).

Production

1. CY2014: 296,600 painted and 315,728 built.

2. CY2015: 312,247 painted and 329,883 built.

3. CY2016: 352,565 painted and 339,673 built.

4. CY2017: 354,187 painted and 340,469 built.

Note: Errors in production records CY2014-16. Built vehicles must be less than painted vehicles.

FCA WTAO Air Pollution Control Devices

Emission Unit	Control Equipment	Comment. Minimum temperature
Uniprime (E-Coat Process)	Recuperative Thermal Oxidizer (RTO)	Durr Rotary design RTO. 1378 ° F
Blackout Booth	Dry Filters	
TuTone	Thermal Oxidizer Water Wash System	1291 ° F

Final Repair	Dry Filters	
Spot repair deck (1-12)	Activated Carbon Filters Dry Exhaust Filters	
Color One Color Two Reprocess (Hi-Bake)	Thermal Oxidizer Water wash System	1370 ° F 1291 ° F 1360 ° F
ColorOneSand PolishDeck Reprocessand ReProPolish UniPrimeSand	Dry Filters	
Carpenter Shop	Baghouse (Bag Filters)	

FCA WTAP has the following emission units:

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-MECH-WASHER	Mechanical body washer in "Body-in-White" is for cleaning vehicle bodies with a cleaner and a rust-inhibitor.	07/31/1984	NA
EU-UNIPRIME	Uniprime is a cathodic electrodeposition primer system to apply primer to vehicle bodies with an associated curing oven. Uniprime system is immersion (dip) e-coat system with DC voltage, where vehicle bodies are grounded and coating solids are positively charged. One regenerative thermal oxidizer (RTO) for curing oven emissions.	07/31/1984	FG-AUTOMACT
EU-SOLVENT-WIPE	Emissions from solvent wipes and body cleaners throughout the plant.	07/31/1984	FG-AUTOMACT
EU-SEALERS&ADHESIVE	Application of sealers and adhesives and associated gelling oven.	07/31/1984	FG-AUTOMACT
EU-BLACKOUT-BOOTH	Spray booth for applying blackout paint to vehicle bodies. The booth is on long-term idle.	07/31/1984	FG-AUTOMACT

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-TUTONE	The Tutone booth for applying topcoat on Tutoned vehicle bodies and associated curing oven. One down-draft waterwash system for paint overspray particulate control and one thermal oxidizer for VOC from the bake oven.	06/17/1992	FG-AUTOMACT
EU-FLUID-FILL	Stations for filling fuel tanks (gasoline) and windshield washer solution, brake, power steering etc. reservoirs. Onboard Re-fueling Vapor Recovery systems for vehicles.	07/31/1984	NA
EU-FINAL-REPAIR (Low-bake spovens)	Final repair system, for low-bake, includes two spot repair stations with associated spovens (one spoven per booth) and sanding booths in Repair Dept. 9190 of Main Building. Prep booths or sanding booths are equipped with side-draft dry filters. The spovens (spot ovens) are equipped with IR Heat and are located inside the downdraft spray booths. The booths (2) are equipped with downdraft filters like collision shop booths.	07/22/1996	FG-AUTOMACT
EU-SPOT-REPAIR-DECK (1-12 stations)	1 through 12 spot repair painting stations with portable hose emissions capture system and associated IR (infra-red) curing ovens. The emissions are ducted to a common control system consisting of series of dry filters and carbon adsorption. Carbon is monitored for breakthrough using color change at sight glass. Dry filter system and carbon adsorption system.	07/22/1996	FG-AUTOMACT
EU-COLOR-ONE	Color1 line (one of two identical top coat lines) consists of spray booths for applying topcoat to vehicle bodies and oven for curing. Downdraft Water Wash System and Thermal Oxidizer for bake oven.	07/31/1984	FG-AUTOMACT FG-TOPCOAT

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-COLOR-TWO	Color2 line (one of two identical top coat lines) consists of spray booths for applying topcoat to vehicle bodies and oven for curing. Downdraft Water Wash System and Thermal Oxidizer for bake oven.	07/31/1984	FG-AUTOMACT FG-TOPCOAT
EU-REPROCESS (High-bake)	Reprocess is high bake repair operation that consists of spray booths for topcoat application to repair vehicle bodies and oven for curing. Wash System and Thermal Oxidizer for bake oven.	07/31/1984	FG-AUTOMACT FG-TOPCOAT
EU-TEMPBOILER1	25 million BTU per hour, natural gas only fired trailer-mounted temporary boiler.	03/19/2009	FG-TEMPBOILERS FG-BOILER-MACT5D
EU-TEMPBOILER2	29 million BTU per hour, natural gas only fired trailer-mounted temporary boiler.	03/19/2009	FG-TEMPBOILERS FG-BOILER-MACT5D
EU-BOILER3	152 million BTU heat input per hour (Babcox & Wilcox Boiler3, installed 7/11/98) natural gas only boiler equipped with low NOx burners.	07/11/1998	FG-BOILERS FG-BOILER-MACT5D
EU-BOILER4	106 million BTU heat input per hour (Babcox & Wilcox Boiler4, installed 7/11/98) natural gas only boiler equipped with low NOx burners.	07/11/1998	FG-BOILERS FG-BOILER-MACT5D
EU-BOILER5	152 million BTU heat input per hour (Wickes Boiler5, installed 9/1/96) natural gas only boiler equipped with low NOx burners.	09/01/1996	FG-BOILERS FG-BOILER-MACT5D
EU-BOILER6	192 million BTU heat input per hour (Riley Stoker Boiler6, installed 10/29/84) natural gas only boiler equipped with oxygen trim system but not low NOx burners.	10/29/1984	FG-BOILERS FG-BOILER-MACT5D
EU–UNLEADEDGAS1	TK1 25,000-gallon gasoline storage tank – above-ground storage tank with spill containment.	03/192013	FG–GASOLINE-TANKS
EU-CARPENTERSHOP	Wood saws, lathes, etc. Carpenter shop baghouse.	07/31/1984	FG-RULE-331

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-COLOR-ONE-SAND	Miscellaneous particulate matter source with associated exhaust filters.	07/31/1984	FG-PM-MISC
EU-POLISH-DECK	Miscellaneous particulate matter source with associated exhaust filters.	07/31/1984	FG-PM-MISC
EU-REPROCESS-SAND	Miscellaneous particulate matter source with associated exhaust filters.	07/31/1984	FG-PM-MISC
EU-REPRO-POLISH	Miscellaneous particulate matter source with associated exhaust filters.	07/31/1984	FG-PM-MISC
EU-UNIPRIME-SAND	Miscellaneous particulate matter source with associated exhaust filters.	07/31/1984	FG-PM-MISC
EU-OLDMACT	The permittee shall maintain an up-to-date list of emissions units subject to FG-OLDMACT.	07/31/1984	FG-OLDMACT
EU-Eng-FPH1	Existing CI (Diesel) Engines located at a Major Source 266 HP < 500 HP, Emergency.	01/01/1985	FG-CI-RICE-MACT4Z<500HP
EU-ENG-SMB1	Existing CI Engines located at a Major Source > 500 HP, Emergency.	01/01/1985	FG-CI-RICE-MACT4Z>500HP
EU-ENG-SMB2	Existing CI Engines located at a Major Source > 500 HP, Emergency.	01/01/1985	FG-CI-RICE-MACT4Z>500HP
EU-ENG-FPH2 Fire Pump emergency engine	This flexible group includes new emergency compression ignition (CI) natural gas fired stationary reciprocating internal combustion engines (RICE) that have a maximum site rating of greater than or equal to 100 brake horsepower (HP), but less than 500 (HP) and subject to 40 CFR 60, Subpart IIII.	01/01/2011	FG-CI-RICE-NSPS4I<500

FCA WTPA has the following flexible groups:

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-TOPCOAT	Two topcoat lines (EU-COLOR-ONE & EU -COLOR-TWO) and one high bake-repair operation (EU-REPROCESS), which is a part of the topcoat system. Each topcoat line consists of spray booths for applying topcoat to vehicle bodies and oven for curing. Reprocess is high bake repair operation that consists of spray booths for topcoat application to repair vehicle bodies and oven for curing. While Color1 (36 JPH) and Color2 (36 JPH) lines are identical topcoat lines (72 JPH), reprocess line is shorter and slower.	EU-COLOR-ONE EU-COLOR-TWO EU-REPROCESS (high bake repair)
FG-TEMPBOILERS	Two natural gas fired boilers. These are trailer-mounted temporary boilers installed since 2009 and mostly used in non-heating season (summer). Although capable of being moved, the boilers have been located at the plant for at least two years (as of March 2016). AQD received both NSPS Dc (April 30, 2007) and Major Source Boiler MACT 5D (May 24, 2013) notifications.	EU-TEMPBOILER1 EU-TEMPBOILER2
FG-BOILERS	Four (4) natural gas fired boilers to produce steam and heat.	EU-BOILER3 EU-BOILER4 EU-BOILER5 EU-BOILER6
FG–GASOLINE-TANKS	Three unleaded gasoline storage tanks.	EU–UNLEADEDGAS1
FG-RULE-331	Wood saws, lathes, etc.	EU-CARPENTERSHOP
FG-PM-MISC	This group consists of various emission units that have the same particulate requirements.	EU-COLOR-ONE-SAND EU-POLISH-DECK EU-REPROCESS-SAND EU-REPRO-POLISH EU-UNIPRIME-SAND

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-AUTOMACT	FG-AUTOMACT: 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.	EU-UNIPRIME EU-SOLVENT-WIPE EU-SEALERS&ADHESIVE EU-BLACKOUT-BOOTH EU-FINAL-REPAIR EU-SPOT-REPAIR-DECK EU-TUTONE EU-COLOR-ONE EU-COLOR-TWO EU-REPROCESS
FG-OLDMACT	The affected source is each new, reconstructed, or existing Organic Liquid Distribution (OLD) (non-gasoline) operation that is located at, or is part of a major source of hazardous air pollutant (HAP) emissions. The affected source is comprised of storage tanks, transfer racks, equipment leak components associated with storage tanks, transfer racks and pipelines, transport vehicles, and all containers while loading or unloading at transfer racks subject to this subpart. Equipment that is part of an affected source under another NESHAP is excluded from the affected source.	
FG-BOILER-MACT5D	Requirements for existing Gas 1, (Natural Gas only) for existing Boilers and Process Heaters at major sources of Hazardous Air Pollutants per 40 CFR Part 63, Subpart DDDDD. These existing boilers or process heaters must comply with this subpart no later than January 31, 2016, except as provided in 40 CFR 63.6(i).	EU-TEMPBOILER1 EU-TEMPBOILER2 EU-BOILER3 EU-BOILER4 EU-BOILER5 EU-BOILER6
FG-CI-RICE-MACT4Z<500HP	Existing CI Engines located at a Major Source < 500 HP, Emergency.	EU-ENG-FPH1
FG-CI-RICE-MACT4Z>500HP	Existing CI Engines located at a Major Source > 500 HP, Emergency.	EU-ENG-SMB1 EU-ENG-SMB2

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-CI-RICE-NSPS4I<500	This flexible group includes new emergency compression ignition (CI) Diesel fired stationary reciprocating internal combustion engines (RICE) that have a maximum site rating of greater than or equal to 100 brake horsepower (HP), but less than 500 (HP) and subject to 40 CFR 60, Subpart IIII.	EU-ENG-FPH2 (305 HP, 01/01/2011, Fire Pump emergency engine)
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.	
FG-RULE-290	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 290.	
FG-RULE-287(c)	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 287(c).	

EU-MECH-WASHER

Mechanical body washer in "Body-in-White" is for cleaning vehicle bodies with a cleaner and a rust-inhibitor.

Before a car body leaves welding area, the body is washed with cleaner and rust inhibitor using mechanical body washer. Soap (Hazardous Substance Liquid, NOS Sodium Nitrate) is used. After soap and hot water wash, truck is blow-dried.

MI-ROP-B2767-2016, EU-MECH-WASHER, I

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
1. VOC	21.5[2 β] Pounds per hour	Hour	EU-MECH-WASHER	0.46	
2. VOC	45.24[2] Tons per year	12-month rolling time period	EU-MECH-WASHER	0.10	
[β]Based upon monthly values using methods acceptable to AQD. All actual emissions are based upon CY 2017 and 4Q2017 reports.					

MI-ROP-B2767-2016, EU-MECH-WASHER, VI:

Hours of operation, materials usage, VOC emission rates, and VOC content records are kept. The required calculations are performed to show compliance with the limits.

The records and calculations are kept on file.

EU-UNIPRIME (FG-AUTOMACT)

Uniprime is a cathodic electrodeposition primer system to apply primer to vehicle bodies with an associated curing oven. Uniprime system is an immersion (dip) e-coat system with DC voltage, where vehicle bodies are grounded and coating solids are positively charged. Both coating and water are recycled/reused using ultrafiltration (UF) membranes.

Control: One regenerative thermal oxidizer (Durr Rotary design RTO) for curing oven emissions (about 2008 one E-coat oven RTO replaced two thermal oxidizers).

This is a cathodic electrodeposition primer system (there is no anodic system in US any more), which applies a primer coating to vehicle bodies, which are cured in an oven. The process is equipped with one regenerative thermal oxidizer (1 e-coat RTO, Durr Rotary Disign) to destroy VOC from e-coat bake oven. In CY2008, one e-coat Durr RTO replaced two existing e-coat thermal oxidizers (2 TO) as a part of energy savings program. In 2009, 2 E-coat TOs that an RTO replaced moved to Color1 and Tu-tone ovens; one TO at each location.

Durr Rotary Disign RTO accomplishes heat recovery using twelve (12) "Regenerative" heat recovery chambers containing beds of ceramic heat recovery media accomplish energy recovery. The chambers reside in a common housing fabricated from steel plate with internal divider walls of stainless steel and ceramic material.

Before electrodeposition (e-coat), aka uni-prime, a car body is cleaned and prepared for coating application. Cleaning and preparation is done in many stages:

- Stage 0: Pre-clean with water; water is recycled.
- Stage 1 & 2: Hot water (steam is replaced), chemical detergent cleaning with high velocity nozzles. Stage 1 soap water spray. Phosphate system stage 2 immersion cleaner (Hot).
- Stage 3: Stage 3 cold water spray. Rinse with water, which is recycled to stage 1
- Stage 4: Rinse with titanium based solution (34000-gallon conditioner tank).
- Stage 5: Zinc phosphate immersion coating (acidic, 200 ppm Ni, 600 ppm Mg). 200 mg per sq. ft phosphate deposit. Sludge from Stage 5, is filtered on a filter paper with a vacuum to pull water.
- Stages 6-9: Rinsed with city (Stage 6), DI water, virgin DI water. Water is recycled in a counter-current fashion in a staged operation; i.e., Stage 9 water is recycled to Stage 8 and so on. 200-300 mg of zinc phosphate per square feet.

For assembled car bodies (non-painted), two (2) Saint Clair Systems X-Therm Ultra High Efficiency hot water heaters are present to supply hot water for body wash. The heaters (2) are fired with natural gas. Dry-off blowers are present to remove water from bodies.

Uniprime system consists of immersion cathodic e-coat with an application of DC Voltage. While a car body is grounded (negative - cathode), paint particles are positively charged. Due to the application of DC Current (182 Volts & 3-6 Amps) and plating reaction, an acid (sulfamic) solution is created. Paint temperatures are tested (91-95° F). Paint solids are maintained at 20% by mass in 110,000-gallon paint bath; rest is DI (RO) water. Water is purged based upon acidity (electrical conductivity, 1165 mhos, 5.28 Ph reading during the inspection) and equal amount of fresh make-up water is added to balance purge and losses; the purging maintains proper pH (5.28 pH during the inspection). Ultrafiltration Unit (UF) is used to recover paint; recovered paint (UF concentrate) is recycled into e-coat bath. Upon completion of electrodeposition (e-coat) of paint solids on a car body, a body is removed and excess paint is rinsed in three (3) stages. Paint and water are recycled using UF membranes. Ultrafiltration (UF) Unit is used to recover paint; recovered paint (UF concentrate) is recycled into e-coat bath. Finally, a body is rinsed with virgin DI water (RO). Thus e-coated truck's excess water is blown off. Paint solids are always returned to the e-coat bath; UF permeate is used to wash truck body being e-coated and UF concentrate (paint solids) is returned to e-coat bath. Small molecular size paint solids in UF permeate help put finishing touches to just e-coated car / truck body.

The following processes exist:

1. Spray wash system, 2,500 gallons / minute and 5-10 psi

2. Wash bath solids, 0.8% conductivity, 800-2000 mhos, pH = 4.5-6.2 T=85-95 °F

3. DI (actually RO) water wash – recirculation tank

The e-coated car body is baked in an oven at 375 °F. Solvent (85% IPA, 15% water) wipes were used in the past to clean a body; the solvent wipes are not used anymore. E-coat oven is natural gas fired. When RTO malfunctions, e-coat system completely shuts down via an inter-lock system. A cool-off tunnel is present to cool the trucks / jobs after baking at 375 °F. In order to facilitate production interruption (lunch, overnight), a strip bank is present to hold up to 170 jobs.

Mr. Keith White assisted with e-coat process.

Mr. Larry Lablanc (Cell: 810-335-2399), Laboratory Tech, passed away according to Mr. White.

MI-ROP-B2767-2016, EU-UNIPRIME, I.

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
1. VOC	14.5[2 β] Pounds per hour	Hour	EU-UNIPRIME (dip tank)	2.01	
2. VOC	31.23[2] Tons year	12-month rolling time period	EU-UNIPRIME (dip tank)	10.79	
3. VOC	8.2[2 β] Pounds per hour	Hour	EU-UNIPRIME (oven)	0.61	
4. VOC	17.66[2] Tons per year	12-month rolling time period	EU-UNIPRIME (oven)	2.07	
5. VOC	1.34[2] Pounds per gallon of applied coating solids	Monthly average	EU-UNIPRIME (dip tank and oven)	0.09	
[β]Based upon monthly values using methods acceptable to AQD. All actual emissions are based upon CY 2017 and 4Q2017 (or December 2017) reports.					

MI-ROP-B2767-2016, EU-UNIPRIME, III.1.

E-coat RTO is operating properly based upon temperature charts. Set point is 1375 °F. EU-UNIPRIME, III.1 requires minimum operating temperature of 1450 °F or the most recent performance test temperature. However, based upon November 2010, E-coat RTO Ladder Study, AQD approved the RTO operating temperature of 1375 °F via Robert Byrnes' Dec 21, 2010, e-mail to Mary Turner. The ROP limit's 1450 °F was based upon March 11, 2008, Destruction Efficiency (DE) tests. November 05, 2015, Destruction Efficiency (DE) tests at 1378 °F achieved 92.8% destruction. ROP does not require minimum DE but the values are used in calculations.

Note: *About 2008, concerning E-coat oven, one Regenerative Thermal Oxidizer (RTO) replaced two thermal oxidizers.*

MI-ROP-B2767-2016, EU-UNIPRIME, V.1: US EPA Reference Test Method 24

VOC: PPG determines coating VOC content using US EPA RM24. US EPA Reference Method 24 (US EPA RM24) tests are done by PPG.

MI-ROP-B2767-2016, EU-UNIPRIME, V.2-3. Transfer Efficiency (TE) and Oven Solvent Loading (OSL) or Capture Efficiency (CE)

OSL: Oven Exhaust Control Device VOC loading (Oven Solvent Loading) was conducted in 1990s. OSL is assumed to be 85%. At any rate, as allowed by the Protocol, default TE value is assumed to be 100 percent for e-coating process.

MI-ROP-B2767-2016, EU-UNIPRIME, V.4: Destruction Efficiency (DE)

September 2001 DE tests for 2 TOs

Based upon the September 2001 tests, destruction efficiencies (DE) are 99 and 98 percents for two thermal oxidizers (2 TO), which served E-coat ovens A & B (two ovens). Oven loading is assumed to be 85 percent. However, in CY2008, two old thermal oxidizers (2 TO) were replaced by one Durr Rotary Regenerative Thermal Oxidizer (1 Durr Rotary RTO).

2008 and 2010 DE tests for e-coat RTO: DE and E-coat RTO Ladder Study

On February 06, 2008, AQD received the e-coat RTO test plan dated February 5, 2008. AQD's Tom Maza approved the test plan via DE test plan approval letter dated March 6, 2008. Durr Systems, Inc. hired Bureau Veritas North America, Inc. (248-344-2661) of Novi, Michigan, to conduct DE tests. AQD received the DE test report dated April 10, 2008 (the cover letter dated April 16), on April 23, 2008. Inlet and outlet VOC sampling was conducted on March 11, 2008. Destruction Efficiency (DE) reported is 95 percent based upon three run (91, 96 & 97) average. RTO firebox temperature was 1,450 °F. On October 21, 2010, AQD received an E-coat RTO Ladder Study plan. AQD neither approved this plan nor observed the sampling. The purpose of the ladder study was to reduce the E-coat RTO operating temperature from 1450 °F to 1337 °F. The RTO was able to destroy 92.7% of VOC at 1337 °F. The same RTO was able to destroy 95.2% (average of 95.1 and 95.3) of VOC at 1375 °F during November 9-10, 2010 testing. Hence, AQD approved the RTO operating temperature of 1375 °F (EU-Uniprime, III). Bureau Veritas North America, Inc. (248-344-2661) of Novi, Michigan, conducted DE tests for the E-coat RTO ladder study. AQD (Tom Maza) did not review the ladder study report in detail; only spot checks were done.

2015 DE tests for e-coat RTO

FCA US (Chrysler) performed destruction efficiency (DE) tests about November 05, 2015. RWDI AIR Inc. (RWDI Project #1600240, December 2, 2015) of Windsor, Ontario, Canada sampled on November 05, 2015. Sampling was witnessed by Mr. Mark Dziadosz of AQD-TPU. USEPA Reference Method 25A flame ionization analyzer was used. Three 1-hour tests concurrently at the inlet and outlet were conducted in order to determine the average destruction efficiency of the RTO. An average Destruction Efficiency based on mass rates (inlet = 21.2 & outlet = 1.5 pounds per hour NMVOC as propane) is 92.8% at 1378 °F. Production rates remained, on average, between 31 and 37 vehicles per hour during the testing.

MI-ROP-B2767-2016, EU-UNIPRIME, VI.1: temperature measurement device of RTO

E-coat RTO (1) thermocouples are calibrated or replaced on annual basis. Maintenance Dept. keeps calibration / replacement records. Durr inspects RTO on an annual basis.

MI-ROP-B2767-2016, EU-UNIPRIME, VI.2: records/calculations

Production hours, coating usage, coating content, OSL & TE values, etc. records are kept. The calculations showing VOC limits (MI-ROP-B2767-2016, EU-UNIPRIME, I) compliance are performed in a timely manner and quarterly VOC reports are submitted.

MI-ROP-B2767-2016, EU-UNIPRIME, VI.3: bypass

There is a conveyor interlock system that stops the conveyor when RTO bypass occurs.

MI-ROP-B2767-2016, EU-UNIPRIME, VI.4: CAM O&M plan

E-coat RTO CAM plan was submitted with the ROP renewal application and implemented per Appendix 3.

MI-ROP-B2767-2016, EU-UNIPRIME, VII:

Semi-annual, annual certifications (ROP, MACT, CAM, MAERS) and quarterly (VOC) reports are submitted.

MI-ROP-B2767-2016, EU-UNIPRIME, IX:

FCA complies with NSPS MM via Auto Protocol calculations. According to CAM, FCA is required to notify AQD of excursions as defined in CAM.

Powder antichip coating (Exempt; not part of ROP)

The antichip powder coating process is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1287(d) and there is no applicable requirement as a condition of the exemption; hence the powder coating process is not a part of the RO Permit.

Entire car body is sprayed with powder antichip using 6 robots (2 nozzles on each robot) and 24 bells. While there are16 bells (8 on each side) for vertical surface, there are 8 bells for horizontal surface. Robots use 100%virgin powder. A car body is sprayed with a mixture of 20% virgin powder and 80% recycled / reclaimed powder. A hood is spray with 100% virgin powder. The collectors are present at the lower level to collect overspray particles. Humidity (< 65% RH) and temperature (< 65 deg F) are important factors and are controlled carefully using an AC system. 2-4 mil powder coat is deposited versus 1 mil e-coat application; 1 mil = 1/1,000 inch. While the particles are charged, a body is grounded. 2.2-3.2 mils of coating is applied to horizontal surface, 1.7-2.7 mils on vertical surface, 2-2.7 on rocker panel (where rocks hit). Two (East & West) ovens to bake the powder coating.

At the lower level, the elaborate reclamation operations are present to recycle / reuse the powder. Air is recycled as well; 20 percent of air is purged to control fines in the recycled powder, an equal amount of make-up air is added to maintain balance; effectively 80% of air is recycled. Both recycled air and make-up air are filtered using Torit Cartridge Filters.

Powder comes in totes or lately bags. Virgin powder is of Tyler #200 mesh size (0.074 mm = 0.0029 inches). Recycled powder is of Tyler #230 mesh size (0.06 mm = 0.0025 inches). There are virgin, mix (20 percent virgin plus 80 percent reclaim), 100 % recycle mix tanks. Mix tanks are kept in a fluidized state to prevent cluster formation. There are two powder systems (A & B). The powder coating is baked in 8 zone oven (6 radiant followed by 2 convection zones). Powder coat is baked for 30 minutes at 360-450 deg F.

While a horizontal surface is sprayed with 100 percent virgin powder, a vertical surface is sprayed with a mixture of 20 percent virgin powder and 80 percent recycle / reclaim powder.

EU-Sludge-dryer (E-1.3, Permanently Shutdown; removed from 2011 ROP)

Before permanent shutdown in 2006, paint sludge was dried using the natural gas fired sludge dryer equipped with a cyclone to collect particulate matter and thermal oxidizer to destroy VOC. The sludge dryer has not operated since September 2006; it has been idled. In CY2008, many important components were removed and the sludge dryer never operated again. During FY2008 inspection, I asked Mr. Tom Thornton to send Rule 336.1215/1216 notice regarding this permanent shutdown status. The notices were never sent. However, the status change was incorporated into 2011 ROP.

By September 2009, all components of the sludge dryer were removed.

Applied Science & Technology, Inc. (ASTI), (810-225-2800) of Brighton, Michigan, conducted a performance test for particulate matter emission in May 1999. Emissions were 0.0049 pounds of particulate matter per 1000 pounds of exhaust gases (limit: 0.10) and 1.9 pounds of VOC per hour (limit: 8.6).

EU-SOLVENT-WIPE (FG-AUTOMACT)

Emissions from solvent wipes and body cleaners throughout the plant.

Solvent (85% isopropyl alcohol or IPA & 15% water, generally) wet wipes are used for cleaning throughout paint process. Apart from 85% (31.26 pounds per case) IPA wipes, 95% IPA (14.72 pounds per case), 75% IPA (75% IPA & 25% Methoxy Propanol, 45.63 pounds per case) wipes are used as well. Number of IPA wipe cases is counted for the purpose of record keeping.

About 2015, Chrysler implemented centrifugal recovery of solvents from rags. Mobile solvent recovery unit, periodically, comes to the site and operates a centrifuge to separate solvents from rags.

MI-ROP-B2767-2016, EU-SOLVENT-WIPE, I:

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
1. VOC	488.6[2 β] Pounds per hour	Hour	EU-SOLVENT-WIPE	332.39	
2. VOC	1502.58[2] Tons per year	12-month rolling time period	EU-SOLVENT-WIPE	732.87	

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
βBased upon monthly values using methods acceptable to AQD					
All actual emissions are based upon CY 2017 and 4Q2017 (or December 2017) reports.					
.FCA counts number of cases for the purpose of the calculations.					

MI-ROP-B2767-2016, EU-SOLVENT-WIPE, VI:

Hours of operation, materials usage, VOC emission rates, and VOC content records are kept.

MI-ROP-B2767-2016, EU-SOLVENT-WIPE, VII:

Semi-annual, annual cert. and quarterly (VOC) reports are submitted.

EU-SEALERS&ADHESIVE (FG-AUTOMACT)

Application of sealers and adhesives and associated gelling oven.

Control device: Sealer and adhesive materials hardly contain VOC (<< 5%). Most sealers are baked in E-coat oven and hence, e-coat Durr RTO controls sealer VOC.

Sealer deck emissions are dried in gel oven (sealer) and hence not controlled by e-coat Durr RTO.

The emission unit consists of sealers and adhesive application throughout the plant. After powder antichip, the assembly line splits into two lines (70 jobs per hour or jph = 35 jph +35 jph). After sealers application, the cars / trucks are baked in two gen ovens (East and West). The ovens operate at 295 °F but the truck body attains 140 °F to dry off VOCs. The line can be split between Color1-Tu-tone and Color2; Color2 has nothing to do with Tu-tone. All sealers are applied after powered coating except ditch rail sealer. Color1 and Color2 lines are identical.

MI-ROP-B2767-2016, EU-SEALERS&ADHESIVE, I:

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
1. VOC	151.2[2 β] Pounds per hour	Hour	EU-SEALERS&ADHESIVE	4.4	
2. VOC	325.73[2] Tons per year	12-month rolling time period	EU-SEALERS&ADHESIVE	8.94	
3. VOC	3.0[2 θ] Pounds per gallon of coating, minus water, as applied	Daily / Monthly (see SC VI.1)	EU-SEALERS&ADHESIVE	0.0006	

[θ]On monthly basis if and only if all coatings satisfy the limit.
[β]Based upon monthly values using methods acceptable to AQD.
All actual emissions are based upon CY 2017 and 4Q2017 (or December 2017) reports.

MI-ROP-B2767-2016, EU-SEALERS&ADHESIVE, V:

Semidize Company (there are other suppliers also) supplies US EPA RM24 data for VOC content. The highest use sealer has VOC content of < 0.3 pound VOC per gallon.

MI-ROP-B2767-2016, EU-SEALERS&ADHESIVE, VI:

Production hours, material usage, materials VOC content, etc. records are kept. The calculations showing VOC limits compliance are performed in a timely manner and quarterly VOC reports are submitted.

MI-ROP-B2767-2016, EU-SEALERS&ADHESIVE, VII:

Quarterly VOC emissions reports are submitted.

The emissions data is based upon 4Q2017 VOC report.

Determination of sealer VOC destruction in E-coat bake oven (Dec 2012).

Personnel present:

Mr. Iranna Konanahalli (E-mail: konanahallii@michigan.gov)
Thomas Thornton (E-mail: tt158@chrysler.com)
Rohitkumar Patel (E-mail: rgp6@chrysler.com)

On November 30, 2012, Mr. Tom Maza of AQD-TPU approved the test protocol.

Chrysler used 2 inches * 4 inches metal panels to carry sealers through the assembly process. Three (3) sealers were used: one structural non-expandable sealer (like liquid nail

or liquid weld, black) and two expandable sealers. Sealers (except black structural) expand upon baking in an oven so as to provide tight seal. Three sealers were applied to metal panels such that 9 sandwiches (3 sandwiches per sealer; i.e. 3 runs for each sealer) were made. Three control panels (not pairs) were used as blank.

On December 3, 2012, 9 pairs of panels and three control panels were weighed for tear weight; of course no sealers on them. Sealers (3 types) were applied on 9 pairs of metals so as to form sandwich of a sealer material between two metal plates (panels). 9 pairs (sandwiches) and 3 control panels were weighed again to obtain sealer weight.

Allowed panels and sealers to rest at room temperature for 16 hours and weighed, on December 4, 2012, again to determine weight loss due to evaporation. Because sealers are highly viscous (requiring 30,000 psi pressure to apply), weigh loss was practically zero.

The panels (9 pairs plus 3 controls) were baked for about 45 minutes by hanging them on the production vehicles / trucks; the panels were not spot-welded. The panels were allowed to cool to room temperature. The panels were weighed again.

Each sample panel was weighed seven times based up six sigma principles to obtain accurate weight. Mettler Toledo AG204 Balance, which was calibrated on July 12, 2012, was used. Each time between a set of weighing, the balance was checked using standard weights. All weighing occurred in a vibration-free area (Mr. Thornton's office at Warren Truck Assembly Plant). Each time the balance was allowed to reset to zero.

On February 14, 2013, AQD received the sealer test results as follows (% VOC delivered to E -coat oven):

1. 100.10 percent structural epoxy adhesive (0.0% volatile content)

2. 97.73 percent Henkel-Terostat SA-4510 MS-CD 470F (0.6% volatile content)

3. 99.39 percent Henkel-Terostat 4600 MS-CD-473H (3% volatile content)

The sealer coated body is baked in E-coat oven (338 °F). The E-coat RTO destruction efficiency is 93.8% based upon November 2010 stack test.

Maximum volatile content of sealers is 3% and rest is solids. About 94 percent of VOC are destroyed in E-coat oven.

Sealer test conclusion: About 94 percent of VOC from sealers (maximum 3% volatile content) are destroyed in E-coat oven.

EU-BLACKOUT-BOOTH (FG-AUTOMACT)

Spray booth for applying blackout paint to vehicle bodies. The booth is on long-term idle. The booth is used as an inspection area.

The blackout application was done in a booth with a dry filter system. Blackout was done for Mitsubishi vehicles only. Blackout application is not used at this time because Mitsubishi vehicles are not manufactured at this time. During FY2018 inspection, black out line was still present but did not operate for several years.

The contract with Mitsubishi terminated during the bankruptcy (on April 30, 2009, Chrysler LLC filed for Chapter 11 reorganization). Chrysler wants to keep the booth and the corresponding permit just in case. Blackout process will be idled long-term.

At this time (FY 2018) Blackout Booth is used as an inspection area.

EU-TUTONE (FG-AUTOMACT)

The Tutone booth for applying topcoat on Tutoned vehicle bodies and associated curing oven.

Controls

1. A thermal oxidizer (TO) for VOC from the bake oven. Replaced December 2017. Set point = 1291 °F
2. A down-draft waterwash system for paint overspray particulate control.

At tu-tone (EU-TUTONE), all painting is robotic: two (2 mobile) BC robots and four (4 stationary) CC robots. Tu-tone application is baked to tack (not fully baked but sufficiently dried). After this semi-bake, vehicles are masked at masking deck.

Prior to 2006, all cars passing through Color1 booth used to go through tu-tuone booth; but all cars did not get tu-tone paint; only those tagged with bar code get tu-tone. No car painted at Color2 booth gets tu-tone color. Now (since 2006) there is an option to bypass tu-tone booth although this option is not always exercised. Approximately, 4% of trucks get tu-tone coating.

The process consists of tu-tone booth for tu-toned vehicles with downdraft water wash for paint overspray, one thermal oxidizer (1 TO) to destroy the tu-tone oven VOC; in 2009, 1 old TO was replaced with 1 TO that came from E-coat, which now has an RTO (known as e-coat Durr Rotary RTO). The tu-tone process was idled since CY 2005. As predicted, tu-tone production was restored for model year 2009. Tu-tone started operating on trial basis since May 2008. Tu-tone vehicle production started in July 2008. In August 2008, full production started. As of September 2018, tu-tone continues to be done. Again, in December 2017, TO was replaced with new TO. During February 13th thru February 15th, 2018, RWDI AIR Inc. (RWDI #1703283, April 11. 2018) performed sampling for VOC Destruction Efficiently (DE) at EU-COLOR-TWO AND EU-TUTONE thermal oxidizers (TO) using flame ionization analyzer as described in USE PA Method 25A. Each emission unit oven has its own dedicated thermal oxidizer.

First tu-tone is done and then, after masking, color coating is done in Color1 (never Color2) line.

MI-ROP-B2767-2016, EU-TUTONE, I:

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
1. VOC	12.3[2] [θ] Pounds per gallon (1.47 kg per liter) of applied coating solids	Calendar month	EU-TUTONE	10.83	
2. VOC	381.1[2] [β] Pounds per hour	Hour	EU-TUTONE Spraybooth	4.61	
3. VOC	821[2] Tons per year	12-month rolling time period	EU-TUTONE Spraybooth	22.91	
4. VOC	9.51[2] [β] Pounds per hour	Hour	EU-TUTONE Oven	0.12	
5. VOC	20.53[2] Tons per year	12-month rolling time period	EU-TUTONE Oven	0.59	

[θ]Per the EPA Protocol (VI(4) & (6))

[β]Based upon monthly values using methods acceptable to AQD.

All actual emissions are based upon CY 2017 and 4Q2017 (or December 2017) reports.

All emission calculations are based upon the Protocol default transfer efficiency (TE) of 55

All emission calculations are based upon the Protocol default transfer efficiency (TE) of 55% for Tu-tone.

October
October 2013 TE test.

For clearcoat (CC) TE value of 64.80 ≈ 65 is used based upon October 2013 tests.

MI-ROP-B2767-2016, EU-TUTONE, III:

1. Thermal oxidizer is installed and operating properly. In December 2017, new thermal oxidizer (TO) replaced existing TO for Tu-tone oven VOC emissions. February 14-15, 2018, stack test temperature of 1291 °F (RWDI #1703283, April 11. 2018) is new temperature limit (Destruction Efficiency (DE) Based on Mass Rates = 96.8%). April 2015 stack test temperature limit was 1360 °F for the previous tu-tone thermal oxidizer. Temperature charts are maintained on the computer. New limit is minimum 1291 °F.

2. Water wash system is essential to operation of paint spray booths. MPS (Mike Frauges Services; no longer Abedengo) inspects water wash systems once per week and submits reports

MI-ROP-B2767-2016, EU-TUTONE, V.1: US EPA RM-24

VOC: VOC content records using RM-24 are kept. PPG, a paint supplier, sends US EPA RM-24 VOC content information with each tote of paint.

MI-ROP-B2767-2016, EU-TUTONE, V.2: Transfer Efficiency (TE) Test

TE: Transfer Efficiency (TE) Test is not done; however, the Protocol default value of 55% for Tu-tone TE is used in calculations except for CC (CC TE = 65 default value). The RO Permit allows use of default TE value in lieu of TE test. At any rate, the RO Permit allows use of default TE value in lieu of TE test. Tu-tone accounts for < 10 percent total production based upon 2013 calculations; current estimate is about 4%.

MI-ROP-B2767-2016, EU-TUTONE, V.3: Oven Solvent Loading (OSL) or Capture Efficiency (CE)

OSL tests of April 2007

Per Mr. Sanni's test notice letter dated April 27, 2007, Topcoat Oven Solvent Loading Testing was conducted at PPG Laboratories. On July 17, 2007, AQD received Final Result Report for Topcoat Oven Solvent Loading (OSL). Per the report OSL test was conducted at PPG satellite testing facility, Sterling Heights. Three (3) solvent-borne basecoat (BC) and one (1) solvent-borne clearcoat (CC) were evaluated for OSL during the June 1, 2007, test. Obliviously Tu-tone was not part of the test and Tu-Tone process was not operating at that time. Based upon 100 % TE, Oven Solvent Loading (OSL) was 19.97%, 17.32%, 30.75% and 61.94% (revised from 50.98 per Dec 11, 2007 letter) for Bright White, Inferno Red Crystal, Bright Silver and Carbamate CC, respectively.

2011 OSL tests at Windsor

Again in 2011 OSL tests were conducted in Windsor, Canada. On July 19, 2011, Mr. Tom Maza of AQD-TPU approved the test protocol. Mr. Maza approved off-site OSL testing according to Sec. 21 of the Auto Protocol. Chrysler was required to test a representative coating from each group based upon characteristics. The research center must simulate assembly plant conditions. At ARDC, OSL tests were conducted on August 1, 2011 using solvent-based basecoat coatings and clearcoat coatings. The Oven Solvent Loading (OSL) results at 100 percent transfer efficiency are summarized below. The OSL must be converted

to actual TE conditions. Bright white coating: 18.59% and 1.728 lbs. / GACS; Bright silver coating: 29.74% and 2.544 lbs. / GACS; Deep Cherry Red coating: 19.27% and 1.659 lbs. / GACS; Clearcoat NCT10 coating: 61.33% and 6.731 lbs. / GACS Tu-tone was not part of the 2011 OSL test.

2013 transfer efficiency (TE) and oven solvent loading (OSL) tests.

On August 6, 2013, AQD received a transfer efficiency (TE) test and an oven solvent loading (OSL aka CE = capture efficiency) plans notification. On September 11, 2013, Mr. Tom Maza of MDEQ-AQD-TPU approved the test protocol. All tests and calculations were done according to the Auto Protocol (EPA-453/r-8-002). TE tests are based upon solid basecoat, metallic basecoat and clearcoat coatings. OSL tests are based upon basecoat and clearcoat coatings. During October 08, 2012, meeting (Tom Maza, Iranna Konanahalli, Rohit Patel), it was decided as follows: OSL only (no TE) for Topcoat Reprocess and Tu-tone and both TE and OSL for Colore2 (Color 1 and Color2 lines are identical and Color2 was chosen as a representative line). While OSL / CE tests were conducted using test panels, TE tests were conducted using vehicle bodies. During CC TE tests, robot malfunction caused the process operate under "degrade" mode", which may lower TE values. AQD SEMI received OSL and TE test report on March 06, 2014. However, AQD-TPU received the test report on December 12, 2013. Tom Maza of AQD-TPU completed the review of the OSL & TE test report on February 28, 2014.

Bureau Veritas North America, Inc. (Project Nos. 11013-000181.00 and 11013-000184.00) conducted both OSL and TE tests during October 2013.

AQD calculated values are generally in agreement with Bureau Veritas' values with a margin of error.

OSL / CE values are summarized below:

Coating line	AQD lbs./GACS	Bureau Veritas lbs./GACS	AQD CE %	Bureau Veritas CE %
Line2 BC	1.26	1.25	9	8.8
Line2 CC	3.97	3.98	32.5	32.2
Reprocess BC	1.25	0.74	9.1	5.2
Reprocess CC	2.93	2.97	24.0	24.1
Tu-tone BC	1.34	1.31	9.7	9.2
Tu-tone CC	3.74	3.64	30.3	29.5

(Line2 = Color2, BC = Basecoat, CC = Clearcoat)

While AQD calculated Line2 (Color2) TE values are 71.2 % for Metallic BC, 64.7% for Solid BC and 63.4% for CC, Bureau Veritas are 71.2 % for Metallic BC, 64.6% for Solid BC white and 64% for CC.

MI-ROP-B2767-2016, EU-TUTONE, V.4: Destruction Efficiency (DE) tests

September 2001 DE

During September 24 through October 1, 2001, Daimler-Chrysler's Stationary Environmental and Energy (Mr. Daniel Ozimek, Air Emissions Test Technician and Mr. William R. Prokopy, Air Emissions Test Specialist) together with Clayton Environmental conducted destruction efficiency (DE) tests for Topcoat Color Oven 1 (DE = 96.1 at 1310 °F & DE = 97.9 at 1350 °F), Topcoat Color Oven 2 (DE = 97.2 at 1310 °F & DE = 98.5 at 1350 °F), E-coat North Oven (DE = 99.1 at 1310 °F & DE = 99.1 at 1350 °F), Reprocess Oven (DE = 99.1 at 1310 °F & DE = 92.2 at 1350 °F) and Tu-tone oven (DE = TBD at 1310 °F & DE = 96.9 at 1350 °F).

January 2002 DE

Tu-Tone incinerator DE test was performed again on January 31, 2002. DE was only 72.3 percent at 1310 °F. This is too low DE to be acceptable to AQD. It appears that something went wrong with the January 2002 test because 40 degrees (reduced to 1310 °F from 1350 °F) reduction in fire box temperature should not reduce DE so drastically. Chrysler chose to reduce operating temperature anyway. AQD's Ms. Joyce Zhu discussed possible issuance of violation with Chrysler staff for this reduction in operating temperature to 1310 °F. Plant manager decided to increase temperature back to 1350 °F. The operating temperature reduction was motivated by energy and cost savings. Hence, Chrysler is not allowed to reduce operating temperature until a valid test is completed. However, the RO Permit requires neither minimum temperature nor minimum destruction efficiency.

May 2010 DE

On May 4 and 5, 2010, Chrysler performed destruction efficiency (DE) tests of four Thermal Oxidizers (4 TOs: Color1, Color2, Tu-tone, Reprocess). This was a compliance test using US EPA Reference Method 25A for the topcoat color ovens (Coler1 and Color2), the reprocess oven, and the tu-tone oven. AQD's Jon Wilford observed the sampling procedures. MACES does not have a stack test review report although an observation report exists for May 2010 tests. AQD received May 2010 DE test report dated June 25, 2010, on July 1, 2010. Bureau Veritas North America, Inc. (248-344-2661), 45525 Grand River Ave., Suite 200, Novi, Michigan (Bureau Veritas Project No. 11009-109201.00) conducted both inlet and outlet sampling of VOC. Destruction Efficiencies reported are: Color1 = 91% at Firebox T = 1349 °F; Color2 = 99% at Firebox T = 1349 °F; Tu-tone = 86% at Firebox T = 1351 °F; Reprocess = 92 % at Firebox T = 1351 °F. (E-1.5. III.A & B).

April 2015 DE

On March 11, 2015, AQD received destruction efficiency (DE) test plan notification for thermal oxidizers at Color1, Color2, Tu-tone, Highbake reprocess. On March 19, 2015, Mr. Tom Gasloli of MDEQ-AQD-TPU approved the test protocol via a letter to Rohit Patel of FCA US. All tests, sampling, analysis and calculations to be done according to US EPA Reference Method 25A. Iranna Konanahalli and Tom Gasloli of AQD observed test during April 2015 and Stuart Duncan and Rohit Patel of FCA US coordinated the testing process. AQD-SEMI received the DE test report on June 02, 2015. Mr. Gasloli performed cursory review of tests results while comparing to the previous tests. Bureau Veritas North America, Inc. (Project No. 11015-000047.00) conducted DE sampling during April 14-17, 2015. Bureau Veritas reported thermal oxidizer DE values in percent (%): 95.8 for Color1, 97.5 for Color2, 88.0 for Reprocess and 88.3 for Tu-tone. The DE values may be used in the calculations.

Tu-tone thermal oxidizer (1 TO) was replaced in November 2009: In 2008 1 Durr RTO replaced 2 TOs at e-coat oven. These two e-coat TOs (2) moved to Color1 oven and Tu-tone oven; one TO at each location. Again, in December 2017, Tu-tone TO was replaced by brand new TO.

April 2018 DE

On September 29, 2017, AQD received Notification of Intent to Conduct Air Compliance Testing at FCA US LLC's Warren Truck Assembly Plant (WTAP) (RWDI Reference No. 1703283) from Responsible Official Mr. Andrew Raglyi (Phone: 586-497-3955) via letter dated September 27, 2017. The notification pertains to destruction efficiencies of the thermal oxidizers (TO) for volatile organic compounds (VOC) for controlling the bake oven emissions from EU-TUTONE, EU-COLOR- ONE, EU-COLOR-TWO and EUREPROCESS Lines. WTAP replaced the existing Thermal Oxidizers (TOs) for EU-TUTONE (December 2017), EU-COLOR-ONE, (August 2017) EU-COLOR-TWO (December 2017) and EU-REPROCESS (July 2018). As stated above, FCA WTAP replaced, in 2008, e-coat thermal oxidizers (2 TOs) with one Rotary Durr RTO (1 Durr RTO) for fuel efficiency. US EPA Reference Methods: 1, 2, 3, 4, 25A would be used. The DE test plan included Temperature Ladder Study. AQD (Mark Dziadosz of AQD-TPU) approved the VOC Destruction Efficiency (DE) Test Plan vial the letter dated October 17, 2017, to Mr. Andrew Ragalyi, Plant Manager. On April 13, 2018, AQD received DE test report for EU-COLOR-TWO and EU-TUTONE and AQD-TPU (Dziadosz) would only perform cursory review this report. RWDI AIR Inc. (Phone: 519-974-7384, RWDI #1703283, April 11. 2018) sampled, during February 13 thru February 15, 2018, concurrently at the inlets and outlets (three 1-hour tests) of corresponding thermal oxidizers and analyzed VOC using flame ionization analyzer as propane as described in USE PA Method 25A. The mass rate destruction efficiencies obtained are: EU-COLOR-TWO (February 13, 2018) = **99.0% at 1291 °F** and EU-TUTONE (February 14-15, 2018) = **96.8% at 1291 °F**. Testing for VOCs was accomplished simultaneously at the inlet and outlet using continuous emission monitors (CEM). VOC testing followed USEPA Method 25A "Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer". In order to compare inlet and outlet concentrations, the outlet concentrations of total VOCs were converted to parts per million (ppmv) as propane. The exhaust gas sample was withdrawn from a single point at the center of the duct or stack using a stainless-steel probe. The sample proceeded through a heated filter where particulate matter was removed. The sample was then transferred via a heated Teflon® line and introduced to the analyzer (hot/wet) for measurement.

MI-ROP-B2767-2016, EU-TUTONE, VI.1: thermal oxidizer temperature monitoring device

Thermocouples are calibrated or replaced once per year. Maintenance Dept. keeps calibration / replacement records.

MI-ROP-B2767-2016, EU-TUTONE, VI.2: weekly visual inspections of the waterwash system

MPS (Mike Frauges Services, no longer Abedengo) inspects water wash systems once per week and submits reports

MI-ROP-B2767-2016, EU-TUTONE, VI.3: The temperature monitor shall be placed in the firebox

Temperature monitor is placed in the fire-box.

MI-ROP-B2767-2016, EU-TUTONE, VI.4:

According the US EPA Auto Protocol (the Protocol or Auto Protocol), VOC records are kept. Transfer Efficiency (TE) Test is not done; however the **Protocol default value of 55 for TE** is used in calculations except for CC (CC TE = 65 or Round (64.800 default value). The RO Permit allows use of default TE value in lieu of TE test. DE, TE, OSL values are kept.

MI-ROP-B2767-2016, EU-TUTONE, VI.5: Plant production hours

Monthly production hours are kept.

MI-ROP-B2767-2016, EU-TUTONE, VI.6: Records of the VOC mass emission rates

VOC emissions rates to show compliance are calculated.

MI-ROP-B2767-2016, EU-TUTONE, VI.7: Records of water wash system inspection

MPS (Mike Frauges Services; no longer Abedengo) inspects water wash systems once per week and submits reports.

MI-ROP-B2767-2016, EU-TUTONE, VI.8: Bypass

Ovens depend on heat from thermal oxidizers and hence an interlock system stops the line. No bypass.

MI-ROP-B2767-2016, EU-TUTONE, VI.9-13: Operation and Maintenance (O&M) plan. Appendix 3 CAM.

CAM O&M plan submitted with ROP application and implemented. FCA complies with NSPS MM via Auto Protocol calculations. FCA has implemented CAM.

MI-ROP-B2767-2016, EU-TUTONE, VII.1-6:

Semi-annual deviations, annual certification, CAM, MAERS, MACT and quarterly VOC emissions reports are submitted.

EU-FLUID-FILL

Stations for filling fuel tanks (gasoline) and windshield washer solution, brake, power steering etc. reservoirs.

Control: Stage II vapor balance system or onboard Re-fueling Vapor Recovery systems for vehicles. All cars and trucks are designed with ORVRS as required by CAA Mobile Source regulations.

All trucks are filled with gasoline (7.4 gallons per car) or ultra-low sulfur diesel (ULSD 15 ppm S, 4 gallons per car), engine coolant, windshield washer, etc.

MI-ROP-B2767-2016, EU-FLUID-FILL, I.

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
1. VOC	12.3[2 β] Pounds per hour	Hour	EU-FLUID-FILL	1.887	
2. VOC	26.39[2] Tons per year	12-month rolling time period	EU-FLUID-FILL	6.23	
[β]Based upon monthly values using methods acceptable to AQD.					
All actual emissions are based upon CY 2017 and 4Q2017 (or December 2017) reports.					

MI-ROP-B2767-2016, EU-FLUID-FILL, III: Stage II vapor balance system or onboard Re-fueling Vapor Recovery systems for vehicles.

All cars and trucks are designed with ORVRS as required by CAA Mobile Source regulations.

The US EPA rule requires onboard refueling emissions controls for passenger cars and light trucks (e.g., pickups, mini-vans, and most delivery and utility vehicles). The EPA rule does not require onboard refueling emissions controls for heavy-duty vehicles and trucks (those over 8500 pounds gross vehicle weight rating (GVWR)). The rule covers 97 percent of new vehicles and 94 percent of refueling emissions.

Therefore, a vapor balance system is not required. The change was incorporated in to MI-ROP-B2767-2011. October 22, 2009 Violation Notice regarding Stage II vapor balance system is resolved. (MI-ROP-B2767-2003, E-01.8.V).

MI-ROP-B2767-2016, EU-FLUID-FILL, VI: production hours, materials used, Calculations

Production records are kept and the calculations are performed.

MI-ROP-B2767-2016, EU-FLUID-FILL, VII:

Semi-annual deviations, annual certification, MAERS and quarterly VOC emissions reports are submitted.

EU-FINAL-REPAIR (FG-AUTOMACT)

Final repair system, for low-bake, includes two spot repair stations with associated spovens (one spoven per booth) and sanding booths in Repair Dept. 9190 of Main Building. Prep booths or sanding booths are equipped with side-draft dry filters. The spovens (spot ovens) are equipped with IR Heat and are located inside the downdraft spray booths. The booths (2) are equipped with downdraft filters like collision shop booths. These booths should not be confused with Spot Repair Deck 1-12, with carbon adsorption system, located in paint shop.

Controls:

1. Down-draft filters for paint spray booths
2. Side-draft filters for sanding booths

Mr. Jeff Moore, Spot Repair (Low Bake Repair) Area Manager, retired in 2009 via buy out.

George Asher is Dept. 9190 Manager; separated about October 2014. Floyd Jeffries is responsible for the repair operations. Mr. Jeffries was not present during FY 2018 inspection.

While Spot Repair (12 stations with carbon control for VOC) is in paint shop, Final Repair (two downdraft filter system booths) is the main building. Both use low bake paints.

Before spot repair painting, spot sanding is done in two separate identical booths, which are equipped with exhaust filters on one side. The sanding booths (2) are also known as Prep Booths. Final Repair consists of two identical repair booths with downdraft filters for paint overspray control, two sanding booths with side-draft filters and a paint mix room, which is enclosed in a cage.

The collision shop style down-draft booths are equipped intake air filters to ensure finish quality. Two spovens (spot ovens) that use IR heat provide heat provide for enhanced drying. Spovens are located within the down-draft booths.

Adjacent to these booths, final repair area is present where only pens and spray cans are used (Rule 287(b)).

MI-ROP-B2767-2016, EU-FINAL-REPAIR, I:

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
1. VOC	45.0[2 β] Pounds per hour	Hour	EU-FINAL-REPAIR	0.055	
2. VOC	52.1[2] Tons per year	12-month rolling time period	EU-FINAL-REPAIR	0.18	
3. VOC	4.8[2 θ] Pounds per gallon of coating minus water as applied	Daily / Monthly (see SC VI.2)	EU-FINAL-REPAIR	4.137	

[θ]On monthly basis if and only if all coatings satisfy the limit.
[β]Based upon monthly values using methods acceptable to AQD.

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
All actual emissions are based upon CY 2017 and 4Q2017 (or December 2017)					

MI-ROP-B2767-2016, EU-FINAL-REPAIR, III, VI: Filters

All exhaust filters are installed and operating properly. Tri-Dim performs monthly inspections all filters at the plant. One such inspection was performed on December 31, 2017.

MI-ROP-B2767-2016, EU-FINAL-REPAIR, VI: production hours, materials used, Calculations

Production records are kept and the calculations are performed.

MI-ROP-B2767-2016, EU-FINAL-REPAIR, VII:

Semi-annual deviations, annual certification, MAERS and quarterly VOC emissions reports are submitted.

EU-SPOT-REPAIR-DECK (FG-AUTOMACT)

1 through 12 spot repair painting stations with portable hose emissions capture system and associated IR (infra-red) curing ovens. The emissions are ducted to a common control system consisting of series of dry filters and carbon adsorption. Carbon is monitored for breakthrough using color change at sight glass.

Controls:

1. Dry filter system for particulate emissions

2. Carbon adsorption system for VOC

Note: Monroe Environmental makes dual (particulate filter plus carbon adsorption) control system.

Filters are equipped with two Photohelic pressure gauges for pressure drop across the filters. Carbon adsorption system is equipped with color indicator for carbon breakthrough detection. TriDim checks both on monthly basis.

MI-ROP-B2767-2016, EU-SPOT-REPAIR-DECK, I:

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
1. 1. VOC	146.4[2] Pounds per day	24-hour calendar day	EU-SPOT-REPAIR-DECK	0.845	
2. 2. VOC	22.0[2] Tons per year	12-month rolling time period	EU-SPOT-REPAIR-DECK	0.10	
3. 3. VOC	4.8[2 θ] Pounds per gallon, minus water, as applied	Daily / Monthly (see SC VI.2)	EU-SPOT-REPAIR-DECK	4.216	
[θ]On monthly basis if and only if all coatings satisfy the limit.					
All actual emissions are based upon CY 2017 and 4Q2017 (or December 2017)					

MI-ROP-B2767-2016, EU-SPOT-REPAIR-DECK, III:

Monroe Environmental System's particulate filters and carbon adsorption are installed and operating properly. Tri-Dim performs monthly inspections all filters at the plant. One such inspection was performed on December 31, 2017. Tri-Dim inspected carbon (indicator glass tube) as well. HVLP guns are used.

MI-ROP-B2767-2016, EU-SPOT-REPAIR-DECK, VI: production hours, materials used, Calculations

Production records are kept and the calculations are performed.

MI-ROP-B2767-2016, EU-SPOT-REPAIR-DECK, VII:

Semi-annual deviations, annual certification, MAERS and quarterly VOC emissions reports are submitted.

The flexible units are:

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-TOPCOAT	Two topcoat lines (EU-COLOR-ONE & EU-COLOR-TWO) and one high bake-repair operation (EU-REPROCESS), which is a part of the topcoat system. Each topcoat line consists of spray booths for applying topcoat to vehicle bodies and oven for curing. Reprocess is high bake repair operation that consists of spray booths for topcoat application to repair vehicle bodies and oven for curing. While Color1 (36 JPH) and Color2 (36 JPH) lines are identical topcoat lines (72 JPH), reprocess line is shorter and slower.	EU-COLOR-ONE EU-COLOR-TWO EU-REPROCESS (high bake repair)
FG-TEMPBOILERS	Two natural gas fired boilers. These are trailer-mounted temporary boilers installed since 2009 and mostly used in non-heating season (summer). Although capable of being moved, the boilers have been located at the plant for at least two years (as of March 2016). AQD received both NSPS Dc (April 30, 2007) and Major Source Boiler MACT 5D (May 24, 2013) notifications.	EU-TEMPBOILER1 EU-TEMPBOILER2
FG-BOILERS	Four (4) natural gas fired boilers to produce steam and heat.	EU-BOILER3 EU-BOILER4 EU-BOILER5 EU-BOILER6
FG–GASOLINE-TANKS	Three unleaded gasoline storage tanks.	EU–UNLEADEDGAS1
FG-RULE-331	Wood saws, lathes, etc.	EU-CARPENTERSHOP
FG-PM-MISC	This group consists of various emission units that have the same particulate requirements.	EU-COLOR-ONE-SAND EU-POLISH-DECK EU-REPROCESS-SAND EU-REPRO-POLISH EU-UNIPRIME-SAND

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-AUTOMACT	FG-AUTOMACT: 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.	EU-UNIPRIME EU-SOLVENT-WIPE EU-SEALERS&ADHESIVE EU-BLACKOUT-BOOTH EU-FINAL-REPAIR EU-SPOT-REPAIR-DECK EU-TUTONE EU-COLOR-ONE EU-COLOR-TWO EU-REPROCESS
FG-OLDMACT	The affected source is each new, reconstructed, or existing Organic Liquid Distribution (OLD) (non-gasoline) operation that is located at, or is part of a major source of hazardous air pollutant (HAP) emissions. The affected source is comprised of storage tanks, transfer racks, equipment leak components associated with storage tanks, transfer racks and pipelines, transport vehicles, and all containers while loading or unloading at transfer racks subject to this subpart. Equipment that is part of an affected source under another NESHAP is excluded from the affected source.	
FG-BOILER-MACT5D	Requirements for existing Gas 1, (Natural Gas only) for existing Boilers and Process Heaters at major sources of Hazardous Air Pollutants per 40 CFR Part 63, Subpart DDDDD. These existing boilers or process heaters must comply with this subpart no later than January 31, 2016, except as provided in 40 CFR 63.6(i).	EU-TEMPBOILER1 EU-TEMPBOILER2 EU-BOILER3 EU-BOILER4 EU-BOILER5 EU-BOILER6
FG-CI-RICE-MACT4Z<500HP	Existing CI Engines located at a Major Source < 500 HP, Emergency.	EU-ENG-FPH1
FG-CI-RICE-MACT4Z>500HP	Existing CI Engines located at a Major Source > 500 HP, Emergency.	EU-ENG-SMB1 EU-ENG-SMB2

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-CI-RICE-NSPS4I<500	This flexible group includes new emergency compression ignition (CI) Diesel fired stationary reciprocating internal combustion engines (RICE) that have a maximum site rating of greater than or equal to 100 brake horsepower (HP), but less than 500 (HP) and subject to 40 CFR 60, Subpart IIII.	EU-ENG-FPH2 (305 HP, 01/01/2011, Fire Pump emergency engine)
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.	
FG-RULE-290	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 290.	
FG-RULE-287(c)	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 287(2)(c).	

FG-TOPCOAT (FG-AUTOMACT)

EUs: EU-COLOR-ONE, EU-COLOR-TWO, EU-REPROCESS)

Two topcoat lines (EU-COLOR-ONE & EU-COLOR-TWO) and one high bake-repair operation (EU-REPROCESS), which is a part of the topcoat system. Each topcoat line consists of spray booths for applying topcoat to vehicle bodies and an oven for curing. Reprocess is high bake repair operation that consists of spray booths for topcoat application to repair vehicle bodies and an oven for curing. While Color1 (36 JPH) and Color2 (36 JPH) lines are identical topcoat lines (72 JPH), reprocess line is shorter and slower.

Controls:

1. Color1: Downdraft Water Wash System for the spray booths of EU-COLOR-ONE.
2. Color1: Thermal Oxidizer for bake oven of EU-COLOR-ONE. Replaced in August 2017. Setpoint = 1380 °F.

3. Color2: Downdraft Water Wash System for the spray booths of EU-COLOR-TWO.
4. Color2: Thermal Oxidizer for bake oven of EU-COLOR-TWO. Replaced in December 2017. Setpoint = 1370 °F.
5. Reprocess: Downdraft Water Wash System for the spray booths of EU-REPROCESS
6. Reprocess: Thermal Oxidizer for bake oven of EU-REPROCESS. Replaced in July 2018. Setpoint = 1360 °F.

Color1 (36 jobs per hour or JPH) and Color 2 (36 JPH) lines are identical(72 JPH total). Reprocess (high bake repair) line shorter and slower. About 4-6% trucks go through topcoat

reprocess line based upon inspection and defects. Trucks needing substantial repairs go through reprocess line.

All cars passing through Color1 booth used to (before 2006) go through tu-tuone booth; but all cars did not get tu-tone paint; only those tagged with bar code get tu-tone. No car painted at Color2 booth gets tu-tone color. Since 2006 there is an option to bypass tu-tone although this option is not always exercised.

The flexible group consists of two identical topcoat lines (Coler1 and Color2) and high-bake operation for repair; high-bake repair is also known as topcoat reprocess. Total design capacity is 72 jobs per hour (Coler1 = 36 and Color2 = 36). Usually Chrysler runs the topcoat lines at 66-68 jobs per hour; adjustments are made by shutting down the plant for a week based upon product inventory. For efficiency and union contract reasons, both Color1 and Color2 lines are run.

There are two identical topcoat lines (Color1 at second level and Color2 at second level) that split from one line after powder coating; tu-tone line was idled since CY 2005 until July 2008; trial operation started in May 2008; full operation started in 2009. There is no sound-deadener application but deadener mats are placed. There is a tack-off area where a body is wiped with IPA (75% IPA, 25 water) wipes, if necessary; before 2009 all cars were wiped. Hand sanded, if needed, and tacked off again. A bar code on the body determines a color to be coated. Air blow-off is present to remove particulate on the body.

3 robots (2 robots to paint and 1 robot to hold hood, etc.) paint VOC based basecoat for engine compartment. 6 side (3 on each side) 3 overhead (top) bells spray basecoat. Complex moves by bells are possible. In all, 6 (Color1 + Color2) robots are present for basecoat. Bells do majority (70%) of painting. Weighted average TE is used in the VOC calculations. Flash-off and observation zones are present. Manual painting can be done but not standardized.

Clearcoat is done with 5 robots (3 on one side; 2 on other side) 6 bells (3 on each side), 3 overhead bells, manual application for cut-in areas; total 9 bells. Manual CC spray is done for inaccessible areas such as door jams. There is de-mask area for tu-tone trucks. There is 40-ft (5-10 minutes) flash-off zone. Tu-tone is painted first and then trucks are masked for other coating steps. At the end of topcoat including clearcoat, tu-toned trucks are de-masked. There is some overlapping of paints since there is no masking at tu-tone booth. Topcoat (BC & CC) is done on masked trucks when tu-tone is involved.

High-bake repair line is a part of topcoat. About 4% based upon major defects go through topcoat high-bake reprocess. The reprocess line is smaller than Color1 and Color2. Only tagged cars / trucks go through the topcoat reprocess. Mostly robotic painting is done in the reprocess line; some manual painting is also done. There are 4 color-coat robots and 6 clearcoat robots. Manual CC is also done. Reprocess line has its own oven and a thermal oxidizer.

Paint is baked for 45 minutes at 285-300 degrees Fahrenheit.

There are four thermal oxidizers (4 TO) in all and one e-coat regenerative thermal oxidizer (1 e-coat Durr RTO): 1 TO for tu-tone (idled since CY 2005 but restarted in July 08), 1 Durr RTO for Uniprime (E-coat), 1 TO for tu-tone, 1 TO for Color1, 1 TO for Color2 and 1 TO for topcoat high bake reprocess. When TO / RTO is down, interlock system stops the line. Heat from thermal oxidizers (but not e-coat RTO) is used in bake ovens, which are critical to the

operation of paint process. Therefore, the paint lines cannot be operated without operation of thermal oxidizers (TOs). Obviously, one Uni-prime (E-coat) RTO does not provide its heat to the e-coat oven.

In CY2008 one e-coat RTO replaced two e-coat thermal oxidizers (2 TO) as a part of energy savings program. In 2009, 2 E-coat TOs that an RTO replaced moved to Color1 and Tu-tone ovens because these were in better shape. Again, thermal oxidizers were replaced as the existing ones were too old: tu-tone TO in December 2017, Color 1 TO in August 2017, Color 2 TO in December 2017 and reprocess TO in July 2018.

All ovens (4) are identical. Each oven has five (5) heat exchangers (HE). Hot exhaust gases from a thermal oxidizer exchange heat with a bake oven air. Part of oven air (25%) is purged to maintain VOC below 25% LEL (Lower Explosion Limit) for safety and insurance reasons. The purged oven air, which is laden with VOC, is ducted to a thermal oxidizer to combust VOC to water and carbon dioxide. In order maintain normal pressure equilibrium an equal amount of make-up air is introduced. Make-up air is preheated using TO exhaust. Also, Color1 and Color2 ovens are equipped with gas fired heaters to augment TO heat. Neither tu -tone nor reprocess oven has additional heaters.

MI-ROP-B2767-2016, FG-TOPCOAT, I:

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
1. VOC	1.47[2 θ] kg per liter of applied coating solids (12.3 lbs./GACS)	Calendar month average	FG-TOPCOAT	9.62 lbs/GACS	
2. VOC	270.2[2 β] Pounds per hour	Per hour operated in a calendar month	Spray booths of each topcoat line (EU-COLOR-ONE, EU-COLOR-TWO)	163.49 163.49	
3. VOC	582.11[2] Tons per year	12-month rolling time period	Spray booths of each topcoat line (EU-COLOR-ONE, EU-COLOR-TWO)	566.29 566.29	
4. VOC	6.8[2 β] Pounds per hour	Per hour operated in a calendar month	Bake Ovens of each topcoat line (EU-COLOR-ONE, EU-COLOR-TWO)	1.36 1.36	
5. VOC	15.67[2] Tons per year	12-month rolling time period	Bake Ovens of each topcoat line (EU-COLOR-ONE, EU-COLOR-TWO)	4.73 4.73	
6. VOC	89.9[2 β] Pounds per hour	Per hour operated in a calendar month	High Bake Repair spray booths (EU-REPROCESS)	14.56	
7. VOC	193.74[2] Tons per year	12-month rolling time period	High Bake Repair spray booths (EU-REPROCESS)	50.49	
8. VOC	2.3[2 β] Pounds per hour	Per hour operated in a calendar month	High Bake Repair bake oven (EU-REPROCESS)	0.28	

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Actual emissions	
9. VOC	5.22[2] Tons per year	12-month rolling time period	High Bake Repair bake oven (EU-REPROCESS)	0.97	

[θ]Per the EPA Protocol (VI(4) & (5))
[β]Based upon monthly values using methods acceptable to AQD.
GACS = Gallon of applied coating solids

All actual emissions are based upon CY 2017 and 4Q2017 (or December 2017)
Bothe BC and CC coatings are solvent based.

MI-ROP-B2767-2016, FG-TOPCOAT, III.1: operate thermal oxidizers properly at minimum temperature of 1337 °F (725 °C) or the most recent stack test temperature.

Thermal oxidizers are operated at setpoints stated above. Below 1337 °F the line shuts down. PLC and Data Acquisition System records the temperature charts on the computer.

MI-ROP-B2767-2016, FG-TOPCOAT, III.2: operate water wash systems properly

Downdraft water-wash system is present to control paint overspray. Mr. Smith and a subcontractor from MPS (Mike Frauges, no longer Abendgo), conduct weekly inspection of the water-wash system. Proper functioning of the water wash system is critical to high quality paint finish.

MI-ROP-B2767-2016, FG-TOPCOAT, V.1: US EPA Reference Test Method 24

VOC: VOC content records using RM-24 are kept. PPG, a paint supplier, sends US EPA RM-24 VOC content information with each tote of paint.

MI-ROP-B2767-2016, FG-TOPCOAT, V.2: Transfer Efficiency (TE) tests

2008 TE test.

TE: On September 8, 2008, AQD received a transfer efficiency test plan notification. According the the test notice, the topcoat color booths would be tested for transfer efficiency on November 10-13, 2008. Since the color booths (Color1 and Color2) are identical, Color2 booth would be used as a representative booth for the purpose of transfer efficiency (TE). On September 26, 2008, Mr. Jason Wolf of MDEQ-AQD-TPU approved the test protocol. Mr. Tom Maza of MDEQ-AQD-TPU observed the November 2008 TE test. MACES has November 12, 2008, TE test observation report. MACES did not have report received entry for this TE test report. Warren office did not have the TE test report in its filing system. On September 24, 2009, I talked to Mr. Sanni regarding the non-submittal of TE test report issue. I asked him to send immediately an electronic copy of the report and send the original report (two copies: one for MDEQ-AQD-TPU, Lansing and one for MDEQ-AQD-SEMI, Warren) along with an original certification in the mail. Color2 TE tests were done in November 2008. Although TE test were not submitted promptly in 2008, on March 4, 2010, AQD received, with a responsible official signature, November 2008 TE tests report. 2008 TE test results are as follows:

1. Basecoat/Clearcoat and Clearcoat only

    a. TE for Stone White SW1/CC = 70.98%
    b. TE for Brilliant Black AXR/CC = 64.07%
    c. TE for Clearcoat Clear = 64.80%

2. Calculated basecoat only

    a. TE for Stone White =70.32% straight shade
    b. TE for Brilliant Black =72.03% metallic/mica

2013 TE tests

TE: On August 6, 2013, AQD received a transfer efficiency (TE) test and an oven solvent loading (OSL aka CE = capture efficiency) plans notification. According the test notice, the topcoat color booths would be tested for transfer efficiency in October 5-18, 2013. Since the color booths (Color1 and Color2) are identical, Color2 booth would be used as a representative booth for the purpose of transfer efficiency (TE). The test results are good for Color1, Color2, and HiBake Reprocess topcoat lines. On September 11, 2013, Mr. Tom Maza of MDEQ-AQD-TPU approved the test protocol. All tests and calculations will be done according to the Auto Protocol (EPA-453/r-8-002). TE tests are based upon solid basecoat, metallic basecoat and clearcoat coatings. OSL tests are based upon basecoat and clearcoat coatings. See below (2013 OSL and TE) for results.

MI-ROP-B2767-2016, FG-TOPCOAT, V.3: Oven Exhaust Control Device VOC Loading

2007 Oven Solvent Loading (OSL)

OSL: Per Mr. Sanni's test notice letter dated April 27, 2007, Topcoat Oven Solvent Loading Testing was conducted at PPG Laboratories. On July 17, 2007, AQD received Final Result Report for Topcoat Oven Solvent Loading (OSL). Per the report OSL test was conducted at PPG satellite testing facility, Sterling Heights. Three (3) solvent-borne basecoat (BC) and one (1) solvent-borne clearcoat (CC) were evaluated for OSL during the June 1, 2007, test. Obliviously Tu-tone was not part of the test and Tu-Tone process was not operating at that time. Based upon 100 % TE, Oven Solvent Loading (OSL) was 19.97%, 17.32%, 30.75% and 61.94% (revised from 50.98 per Dec 11, 2007 letter) for Bright White, Inferno Red Crystal, Bright Silver and Carbamate CC, respectively. . (F-1.8. III.B).

2011 Oven Solvent Loading (OSL)

OSL: Again, in 2011 OSL tests were conducted in Windsor, Canada. On July 19, 2011, Mr. Tom Maza of AQD-TPU approved the test protocol. Mr. Maza approved off-site OSL testing according to Sec. 21 of the Auto Protocol. Chrysler was required to test a representative coating from each group based upon characteristics. The research center must simulate assembly plant conditions. At ARDC, OSL tests were conducted on August 1, 2011 using solvent-based basecoat coatings and clearcoat coatings. The Oven Solvent Loading (OSL) results at 100 percent transfer efficiency are summarized below. The OSL must be converted

to actual TE conditions. Bright white coating: 18.59% and 1.728 lbs. / GACS; Bright silver coating: 29.74% and 2.544 lbs. / GACS; Deep Cherry Red coating: 19.27% and 1.659 lbs. / GACS; Clearcoat NCT10 coating: 61.33% and 6.731 lbs. / GACS. OSL was not performed for tu-tone.

2013 Oven Solvent Loading (OSL)

3C OSL and TE: On August 6, 2013, AQD received a transfer efficiency (TE) test and an oven solvent loading (OSL aka CE = capture efficiency) plans notification. On September 11, 2013, Mr. Tom Maza of MDEQ-AQD-TPU approved the test protocol. All tests and calculations would be done according to the Auto Protocol (EPA-453/r-8-002). TE tests were based upon solid basecoat, metallic basecoat and clearcoat coatings. OSL tests were based upon basecoat and clearcoat coatings. During October 08, 2012, meeting (Tom Maza, Iranna Konanahalli, Rohit Patel), it was decided as follows: OSL only (no TE) for Topcoat Reprocess and Tu-tone and both TE and OSL for Colore2 (Color 1 and Color2 lines are identical and Color2 is chosen as a representative line). While OSL / CE tests were conducted using test panels, TE tests were conducted using vehicle bodies. During CC TE tests, robot malfunction caused the process operate under "degrade" mode", which may lower TE values. AQD SEMI received OSL and TE test report on March 06, 2014. However, AQD-TPU received the test report on December 12, 2013. Tom Maza of AQD-TPU completed the review of the OSL & TE test report on February 28, 2014.

Bureau Veritas North America, Inc. (Project Nos. 11013-000181.00 and 11013-000184.00) conducted both OSL and TE tests during October 2013.

AQD calculated values are generally in agreement with Bureau Veritas' values with a margin of error.

OSL / CE values are summarized below (Line2 = Color2, BC = Basecoat, CC = Clearcoat):

Coating line	AQD lbs./GACS	Bureau Veritas lbs./GACS	AQD CE %	Bureau Veritas CE %
Line2 BC	1.26	1.25	9	8.8
Line2 CC	3.97	3.98	32.5	32.2
Reprocess BC	1.25	0.74	9.1	5.2
Reprocess CC	2.93	2.97	24.0	24.1
Tu-tone BC	1.34	1.31	9.7	9.2
Tu-tone CC	3.74	3.64	30.3	29.5

Based upon AQD calculations Line2 (Color2) TE values are 71.2 % for Metallic BC, 64.7% for Solid BC and 63.4% for CC. Bureau Veritas TE values are 71.2 % for Metallic BC, 64.6% for Solid BC white and 64% for CC. All CE values are based upon 100% TE.

MI-ROP-B2767-2016, FG-TOPCOAT, V.4: Destruction Efficiency (DE) of the Thermal Oxidizers

2001 Destruction Efficiency (DE)

During September 24 through October 1, 2001, Daimler-Chrysler's Stationary Environmental and Energy (Mr. Daniel Ozimek, Air Emissions Test Technician and Mr. William R. Prokopy,

Air Emissions Test Specialist) together with Clayton Environmental conducted destruction efficiency (DE) tests for Topcoat Color Oven 1 (DE = 96.1 at 1310 °F & DE = 97.9 at 1350 °F), Topcoat Color Oven 2 (DE = 97.2 at 1310 °F & DE = 98.5 at 1350 °F), E-coat North Oven (DE = 99.1 at 1310 °F & DE = 99.1 at 1350 °F), Reprocess Oven (DE = 99.1 at 1310 °F & DE = 92.2 at 1350 °F) and Tu-tone oven (DE = TBD at 1310 °F & DE = 96.9 at 1350 °F).

2010 Destruction Efficiency (DE)

On May 4 and 5, 2010, Chrysler performed destruction efficiency (DE) tests of four Thermal Oxidizers (4 TOs). This was a compliance test using US EPA Reference Method 25A for the topcoat color ovens (Coler1 and Color2), the reprocess oven, and the tu-tone oven. AQD's Jon Wilford observed the sampling procedures. MACES does not have a stack test review report although an observation report exists for May 2010 tests. AQD received May 2010 DE test report dated June 25, 2010, on July 1, 2010. Bureau Veritas North America, Inc. (248-344-2661), 45525 Grand River Ave., Suite 200, Novi, Michigan (Bureau Veritas Project No. 11009-109201.00) performed the May 2010 inlet and out sampling of VOC. Destruction Efficiencies reported are: Color1 = 91% at Firebox T = 1349 °F; Color2 = 99% at Firebox T = 1349 °F; Tu-tone = 86% at Firebox T = 1351 °F; Reprocess = 92 % at Firebox T = 1351 °F.

2015 Destruction Efficiency (DE)

On March 11, 2015, AQD received destruction efficiency (DE) test plan notification for thermal oxidizers at Color1, Color2, Tu-tone, Highbake reprocess. On March 19, 2015, Mr. Tom Gasloli of MDEQ-AQD-TPU approved the test protocol via a letter to Rohit Patel of FCA US. All tests, sampling, analysis and calculations would be done according to US EPA Reference Method 25A. Iranna Konanahalli and Tom Gasloli of AQD observed test during April 2015 and Stuart Duncan and Rohit Patel of FCA US coordinated the testing process. AQD-SEMI received the DE test report on June 02, 2015. Mr. Gasloli performed cursory review of tests results while comparing to the previous tests. Bureau Veritas North America, Inc. (Project No. 11015-000047.00) conducted DE sampling during April 14-17, 2015. Reported thermal oxidizer DE values in percent (%): 95.8 for Color1, 97.5 for Color2, 88.0 for Reprocess and 88.3 for Tu-tone. The DE values are acceptable.

November 2017 DE - EU-COLOR-ONE

See below for details (Feb 2018 DE).

AQD received DE test report for EU-COLOR-ONE from Responsible Official Mr. Andrew Raglyi (Phone: 586-497-3955) via letter dated December 19, 2017. RWDI AIR Inc. (Phone: 519-974-7384, RWDI #1703283, December 22. 2017) sampled, during November 01-02, 2018, concurrently at the inlets and outlets (three 1-hour tests) of corresponding thermal oxidizers and analyzed VOC using flame ionization analyzer as propane as described in USE PA Method 25A. Sampling was done continuously via heated sample lines from both the inlet and outlet of the EUCOLOR-ONE Thermal Oxidizer (TO) simultaneously. The mass rate destruction efficiency obtained is: EU-COLOR-ONE (November 1-2, 2017) = **99.6%** (inlet = 233 & 14.7 and outlet = 0.9 & 0.06, ppmv & pounds per hour, respectively, as propane) **at 1370 °F.** Velocity, temperature and flow rates were measured using US EPA Reference Methods 1 thru 4. Total VOC were determined using US EPA Reference Method 25A (CEM). VOC were calculated as propane.

February 2018 DE - EU-COLOR-TWO & EU-TUTONE

On September 29, 2017, AQD received Notification of Intent to Conduct Air Compliance Testing at FCA US LLC's Warren Truck Assembly Plant (WTAP) (RWDI Reference No. 1703283) from Responsible Official Mr. Andrew Raglyi (Phone: 586-497-3955) via letter dated September 27, 2017. The notification pertains to destruction efficiencies of the thermal oxidizers (TO) for volatile organic compounds (VOC) for controlling the bake oven emissions from EU-TUTONE, EU-COLOR- ONE, EU-COLOR-TWO and EUREPROCESS Lines. WTAP replaced the existing Thermal Oxidizers (TOs) for EU-TUTONE (December 2017), EU-COLOR-ONE, (August 2017) EU-COLOR-TWO (December 2017) and EU-REPROCESS (July 2018). As stated above, FCA WTAP replaced, in 2008, e-coat thermal oxidizers (2 TOs) with one Rotary Durr RTO (1 Durr RTO) for fuel efficiency. US EPA Reference Methods: 1, 2, 3, 4, 25A would be used. The DE test plan included Temperature Ladder Study. AQD (Mark Dziadosz of AQD-TPU) approved the VOC Destruction Efficiency (DE) Test Plan vial the letter dated October 17, 2017, to Mr. Andrew Ragalyi, Plant Manager. On April 13, 2018, AQD received DE test report for EU-COLOR-TWO and EU-TUTONE. AQD-TPU (Dziadosz) would only perform cursory review of this report. RWDI AIR Inc. (Phone: 519-974-7384, RWDI #1703283, April 11. 2018) sampled, during February 13 thru February 15, 2018, concurrently at the inlets and outlets (three 1-hour tests) of corresponding thermal oxidizers and analyzed VOC using flame ionization analyzer as propane as described in USE PA Method 25A. The mass rate destruction efficiencies obtained are: EU-COLOR-TWO (February 13, 2018) = **99.0% at 1291 °F** and EU-TUTONE (February 14-15, 2018) = **96.8% at 1291 °F**. Testing for VOCs was accomplished simultaneously at the inlet and outlet using continuous emission monitors (CEM). VOC testing followed USEPA Method 25A "Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer". In order to compare inlet and outlet concentrations, the outlet concentrations of total VOCs were converted to parts per million (ppmv) as propane. The exhaust gas sample was withdrawn from a single point at the center of the duct or stack using a stainless-steel probe. The sample proceeded through a heated filter where particulate matter was removed. The sample was then transferred via a heated Teflon® line and introduced to the analyzer (hot/wet) for measurement.

2018 DE - EU-REPROCESS

This test is to be done soon.

MI-ROP-B2767-2016, FG-TOPCOAT, VI.1-13: recording devices to monitor each thermal oxidizer temperature, coating usage and info, control systems values (TE, OSL/CE, DE), emission rates calculations, production info, etc. records.

Thermocouples are installed at firebox. USEPA Protocol calculations are performed and VOC records are kept.

Thermo-couples are calibrated or replaced on annual basis. Mr. Smith and a subcontractor from MPS (Mike Frauges, no longer Abendgo), conduct weekly inspection of the water-wash system. Proper functioning of the water wash system is critical to high quality paint finish. TE, OSL and DE values are kept. VOC emissions rates are calculated to show compliance in accordance with the Protocol. The lines cannot be operated without benefit of heat from thermal oxidizers (CAM).

MI-ROP-B2767-2016, FG-TOPCOAT, VII.

Semi-annual deviations, annual certification, CAM, MAERS, MACT and quarterly VOC emissions reports are submitted.

FG-TEMPBOILERS: Two natural gas fired boilers

These are trailer-mounted temporary boilers installed since 2009 and mostly used in non-heating season (summer). Although capable of being moved, the boilers have been located at the plant for at least two years (as of March 2016). AQD received both NSPS Dc (April 30, 2007) and Major Source Boiler MACT 5D (May 24, 2013) notifications.

1. EU-TEMPBOILER1: 25 million BTU per hour heat input natural gas only fired trailer-mounted temporary boiler.
2. EU-TEMPBOILER2: 29 million BTU per hour heat input natural gas only fired trailer-mounted temporary boiler.

Two temporary portable natural gas fired boilers of capacity 25.1 (TempBoiler1) and 29.3 (TempBoiler2) million BTU per hour heat input were brought on site when the power house was shutdown for maintenance. However, they were not used until CY2009. On April 30, 2007, AQD received NSPS Dc Notification (40 CRF, Part 60, Subpart Dc, 60.48c) regarding these two temporary boilers. In October 2008, Chrysler began operation of temporary boilers as a part of energy savings program.

Trailer mounted (wheeled) portable boilers are used during non-winter seasons. Portable boilers are located in only one place; i.e. they are not moved. The temp boilers are operating at the spot for several years.

MI-ROP-B2767-2016, FG-TEMPBOILERS, III: only pipeline quality sweet natural gas

1. EU-TEMPBOILER1: 0.2.55 million BTU per year in CY 2017.
2. EU-TEMPBOILER2: 0.60 million BTU per year in CY 2017.
3. Total Temp boilers (2): 2.55 million BTU per year in CY 2017.

MI-ROP-B2767-2016, FG-TEMPBOILERS, IX: NSPS Dc

Only requirement of NSPS Dc is natural gas usage recordkeeping. FCA keeps fuel usage records and submits MAERS. Hence, FCA is in compliance with NSPS Dc.

FG-BOILERS

Four (4) natural gas fired boilers to produce steam and heat.

Emission Units:

1. EU-BOILER3: 152 million BTU heat input per hour (Babcox & Wilcox Boiler3, installed 7/11/98) natural gas only boiler equipped with low NOx burners.

2. EU-BOILER4: 106 million BTU heat input per hour (Babcox & Wilcox Boiler4, installed 7/11/98) natural gas only boiler equipped with low NOx burners.

3. EU-BOILER5: 152 million BTU heat input per hour (Wickes Boiler5, installed 9/1/96) natural gas only boiler equipped with low NOx burners.

4. EU-BOILER6: 192 million BTU heat input per hour (Riley Stoker Boiler6, installed 10/29/84) natural gas only boiler equipped with oxygen trim system but not low NOx burners.

While Boiler Nos. 3, 4 and 5 are equipped with low NOx burners, Boiler No. 6 (with oxygen trim system) is a high efficiency boiler but not low NOx. As discovered during the FY 2018 inspection, all boilers are equipped with oxygen trim systems. Hence, Boiler No. 6 is used most of the time to save energy.

MI-ROP-B2767-2016, FG-BOILERS, I: NOx limit

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	CY2017 Actual emissions EUs in pounds per year and FG in tons per year	
1. NOx	119[2] Tons per year	12-month rolling time period	FG-BOILERS	1. EU-BOILER3 = 996 2. EU-BOILER4 = 1,685. 3. EU-BOILER5 = 7,208 4. EU-BOILER6 = 33,169 5. FG-BOILERS = 21.7	

MI-ROP-B2767-2016, FG-BOILERS, II & VI.1: natural gas usage limit and usage records

Material	Limit	Time Period/ Operating Scenario	Equipment	CY 2017 Natural gas usage MM SCF per year	
1. Natural Gas	1,305[2] Million (MM) standard cubic feet per year	12-month rolling time period	FG-BOILERS	407.68	

MI-ROP-B2767-2016, FG-BOILERS, III: natural gas only

FCA WTAP burns only natural gas.

MI-ROP-B2767-2016, FG-BOILERS, V: NOx testing

February 7, 2006 NOx test

On February 7, 2006, Daimler-Chrysler's Regulatory Planning / Compliance and Energy Laboratory conducted performance test on Boiler No. 6 for nitrogen oxides (NOx). Mr. Thomas Maza, Mr. Jason Wolf and Mrs. Joyce Zhu of MDEQ-AQD observed the tests. This test was required by the RO permit. The nitrogen oxides emissions reported were 5.15 pounds of NOx per hour and 0.046 pounds of NOx per million BTU based upon 42.7 pounds of steam per hour output during the February 2006 test. AQD received the original report on March 14, 2006. On May 1, AQD received a revised result: 0.068 pounds of NOx per million BTU based upon 42.7 pounds of steam per hour output. Mr. Wolf suggested O2 content correction in the calculations; 0.068 lbs NOx / MMBTU is the corrected result. However, there is no emission limit in the RO permit other than 119 tpy NOx.

February 23-25, 2010 NOx test

On October 13, 2010, AQD received the NOx test plan for the boilers. On November 3, 2010, AQD's Tom Maza approved the test plan that used US EPA RM 7E. The approved plan required minimum 95 percent boiler load. During February 23-25, 2011, Bureau Veritas North America, Inc. (248-344-2661), 45525 Grand River Ave., Suite 200, Novi, Michigan (Bureau Veritas Project No. 11011-000043.00) conducted NOx sampling. On May 5, 2011, AQD received the NOx test report. 3-run average NOx emissions reported are:

- Boiler 3: 0.11 pounds of NOx per MMBTU and 10.63 pounds of NOx per hour
- Boiler 4: 0.0.08 pounds of NOx per MMBTU and 4.61 pounds of NOx per hour
- Boiler 5: 0.07 pounds of NOx per MMBTU and 6.90 pounds of NOx per hour
- Boiler 6: 0.16 pounds of NOx per MMBTU and 14.71 pounds of NOx per hour

January 26-27, 2016 NOx test

During January 26 thru 27, RWDI AIR Inc. (RWDI # 1600241, March 8, 2016), 4510 Rhodes Drive, Suite 530, Windsor, ON N8W5K5 (Phone: 519-974-7384, ext. 2428) performed sampling of Boilers 3-6 (EU-BOILER3, EU-BOILER4, EU-BOILER5 AND EU-BOILER6) for Nitrogen Oxides (NOx). The testing followed USEPA Reference Methods 3A, 7E and 19. Testing consisted of three (3) 60-minute test runs for nitrogen oxide emissions. Mr. Mark

Dziadosz of AQD-TPU and Mr. Iranna Konanahalli of AQD-SEMI observed the sampling and the boilers. The NOx emission results are tabulated below:

3 1-hour average Nitrogen Oxide (NOx) emissions rates			
Boiler	Pounds per MM BTU	Pounds per hour	Remark
EU-BOILER3	0.0357	3.4	
EU-BOILER4	0.0624	4.5	
EU-BOILER5	0.0631	6.2	
EU-BOILER6	0.1451	13.6	
No NOx emission rate limit other than 119 tpy NOx limit			

However, there is no emission limit in the RO permit other than 119 tpy NOx.

Based upon heat input design capacity and installation dates, the boilers may be subject to NSPS Db. AQD will further investigate.

FG–GASOLINE-TANKS

Unleaded gasoline storage tanks.

EU–UNLEADEDGAS1 (TK1 25,000 gal) – above-ground storage tank with spill containment. This is a non-taxable production tank. There one additional 1,000-gallon taxable corporate fuel tank.

25,000-gallon TK1 gasoline tank is in a concrete containment. Mr. Doug Gregory, tank farm operator, observes vapor balance system during gasoline delivery. Submerged fill pipe is present. Stage I vapor balance system is installed and operating during the tank loading.

FCA maintains Tank Summary Sheet for all tanks on site.

FG-RULE-331

Wood saws, lathes, etc.

Baghouse for EU-CARPENTERSHOP

Small particulate units, with 0.1 pound of particulate matter per 1000 pounds of exhaust gases emission limits, are covered by this flexible group.

Plasma cutting operation was removed in 2007. Maintenance tool shop is removed in 2004. Carpenter shop, which has not been used since 2008, is equipped with a baghouse with pulse-jet cleaning.

Various grinders, cutters, saws have dedicated capture systems ducting one common manifold. The exhaust gases are delivered to one baghouse. Upon cleaning the gases are released to outside ambient air. The bags were replaced in 2017. TriDim inspects the

baghouse. 4 55-gallon drums are present as hoppers for collected dust. Baghouse is equipped with Magnehelic pressure drop gauge.

FG-PM-MISC

This group consists of various emission units that have the same particulate requirements.

Emission units are:

1. EU-COLOR-ONE-SAND: Color1 paint line sanding operations.
2. EU-POLISH-DECK: Polish-deck polishing of minor surface defects.
3. EU-REPROCESS-SAND: Topcoat sanding operations on painted vehicles with enclosure to capture particulate emissions.
4. EU-REPRO-POLISH: Polishing of minor surface defects on painted vehicles.
5. EU-UNIPRIME-SAND: E-coat sanding operations with exhausted enclosure to capture particulate emissions. Powder sand booth. Powder prep deck.

TriDim inspects all filters and file an inspection report on a monthly basis. The filters are replaced if necessary.

FG-AUTOMACT

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.

Emission Units: EU-UNIPRIME, EU-SOLVENT-WIPE, EU-SEALERS&ADHESIVE, EU-BLACKOUT-BOOTH, EU-FINAL-REPAIR, EU-SPOT-REPAIR-DECK, EU-TUTONE, EU-COLOR-ONE, EU-COLOR-TWO, EU-REPROCESS,

FCA (Chrysler) WWAP owns or operates an existing NESHAP / MACT 4I source, as defined in § 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 that is a major source, is located at a major source, or is part of a major source of emissions of hazardous air pollutants (HAP). The regulations begin at 40 CFR, 63.3080 (§ 63.3080). According to § 63.3082(g), the plant is an existing source because it is not a new source (a new affected source if it commenced its construction after December 24, 2002); a reconstruction of the paint shop may make it new source (§ 63.3082(f)). As an existing NESHAP / MACT 4I source, Chrysler must comply with the standards by April 26, 2007 (§ 63.3083(b)).

On June 29, 2007, AQD received Initial Notification of Compliance Status [§63.3110(c)] dated June 28 (due June 30, 2007). Mr. Robert Byrnes of AQD is reviewed this INCS statement. FCA has chosen 0.60 pounds of HAP per gallon of coating solids deposited option [63.3091 (a)] based upon coating formulation without using incinerator credits. Hence, Auto MACT monitoring of RTO and TOs is not done.

FCA claims that it has complied with the NESHAP / MACT IIII without a deviation during the reporting period (Jan-Dec, 2014-17 Cert.): 0.60 lbs. / gallon limit.

MI-ROP-B2767-2016, FG-AUTOMACT, I:

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	CY 2017 Dec Actual emissions	Underlying Applicable Requirements
1. Organic HAP	0.60 Pounds per GACS	Calendar month	**Existing –** FG-AUTOMACT WITH UNIPRIME	0.19	**40 CFR 63.3091 (a)**
2. Organic HAP*	1.10 Pounds per GACS	Calendar month	**Existing –** FG-AUTOMACT	NA	**40 CFR 63.3091 (b)**
3. Organic HAP	0.01 Pound per pound of coating	Calendar month	**Existing –** EU-SEALERS&ADHESIVE	Zero	**40 CFR 63.3090 (c) or 63.3091(c)**
4. Organic HAP	0.01 Pound per pound of coating	Calendar month	**Existing –** EU-DEADENERBOOTH	Not operating	**40 CFR 63.3090 (d) or 63.3091 (d)**
• **FG-AUTOMACT** includes Guidecoat, Topcoat, Final Repair, Glass Bonding Primer, and Glass Bonding Adhesive operations plus all coatings and thinners, except for deadener materials and adhesive and sealers not part of glass bonding systems. • **FG-AUTOMACT WITH ECOAT** also includes Electrocoat operations in addition to all of the operations of FG-AUTOMACT. • **EU-SEALERS&ADHESIVE** include only adhesives and sealers that are not part of glass bonding systems.					
*Permittee may choose to comply with this limit if the requirements of Condition No. I.5 is met. GACS = Gallon of Applied Coating Solids or Gallon of Coating Solids Deposited.					

Because FCA complies with the MACT via formulation only and it does not need VOC control equipment for compliance, only AutoMact work plan is sufficient. Work Plan dated November 20, 2006, is implemented.

FCA has developed and implemented a work practice plan (FG-AUTOMACT, III.1) to minimize organic HAP emissions from the storage, mixing, and conveying of coatings, thinners, and cleaning materials used in, and waste materials generated by, all coating operations for which emission limits are established under § 63.3090(a) through (d) or § 63.3091(a) through (d) (§ 63.3094).

I could not find the Initial Notification in the NESHAP Blue Folder. The notification was due 120 days after June 25, 2004. However, if Chrysler notified pursuant to CAA Sec. 112(j) concerning applicability of the Auto MACT, it is exempt from Initial Notification. Such CAA Sec. 112(j) notification was received by AQD on August 6, 2002, via letter dated July 30,

2002, from Mr. Fred Martino-DiCicco, Plant Manager, WTAP. Items checked in the 112(j) notification were: Automobile & Light Duty Truck Manufacturing; Misc. Metal Parts & Coating; Industrial, Commercial & Institutional Boilers & Process Heater; Emergency Generators (CI RICE MACT).

In addition, AQD received PDF copy of Notification of Compliance Status dated June 28, 2007. Kenneth M. Brune submitted this notification.

MI-ROP-B2767-2016, FG-AUTOMACT, VII: Reporting.

Semi-annual deviations, annual certification, MAERS, MACT and quarterly VOC emissions reports are submitted.

FG-OLDMACT

The affected source is each new, reconstructed, or existing Organic Liquid Distribution (OLD) (non-gasoline) operation that is located at, or is part of a major source of hazardous air pollutant (HAP) emissions. The affected source is comprised of storage tanks, transfer racks, equipment leak components associated with storage tanks, transfer racks and pipelines, transport vehicles, and all containers while loading or unloading at transfer racks subject to this subpart. Equipment that is part of an affected source under another NESHAP is excluded from the affected source. **(40 CFR 63.2338(c))**

These conditions specifically 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.

Emission Unit: The permittee shall maintain an up-to-date list of emissions units subject to FG-OLDMACT.

AQD received a .PDF copy of OLD MACT compliance report dated June 07,2007. Mr. Kenneth A. Brune submitted this report. MDEQ received this report on July 30, 2007.

Two tanks are listed in this report:

1. 7,500-gallon windshield washer solvent containing methanol
2. 7,500-gallon ChemKleen 370 containing Diethylene Glycol Monobutyl Ether

On June 2, 2004, AQD received the OLD MACT initial notification dated May 27. The storage tanks store methanol-based windshield wiper solvent, a cleaner that contain diethylene glycol monobutyl ether.

OLD MACT Tank inventory is kept. Only in it is 7,500-gallon windshield washer tank.

FG-BOILER-MACT5D

Requirements for existing Gas 1, (Natural Gas only) for existing Boilers and Process Heaters at major sources of Hazardous Air Pollutants per 40 CFR Part 63, Subpart DDDDD. These

existing boilers or process heaters must comply with this subpart no later than January 31, 2016, except as provided in 40 CFR 63.6(i).

Per ROP, while Boiler No. 6 has an oxygen trim system, Boiler Nos. 3, 4 & 5 only have O2 monitoring (FG-BOILERS). Based upon inspection all large boilers, except temp boilers, are equipped with the trim systems.

Oxygen trim system means a system of monitors that is used to maintain excess air at the desired level in a combustion device over its operating load range. A typical system consists of a flue gas oxygen and/or CO monitor that automatically provides a feedback signal to the combustion air controller or draft controller.

Emission Units: At the time of 2016 ROP permit renewal, the following boilers are present (all are greater than 10 MM BTU per hour natural gas only boilers):

FCA (Chrysler) was subject to 40 CFR Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Federal Register / Vol. 69, No. 176 / Monday, September 13, 2004 / Page 55218 / Rules and Regulations). However, on June 8, 2007, US Court of Appeals had mandated that EPA vacate the Boiler MACT Rule in its entirety; in the interim period, 112(j) MACT permit was required. US EPA re-promulgated the Area Source Boiler MACT as NESHAP / MACT 6J

01/09/12 - The U.S. District Court for the DC Circuit vacated the EPA's May 18, 2011, notice that delayed the effective dates of the Major Source Boiler MACT rule. The effective dates of the final rules published in the Federal Register on March 21, 2011 (76 FR 15608 and 76 FR 15704), are delayed until such time as judicial review is no longer pending or until the EPA completes its reconsideration of the rules, whichever is earlier.

12/23/11 - The EPA published the Major Source Boiler MACT reconsideration proposal (40 CFR 63, subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, Page 80598 Federal Register / Vol. 76, No. 247 / Friday, December 23, 2011 / Proposed Rules). ~~The EPA will accept comment on the reconsideration proposal until February 21, 2012.~~

The boilers are subject to: Major Source Boiler NESHAP / MACT 5D, 40 CFR Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, Page 7138, Federal Register / Vol. 78, No. 21 / Thursday, January 31, 2013 / Rules and Regulations / Final rule; notice of final action on reconsideration. The December 23, 2011, proposed rule addressed specific issues and provisions the EPA identified for reconsideration. This summary of the final rule reflects the changes to 40 CFR, Part 63, subpart DDDDD (March 21, 2011 final rule) in regards to those provisions identified for reconsideration and on other discrete matters identified in response to comments or data received during the comment period.

The boilers are **existing units** as they commenced construction before **June 4, 2010**. The boilers do NOT burn any fuel other than pipeline quality sweet natural gas (NG); they do not burn solid fossil fuel, biomass, liquid fuel, etc. There is no emission limit for Gas1 that includes natural gas. For boilers over 10 million BTU per hour heat input, annual tune-up is required (no more than 13 months between tune-ups). Initial tune-up is due by January 31, 2016. Only

boilers with emission limits are required to conduct performance tests (within 180 days of compliance date (January 31, 2016), July 29, 2016. Chrysler's boilers are not subject to emission limits as they fire only NG.

Boiler MACT Initial Notification is due by May 31, 2013. AQD received on May 24, 2013, Major Source Boiler MACT Initial Notification dated May 20, 2013. The notification covers Boiler Nos. 3-6 (4 boilers) and two Temp boilers.

FG-TEMPBOILERS

1. EU-TEMPBOILER1: 25 million BTU per hour heat input natural gas only fired trailer-mounted temporary boilers.
2. EU-TEMPBOILER2: 29 million BTU per hour heat input natural gas only fired trailer-mounted temporary boilers.

FG-BOILERS

1. EU-BOILER3: 152 million BTU heat input per hour (Babcox & Wilcox Boiler3, installed 7/11/98) natural gas only boiler equipped with low NOx burners.
2. EU-BOILER4: 106 million BTU heat input per hour (Babcox & Wilcox Boiler4, installed 7/11/98)) natural gas only boiler equipped with low NOx burners.
3. EU-BOILER5: 152 million BTU heat input per hour (Wickes Boiler5, installed 9/1/96) natural gas only boiler equipped with low NOx burners.
4. EU-BOILER6: 192 million BTU heat input per hour (Riley Stoker Boiler6, installed 10/29/84)) natural gas only boiler equipped with oxygen trim system but not low NOx burners.

The boilers produce 150 psi steam. During FY 2018 inspection it was discovered that all boilers except temp boilers are equipped with Oxygen trim systems. FCA will install variable speed fans to move combustion air on all boilers. Boiler No. 3 was equipped with variable speed fan about February 2018. Upon completion of installation of variable speed fans on all boilers, FCA plans to remove rental temp boilers (2).

MI-ROP-B2767-2016, FG-BOILER-MACT5D, II: **only** natural gas.

FCA burns in the boilers **only** pipeline quality sweet natural gas.

MI-ROP-B2767-2016, FG-BOILER-MACT5D, III: tune-up and Energy Assessment (EA)

FCA submitted Compliance Report to US EPA CEDRI stating that tune-ups and burner inspections were performed on boilers EU-TEMPBOILER1 & EU-TEMPBOILER2 on 05/23/2017 and 05/08/2018, respectively. In addition, Mr. Dan Omahen, Plant Manager, submitted, Notification of Compliance Status (NCS) dated March 31, 2016, for four (4) large (EU-BOILER3-6) and two (2) portable temp (EU-TEMPBOILER1-2). The March 31, 2016, NCS stated that all initial tune-ups were completed and ISO 50001 Energy Management program was implemented. ANAB issued ISO 50001 certificate US17/801826959.00 valid from July 04, 2017, thru July 04, 2020.

MI-ROP-B2767-2016, FG-BOILER-MACT5D, VI: monitoring

Copies of notifications and reports are kept.

MI-ROP-B2767-2016, FG-BOILER-MACT5D, VII: reporting

Semi-annual deviations, annual certification, Notification of Compliance Status (March 31, 2016), boiler tune-ups & inspections, etc. reports are submitted.

FG-CI-RICE-MACT4Z<500HP aka FG63-4Z-M/Ex/CI/Em/<500

Existing CI (Diesel) Engines located at a Major Source 266 HP < 500 HP, Emergency

1. Fire Pump House – East Pump: Caterpillar, 198 HP, Engine Model and Serial Nos: PA0067-85-3306D1 & 64Z04118, hours run based upon hours meter readings: 49 in 2016, 21.5 in 2017 and 19.9 in 2017YTDJuly. NSPS 4I = No. Peerless Midwest performs maintenance (change oil and filter, inspect air cleaner and hoses & belts, etc.).

FG-CI-RICE-MACT4Z>500HP

Existing CI Engines located at a Major Source > 500 HP, Emergency

1. SMB – Penthouse – NORTH: Cummins, 900 HP, 600 kW, Engine Model and Serial Nos: VT A28-65-2 & 37109467, Generator Model and Serial Nos: 680FDR7128JJ W & RB-19 -51339-2/27-01, hours run based upon hours meter readings: 15 in 2016, 12 in 2017 and 17 in 2017YTDJuly. NSPS 4I = No. Peerless Midwest performs maintenance (change oil and filter, inspect air cleaner and hoses & belts, etc.).

2. SMB – Penthouse – SOUTH: Cummins, 900 HP, 600 kW, Engine Model and Serial Nos: VT A28-65-2 & 37109466, Generator Model and Serial Nos: 680FDR7128JJ W & RC-19 -51351-3/7-02, hours run based upon hours meter readings: 55 in 2016, 0 in 2017 and 0 in 2017YTDJuly. NSPS 4I = No. Peerless Midwest performs maintenance (change oil and filter, inspect air cleaner and hoses & belts, etc.).

FG-CI-RICE-NSPS4I<500

This flexible group includes new emergency compression ignition (CI) Diesel fired stationary reciprocating internal combustion engines (RICE) that have a maximum site rating of greater than or equal to 100 brake horsepower (HP), but less than 500 (HP) and subject to 40 CFR 60, Subpart IIII.

Emission Unit: EU-ENG-FPH2 (305 HP, 1/1/2011) Fire Pump emergency engine

1. Fire Pump House – West Pump: John Deere, 305 HP, Engine Model and Serial Nos: JU6H-UFADX8 & PE6068L166893, hours run based upon hours meter readings: 42.6 in 2016, 49.1 in 2017 and 44.5 in 2017YTDJuly. NSPS 4I Certificate = Yes. Peerless Midwest performs maintenance (change oil and filter, inspect air cleaner and hoses &

belts, etc.). US EPA Certificate No. CJDXL13.5103-020 Effective 10/0/7/2011 Expired 12/31/2012 for Engine Family CJDXL13.5103 (MI-ROP-B2767-2016, FG-CI-RICE-NSPS4I<500, I: certification demonstrates compliance with emission limits).

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.

Emission Unit: The permittee shall maintain an up-to-date list of cold-cleaners.

FCA keeps inventory of cold-cleaners:

1. Two (2) 1.18-square-feet 87020 Gun Cleaners. Model 87020 gun cleaner's in paint shop 5-gallon pails holds 5 gallon. Both Gun Cleaners use Chrysler Gun Wash and we leave the waste on site.

2. One 1.9-square-feet 34150 Solvent Parts Washer. Model 34150 solvent based machine holds 23 gallons.

3. One 5.25-square-feet 81150, Solvent Parts Washer. Model 81150 solvent based
4. machine holds 76 gallons

DEQ work-practice procedures are posted and lids are kept closed when not in use.

FCA (Chrysler) does not use any of the halogenated solvents regulated by Maximum Achievable Control Technology(MACT) in the cold cleaners; therefore, the cold cleaners are not subject to the MACT standards for halogenated solvent cleaner (40 CFR 63 Subpart T).

SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)
Safety-Kleen Systems, Inc., Richardson, TX 75080 (1-800-669-5740)
Distillates (petroleum), hydrotreated light CAS # 64742-47-8

100% VOC solvent. Flash Point (FP) = 148 °F TCC (Tag Closed Cup). Auto Ignition = NA °F. Boiling Point (BP) = 350 °F (initial) @ 760 mm Hg. Vapor Pressure (VP) = 0.2 mm Hg at 68 °F. Specific Gravity (SG, Water = 1.0) = 0.0.77-0.82. Density (ρ) @ 68 °F = 6.4-6.7 lbs / gallon (0.77-0.82 kg /L). Flammability range = 0.7 %v (LEL) – 5%v (UEL).

FG-RULE-290

This FG is not used at this time.

FG-RULE-287(c)

This FG is not used at this time.

CONCLUSION

FCA (Chrysler) appears to be in compliance with the ROP and Auto MACT.

NAME JS Llewanhall. DATE 9/20/2018 SUPERVISOR_____