Detroit Assembly Complex-Mack

Application for
Permit to Install Amendment

April 2020

FCA US LLC

FIAT CHRYSLER AUTOMOBILES

TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	**1**
2.0 PROCESS DESCRIPTION - UPDATES	**2**
3.0 CRITERIA POLLUTANT EMISSION ESTIMATES - UPDATES	**3**
4.0 REGULATORY ANALYSIS - UPDATES	**4**
4.1 FEDERAL NEW SOURCE REVIEW – MAJOR MODIFICATIONS	4
4.2 STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES (NSPS)	4
4.2.1 Surface Coating of Automobiles and Light Duty Trucks	4
4.2.2 Natural Gas Boiler	4
4.2.3 Emergency Engines NSPS	4
4.3 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS	5
4.3.1 Auto MACT	5
4.3.2 Boiler MACT	5
4.3.3 RICE MACT	5
4.3.4 OLD MACT	5
4.4 STATE APPLICABLE REQUIREMENTS	5
4.4.1 State New Source Review	5
4.4.2 State Best Available Control Technology Requirements	6
4.4.3 State Toxic Air Contaminants Requirements	6
5.0 LOWEST ACHIEVABLE EMISSION RATE - UPDATES	**8**
5.1 LAER DEMOSNTRATION - Update	8
5.1.1 E-Coat LAER - update	8
5.1.2 Paint and Body Shop Sealers LAER - update	8
5.1.3 Primer (Guidecoat) LAER - update	8
5.1.4 Topcoat LAER - update	9
5.1.5 Purge/Clean LAER - update	9
5.1.6 Repair Operations - update	9
5.1.7 Fluid/Fuel Fill Operations - update	10
5.1.8 Windshield Washer Fluid Fill - update	10
5.1.9 TANKS - update	10
5.1.10 Body Solvent Wipe - update	10
5.1.11 Glass Installation - update	10
5.1.12 VOCs from Combustion Sources- update	11
5.1.13 LAER for Emergency Engines - update	11
5.2 LAER SUMMARY – NEW ASSEMBLY PLANT - updated	12
5.3 FLEXIBLE PERMIT LAER	12
6.0 NON-ATTAINMENT OFFSET DEMONSTRATION	**13**
7.0 FLEXIBLE PERMIT INITIATIVE – OTHER CRITERIA POLLUTANTS - UPDATE	**14**
8.0 STATE BACT	**15**
8.1 BACT APPLICABILITY TO SOURCES OF VOCS	15
8.1.1 LAER Demonstration for BACT Subject Sources	15
8.1.2 Purge/Wipe/Cleaning	16
8.1.2.1 Purge	16

TABLE OF CONTENTS

	Page
8.1.2.2 Solvent Wipe	16
8.1.2.3 Cleaning Solvents	17
8.1.3 Sealers	17
9.0 TOXIC AIR CONTAMINANTS AND DISPERSION MODELING	**18**
9.1 TOXIC - BEST AVAILABLE CONTROL TECHNOLOGY REQUIREMENTS	18
9.2 HEALTH BASED SCREENING LEVEL REQUIREMENTS	18
9.2.1 Stack Height and Building Downwash Consideration	19
9.2.2 Meteorological Data	19
9.2.3 Dispersion Coefficients	19
9.2.4 Receptors	19
9.2.5 Terrain Elevation	20
9.2.6 Dispersion Modeling Results	20
10.0 CRITERIA POLLUTANT EMISSIONS IMPACT ANALYSIS	**21**
10.1 OZONE IMPACT ANALYSIS	21
10.2 MINOR SOURCE MODELING POLICY – AQD 022	22
10.2.1 NO_X Modeling Analysis	22
10.2.1.1 Meteorological Data	23
10.2.1.2 NOX Annual NAAQS	23
10.2.1.3 Single Source NOX Modeling Results	23
10.2.1.4 Cumulative NO_X Modeling	23
10.2.1.5 Ambient Background	24
10.2.1.6 Off-Site Sources of NO2	24
10.2.1.7 Results of Cumulative NO2 Modeling	25
11.0 ADDITIONAL IMPACT ANALYSES	**26**
12.0 ADMINISTRATIVE CHANGES	**27**
13.0 CONCLUSION	**31**

ATTACHMENTS

Figure: NO_2 Significant Impact Area

Appendix A: Permit to Install Application Form
Appendix B: Emission Calculations - Update
Appendix C: Toxic Air Contaminant and NO_2 Impact Summary-Update
Appendix D: Dispersion Modeling Input/Output Files - Update
Appendix E: PTI #14-19 Proposed Administrative Changes in Redline
Appendix F: Site Layout
Appendix G: LAER Demonstration – PTI Application, 2019
Appendix H: TANKS 4.0.9d Summaries - Update

1.0 INTRODUCTION

Fiat Chrysler Automobiles US LLC ("FCA") is in the process of constructing the new Detroit Assembly Complex – Mack ("DACM") located at 4000 St. Jean Street in Detroit, Wayne County, Michigan. DACM is located on the property at 11570 Warren Avenue East in Detroit, which has also been called the Mack Avenue Assembly Plant as well as the Mack Engine Plant. FCA received Permit to Install ("PTI") #14-19 on April 26, 2019, for the construction of the new assembly plant at the DACM site.

As part of the ongoing construction management program, FCA has determined that there are minor changes to the design of the new assembly plant since the issuance of PTI #14-19. These changes will have an insignificant impact on the air emissions from the facility, e.g., the allowable emission levels in PTI# 14-19 will not require revision with the exception of an additional 0.28 tpy of particulate matter. Certain changes will also affect the emission source descriptions and the regulatory analyses presented in the PTI #14-19 application, but with few substantive changes. In addition, there are some other edits and clarifications to the PTI, considered administrative in nature, requested in this application. Therefore, FCA is submitting this request to amend PTI #14-19 to account for these minor changes.

BACKGROUND

Wayne County was designated as a marginal nonattainment area for the updated 8-hour ozone NAAQS in 2018. As part of the PTI #14-19 application, FCA secured volatile organic compound ("VOC") offsets and demonstrated compliance with the Lowest Achievable Emission Rate ("LAER") for the new assembly plant. PTI #14-19 was issued with a Flexible Permitting Initiative ("FPI") format such that criteria pollutants are limited on an annual basis.

This application details the minor changes needed to PTI #14-19 based on FCA's updated plans for the new assembly plant. Despite the minor nature of the requested changes to PTI #14-19, FCA has updated the LAER demonstration, regulatory analyses, and the emissions estimates for the new assembly plant project. Supporting documentation is identified within the text and appendices of this application. Administrative amendments and suggested edits to the terms and conditions of PTI #14-19 are also included.

Section 2.0 of this document provides an overview of the proposed changes to the new assembly plant permitted by PTI #14-19. Sections 3.0 through 11.0 and the appendices update the various regulatory requirements and demonstrations. Section 12 provides the details and explanation of the requested changes to the current permit. Section 13.0 provides the application's conclusions. Appendix A includes PTI application form #EQP 5615E.

2.0 PROCESS DESCRIPTION - UPDATES

The DACM facility is currently undergoing construction activities authorized by PTI #14-19. The application for PTI #14-19 included a description of the processes being installed as part of the planned body shop, paint shop and general assembly buildings. All of the process descriptions that were included in the PTI #14-19 application remain valid with the exception of those noted below.

First, FCA proposes to eliminate and modify certain combustion equipment for the new assembly plant project. The following is a description of the combustion equipment changes compared to what was permitted in PTI #19-14.

- An emergency generator engine originally sized at 770 horsepower ("HP") will be switched to two units at 350 HP each, realizing a reduction in overall horsepower.
- The number of hot water generators that will be installed is reduced from ten (10) at 5 MMbtu/hr each to nine (9) at 5 MMBtu/hr each.
- The plan to replace three existing emergency fire pump engines has changed to replacing only two of the three. The two replacement engines will be 350HP instead of 385 HP.
- Removal of the proposed sealer oven (total burner rating at 20 MMbtu/hr) from the planned installations.
- The existing air handling systems and space heaters for buildings Mack 1 and Mack 2, which predate PTI #14-19, will be updated to a greater extent than originally anticipated. The older equipment being removed totals approximately 106 MMbtu/hr (burner ratings), and the new equipment being added totals approximately 74 MMbtu/hr, thereby resulting in a net reduction of approximately 32 MMbtu/hr.
- The capacity and number of the above ground storage tanks that will be installed has been modified slightly. The two permitted gasoline storage tanks will go from 20,000 gallons to 15,000-gallons capacity each. The single 10,000-gallon capacity windshield washer tank will change to two 6,000-gallon capacity tanks.
- Numerous above ground storage tanks used during the time of the former engine plant's operation will be removed.

In addition, FCA is including updated TAC modeling to reflect a change to the jobs per hour line rate through the paint shop (see Appendix C). This rate change does not indicate a change to the plant's finished vehicle annual production capacity, as that has not changed, but this adjustment captures the short-term "gross" vehicle bodies value rather than the "net" vehicle bodies from the paint shop. This change to the job per hour rate is included in the TAC modeling analysis, but does not impact, nor require a change to, the permitted VOC emissions limits.

3.0 CRITERIA POLLUTANT EMISSION ESTIMATES - UPDATES

The annual criteria pollutant emissions resulting from the new assembly plant, as were summarized in the PTI #14-19 application, are presented in Table 3.0, below

Table 3.0 – Original Project Criteria Pollutant Emissions

Emission Source	VOC Emissions (tpy)	NOx Emissions (tpy)	CO Emissions (tpy)	PM-10/2.5 Emissions (tpy)	SO_2 Emissions (tpy)	GHG Emissions (tpy)
Total	**382.5**	**38.52**	**83.88**	**5.42**	**0.56**	**118,876**
Major Modification Level	**40**	**40**	**100**	**15/10**	**40**	**75,000**

The sources that will be impacted by the design changes and their corresponding adjusted emissions are presented in Table 3.1. The method used to calculate the updated estimated emissions is consistent with that used in the original application. The updated emissions calculation tables are presented in Appendix B.

Table 3.1 – Project Criteria Pollutant Emissions Updates

Emission Source	VOC Emissions (tpy)	NOx Emissions (tpy)	CO Emissions (tpy)	PM-10/2.5 Emissions (tpy)	SO_2 Emissions (tpy)	GHG Emissions (tpy)
Tanks	~~1.74~~ 1.33	-	-	-	-	-
Emergency Engines	~~0.69~~ 0.85	~~4.45~~ 3.62	~~6.74~~ 5.94	~~0.18~~ 0.14	~~0.005~~ 0.004	~~462~~ 518
Combustion-Ovens/ASH/AHU/Heat	~~3.93~~ 3.98	~~25.73~~ 26.04	~~60.03~~ 60.75	~~0.50~~ 0.91	~~0.41~~ 0.43	~~100555~~ 84,629
Combustion-HWG	~~0.6~~ 0.54	~~3.94~~ 3.55	~~9.2~~ 8.28	~~0.83~~ 0.75	~~0.08~~ 0.06	~~12,812~~ 11,531
Updated Total	**382.0**	**37.34**	**82.41**	**5.67**	**0.55**	**107,036**
Major Modification Level	**40**	**40**	**100**	**15/10**	**40**	**75,000**

As presented above, the minor changes to the emissions do not change the projects' status relative to being a major/minor modification under New Source Review. In addition, the updated project emissions for each pollutant are either at or below the project's original emission estimates, with the exception of particulate matter ("PM"), which is increased by only 0.25 tons per year.

4.0 REGULATORY ANALYSIS - UPDATES

4.1 FEDERAL NEW SOURCE REVIEW – MAJOR MODIFICATIONS

The new assembly plant project was permitted as a major modification of an existing major stationary source of regulated air pollutant emissions under the Non-Attainment New Source Review ("NANSR") program. Emissions increases of VOCs exceeded the major modification significance threshold of 40 tpy but increases of the other criteria pollutants were below the corresponding major modification significance thresholds for attainment pollutants. The design changes noted in this application do not change the project's status relative to NSR (see Table 3.1).

4.2 STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES (NSPS)

The federal Standards of Performance for New Stationary Sources ("NSPS") consist of technology-based emission standards for new, modified or reconstructed categories of stationary sources. The proposed installations at the new plant will be subject to several NSPSs, which are found at 40 CFR Part 60. The impact of the proposed changes (described by this application) to the applicability of the NSPS is presented in each of the following sections.

4.2.1 Surface Coating of Automobiles and Light Duty Trucks

The proposed changes to the emission sources will not change how the NSPS for surface coating of automobiles and light duty trucks, 40 CFR Part 60, Subpart MM, will apply to the new paint shop. The Subpart MM limitations are:

E-Coat - 1.34 lbs VOC/Gallon of Applied Coating Solids ("GACS")
Primer – 12.0 lbs VOC/GACS
Topcoat - 12.27 lbs VOC/GACS

FCA will comply with the applicable Subpart MM standards based upon the performance levels for E-Coat, primer and topcoat proposed as LAER in this application. The FPI VOC limits (discussed below) do not require adjustments and ensure that the facility will meet the requirements of Subpart MM.

4.2.2 Natural Gas Boiler

The NSPS found in 40 CFR Part 60, Subpart Dc, for Small Industrial-Commercial-Institutional Steam Generating Units would apply to any natural gas-fired hot water generators installed above the 10 MMBtu/hr heat input threshold. At this time, there are no plans to install any units that would be subject to Subpart Dc and the proposed changes do not trigger Subpart Dc applicability. The PTI currently contains conditions that indicate the hot water generators are subject to the Subpart Dc standard, and this application is seeking an administrative correction to those conditions (see Section 12)

4.2.3 Emergency Engines NSPS

FCA will still install six new emergency engines, as originally anticipated in PTI #14-19, but the size and fuel type for three of them is changing. Two of the engines will be diesel fired fire pump engines rated at 350 HP each. Two of the engines will be natural gas fired and rated at 770 HP each. Two of the engines will be natural gas fired and rated at 350 HP each. All of the engines will be subject to either the NSPS found in 40 CFR Part 60 Subpart IIII or JJJJ, for diesel and natural gas fired units,

respectively. All of the engines will be certified by the manufacturer to meet EPA NSPS standards. The proposed changes to the size and number of the emergency engines does not change the applicability of these standards, however, FCA is proposing a new flexible group to accommodate the natural gas fired engines that will be less than 500 HP.

4.3 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The federal National Emission Standards for Hazardous Air Pollutants ("NESHAP") require the implementation of Maximum Achievable Control Technology ("MACT") on major sources of hazardous Air Pollutants ("HAPs"). The proposed installations at the new plant will be subject to MACT standards, which are found at 40 CFR Part 63. The impact of the proposed changes to the applicability of the MACT standards is presented in each of the following sections.

4.3.1 Auto MACT

40 CFR 63 Subpart IIII established the NESHAP for Surface Coating of Automobiles and Light Duty Trucks. The existing JNAP is subject to the standards in Subpart IIII for existing sources and complies without the use of add-on control devices. Similarly, for DACM, FCA anticipates being able to comply with the same standards for existing sources and will be able to do so without the use of add-control equipment. The proposed design changes noted herein do not impact the applicability of the standard nor the way in which the facility will demonstrate compliance.

4.3.2 Boiler MACT

The natural gas-fired hot water generators are subject to 40 CFR 63 Subpart DDDDD for Industrial, Commercial, and Institutional Boilers and Process Heaters. For these smaller natural gas-fired units, there are no emission standards, only work practice requirements. The proposed design changes do not impact the applicability of the standard.

4.3.3 RICE MACT

All emergency engines less than 500 HP will satisfy the requirements of 40 CFR Part 63 Subpart ZZZZ for Reciprocating Internal Combustion Engines ("RICE") by complying with the applicable NSPS. The RICE greater than 500 HP will be subject to the RICE MACT, with the only obligation being the submittal of an Initial Notification. FCA has proposed clarifying language to the permit to address these distinctions.

4.3.4 OLD MACT

The above ground storage tanks containing windshield washer fluid (methanol) are subject to the 40 CFR Part 63, Subpart EEEE for Organic Liquids Distribution. The proposed design changes noted herein do not impact the applicability of the standard nor the way in which the facility will demonstrate compliance.

4.4 STATE APPLICABLE REQUIREMENTS

4.4.1 State New Source Review

Submittal of this document and the application form included in Appendix A addresses the State of Michigan's NSR program requirements.

State of Michigan Public Act 451, Rule 336.1201 (Rule 201) requires that a Permit to Install (PTI) be obtained for the construction or modification of a process or process equipment which may emit an air contaminant. The following sections address other State of Michigan Act 451 regulations that are applicable to the proposed changes.

4.4.2 State Best Available Control Technology Requirements

State of Michigan Rule 702 addresses new sources of VOCs specifically and states the following [emphasis added]:

R 336.1702 New sources of volatile organic compound emissions generally.

Rule 702. A person who is responsible for any new source of volatile organic compound emissions shall not cause or allow the emission of volatile organic compound emissions from the new source in excess of the lowest maximum allowable emission rate of the following:

(a) The maximum allowable emission rate listed by the department on its own initiative ***or based upon the application of the best available control technology.***

(b) The maximum allowable emission rate specified by a new source performance standard promulgated by the United States environmental protection agency under authority enacted by title I, part A, section 111 of the clean air act, as amended, 42 U.S.C. §7413.

(c) The maximum allowable emission rate specified as a condition of a permit to install or a permit to operate.

(d) The maximum allowable emission rate specified in part 6 of these rules which would otherwise be applicable to the new source except for the date that the process or process equipment was placed into operation or for which an application for a permit to install, under the provisions of part 2 of these rules, was made to the department. If the part 6 allowable emission rate provides for a future compliance date, then the future compliance date shall also be applicable to a new source pursuant to this subdivision.

Based upon Rule 702, FCA has developed a best available control technology demonstration in Section 8.0 to address item (a) for certain sources.

4.4.3 State Toxic Air Contaminants Requirements

The Michigan Air Pollution Control regulations include Rules 224, which requires new or modified sources to implement T-BACT (Toxics BACT) for sources or emissions of TACs. Rule 225 states that:

"*Rule 225. (1) A person who is responsible for any proposed new or modified emission unit or units for which an application for a permit to install is required by part 2 of these rules and which emits a toxic air contaminant (TAC) shall not cause or allow the emission of the toxic air contaminant from the proposed new or modified emission unit or units in excess of the maximum allowable emission rate which results in a predicted maximum ambient impact that is more than the initial threshold screening level or the initial risk screening level, or both, except as provided in subrules (2) and (3) of this rule and in R 336.1226.*"

As part of the application for PTI #14-19, FCA included TAC modeling based upon their maximum potential emissions rates taking into account the averaging period of the applicable thresholds (ITSLs and IRSLs). Modeling impacts for comparison to annual averaging periods was based upon the

maximum annual production levels and coating usage, while modeling for comparison to shorter term thresholds (1, 8, and 24 hour) was based upon the maximum hourly production level. FCA has updated the dispersion modeling for TACs based upon a gross hourly vehicle production rate (62 jobs/hr) rather than the net rate included in the original modeling (48 jobs/hr), as well as the other changes described in the application. The updated modeling indicates that the maximum TACs impacts remain well within the applicable thresholds. This updated TAC analysis is included in the appendix.

5.0 LOWEST ACHIEVABLE EMISSION RATE - UPDATES

The LAER demonstration completed at the time of the original PTI application has been reviewed and evaluated relative to any updates that may be warranted as a result of the proposed design changes. The results of the evaluation are presented in this section. The LAER demonstration from the original PTI is included in Appendix G and continues to be valid for those sections unchanged or not impacted by the design changes.

The LAER update evaluation followed the procedure used in the original application and relied upon the following sources:

- U.S. EPA's RACT/BACT/LAER Clearinghouse
- State Permits issued for similar sources. (Note: Because recently issued permits will not reflect an emission limitation that is "achieved in practice", they are not included in the LAER analysis. This criterion is specifically relevant to the FCA Warren Truck Assembly Plant permit #13-19A, issued Aug 26, 2019).
- Applicable State Implementation Plans/Regulations primarily in locations where automotive assembly plants exist
- Other sources of information such as regulatory agency inquiries.

5.1 LAER DEMOSNTRATION - Update

The following section provides the results of the LAER update evaluation of each of the various VOC sources being constructed at DACM.

5.1.1 E-Coat LAER - update

The proposed design changes will not impact the LAER analysis completed for the E-coat process. A review of the above noted sources reveals no additional or new information that changes the LAER demonstration for E-coat. FCA continues to elect to control the tank and oven emissions. The emission reduction technologies originally proposed for the E-coat operations remain valid, and the equivalent emission rate of 0.04 lbs VOC/GACS does not change and is representative of LAER. The proposed annual emission rate of 1.6 tons per year from E-coat provided the basis for a portion of the VOC FPI level and continues to represent LAER.

5.1.2 Paint and Body Shop Sealers LAER - update

The proposed design changes will not impact the LAER analysis completed for the paint and body shop sealer application process. A review of the above noted sources reveals no additional or new information that changes the LAER demonstration for the sealers. The original determination that LAER for the body and paint shop sealers and adhesives is an equivalent monthly average VOC content of 0.25 pounds per gallon, minus water, remains valid. The proposed annual emission rate of 29 tpy from sealers provided a basis for a portion of the new VOC FPI level and continues represent LAER.

5.1.3 Primer (Guidecoat) LAER - update

The proposed design changes will not impact the LAER analysis completed for the primer coating process. A review of the above noted sources reveals no additional or new information that changes the LAER demonstration for the primer application process. The original determination that LAER for the

primer coating system is defined by either high solids, solvent borne or waterborne coating materials, electrostatic application technology coupled with thermal oxidation controls. These resulted in an equivalent emission rate of 2.92 lbs VOC per gallon of applied coating solids (lbs VOC/GACS). The proposed annual emission rate of 41.3 tpy from primer provided a basis for a portion of the new VOC FPI level and continues to represent LAER.

5.1.4 Topcoat LAER - update

The proposed design changes will not impact the LAER analysis completed for the topcoat application process. A review of the relevant sources reveals no additional or new information that changes the LAER demonstration for topcoat. The original determination indicating that the most appropriate equivalent LAER value for the topcoat operation is the limit in the Ford Kentucky Truck permit of 3.53 lbs VOC/GACS continues to be appropriate. In addition, the proposed annual emission rate of 137.6 tpy provided the basis for a portion of the new VOC FPI level, and continues to represent LAER.

5.1.5 Purge/Clean LAER - update

The proposed design changes will not impact the LAER analysis completed for the purge/clean processes. A review of the above noted sources reveals no additional or new information that changes the LAER demonstration for purge and cleaning materials used in the paint shop. The original LAER determination continues to be valid, and is reclaiming solvent-based purge materials, where appropriate, and implementing work practice standards to minimize VOC emissions from solvent cleaning operations. FCA proposed work practice provisions for VOCs that are identical to those found in the auto and light duty vehicle new source MACT rule (40 CFR 63 Subpart IIII). The proposed new facility is consistent with LAER for similar operations with a projected VOC emission rate of 129.4 tpy. The proposed annual emission rate of 129.4 tpy provided a basis for a portion of the new VOC FPI level and continues to represent LAER.

Other Coating or Miscellaneous VOC Sources – update

The following sub-sections discuss potential requirements for miscellaneous operations within the assembly plant that are typically not regulated in the same manner as the surface coating processes identified in the previous sections of this application. Typically, these sources may have material VOC content limits or work practice type requirements. The CTG for Automobile and Light Duty Trucks issued by USEPA under Section 183e of the Clean Air Act in September 2008 for existing sources was also reviewed as part of this demonstration.

5.1.6 Repair Operations - update

The proposed design changes will not impact the LAER analysis completed for the repair operation. A review of the relevant sources reveals no additional or new information that changes the LAER demonstration for coating repair processes. While LAER for repair operations is somewhat undefined, the use of coatings containing no more than 4.8 lbs VOC/gallon has been established as BACT in many recent permits. Nothing more stringent has been identified that would establish LAER beyond this level. For purposes of establishing a FPI limit, the emissions from all repair operations are approximately 2.74 tons per year, and continue to represent LAER.

5.1.7 Fluid/Fuel Fill Operations - update

The proposed design changes will not impact the LAER analysis completed for the fluid/fuel fill operation. A review of the relevant sources reveals no additional or new information that changes the LAER demonstration for the fluid/fuel fill processes. As noted in the original demonstration, Stage II emission controls for fluid fill operations have been replaced with the use of on-board recycling and vapor recovery (ORVR) systems on vehicles. ORVR systems typically provide 95% or greater control of VOCs and nearly 100% of vehicles produced in the U.S. now employ such systems. FCA utilized standard emission factors for the vehicle filling operation and estimated roughly 0.002 lbs VOC per vehicle (includes anti-freeze). Using this value results in an annual emission that is consistent with the GM Delta Township, MI facility permit that includes an emission limit for VOCs of 0.5 tpy. The proposed annual emission rate of 0.34 tpy provided the basis for a portion of the new VOC FPI level, and continues to represent LAER.

5.1.8 Windshield Washer Fluid Fill - update

The proposed design changes will not impact the LAER analysis completed for the washer fluid fill operation. A review of the relevant sources reveals no additional or new information that changes the LAER demonstration for the washer fill process. FCA utilized standard emission factors and has estimated emissions of VOCs at roughly 0.002 lbs per vehicle. This value is consistent with other assembly plants that have recently demonstrated BACT (or LAER). The emission factor and projected production levels results in 0.30 tpy of VOC from windshield washer fill, which provides the basis for a portion of the new VOC FPI level and continues to represent LAER.

5.1.9 TANKS - update

While the number and capacity of the storage tanks has changed slightly from the original application, the change does not impact the LAER demonstration. The proposed gasoline and methanol storage tanks will rely upon submerged fill and vapor balance in accordance with MDEQ-AQD's Part 7 regulations. For materials with low volatility (i.e., brake fluid and engine coolant) only submerged fill will be relied upon. These practices continue to represent LAER.

5.1.10 Body Solvent Wipe - update

The proposed design changes will not impact the LAER analysis completed for the solvent wipe operation. A review of the relevant sources reveals no additional or new information that changes the LAER demonstration for the use of solvent wipes. LAER for these operations are essentially the same across the industry and nearly all plants use containerized, single use wipes. A pound per vehicle emission factor was determined, which results in roughly 32.7 tons per year of VOC emissions from solvent wiping based upon projected production rates. This value represents a portion of the new VOC FPI level and continues to represent LAER.

5.1.11 Glass Installation - update

The proposed design changes will not impact the LAER analysis completed for the glass installation process. A review of the relevant sources reveals no additional or new information that changes the LAER demonstration for glass installation. FCA determined that glass installation will result in approximately 1.7 tons per year (included in sealer estimates). The emission factor and projected production levels provided the basis for a portion of the new VOC FPI level, and continues to represent LAER.

5.1.12 VOCs from Combustion Sources- update

While the amount of natural gas combustion equipment installed at the facility will be changing slightly from the original application, such a change does not impact the LAER demonstration. VOCs generated from combustion sources are limited to products of combustion of natural gas. Lower emitting fuels or burner configuration technologies that would reduce VOC emissions from the proposed natural gas combustion sources were not identified. Therefore, the use of natural gas as fuel in these units continues to constitute LAER. Use of the USEPA's AP-42 emission factor rate of 5.5 pounds VOC per million cubic feet of natural gas consumed is considered a widely acceptable emission rate for VOCs from natural gas combustion and continues to represent LAER.

5.1.13 LAER for Emergency Engines - update

The design change proposed for replacing a 770 HP engine with two, 350 HP engines does result in a change to the LAER demonstration for these units. The brake HP rating of an engine is one criterion considered when establishing how a stationary engine is regulated and the corresponding emission standards. Engines rated greater than 500 HP have different conditions than those rated less than 500 HP. Therefore, the LAER analysis for the 350 HP natural gas fired engines requires an update.

FCA reviewed the USEPA's RBLC for emergency engines less than 500 HP fired by natural gas. The tables and discussions below summarize the findings from that review.

Table 5.1 Emergency Engine Data Review

Source/RBLC ID	Type/Size	Date	VOC Limit	Control Technology
Virginia Electric Power – IA-0102	150 KW Propane	2/1/2012	1.0 g/hp-hr	NA
Fiber Industries – SC-0182	NA	10/13/2017	200 hrs/year	NA
Waupaca Foundry	100 KW (1.12 MMBtu/hr)	6/25/2018	0.36 lbs/MMBtu (1.35 g/hp-hr)	None
Green Bay Packaging Inc. WI-0267	50 KW	9/6/2018	Meet NSPS Subpart JJJJ and 200 hours/yr	None

Based upon the above information, VOC emissions from natural gas fired emergency engines rated less than 500 HP are either 1) not regulated/addressed or 2) subject the NSPS standard of 1 g/hp-hr, or 3) limited based upon hours of operation. FCA did not identify other permits with VOC limits that are more stringent than the applicable NSPS limit. Accordingly, FCA believes that a natural gas-fired emergency engine that meets the 1.0 g/hp-hr limit in Subpart JJJJJ demonstrates LAER for VOCs.

5.2 LAER SUMMARY – NEW ASSEMBLY PLANT - updated

The table below provides the results of the above VOC LAER analysis in summary format.

Table 5.2 – LAER Summary

Source	Facility	Application/Matls	Controls	LAER Equivalent Performance Metric
E-Coat	Ford KTP	Dip 100%	Tank and Oven RTO	**0.04 lbs VOC/GACS**
Paint Shop Sealers	FCA SHAP	Robotic pump/manual applied	None	**0.25 lbs VOC/gallon**
Primer (Guidecoat)	KIA Motors Georgia	High efficiency applicators	Booth/Oven RTO	**2.92 lbs VOC/GACS**
Topcoat	Ford KTP	High efficiency applicators	BC/CC Booth, BC Flash, and Oven to RTO	**3.53 lbs VOC/GACS**
Purge/Clean	KIA Motors Georgia	NA	Purge Capture and work practices	**0.6 tons VOC/1000 vehicles**
Repair	FCA SHAP	Manual	None	**4.8 lbs VOC/gallon**
Fuel Fill/Tanks	GM Delta Twp.	Submerged fill/Vapor Balance and ORVR	ORVR	**95% Control on vehicle system**
Washer Fill	Various	Standard Material	None	**NA**
Solvent Wipe	Kia Motors Georgia	Included in Purge/Clean	NA	**NA**
Glass Installation	All	Safety Based Materials	None	**4.9 lbs/gallon**
Process Fuel Combustion	All	NA	None	**Natural Gas**
Emergency Engines, > 500 HP, nat gas	Holland Board of Public Works (MI-0424 and MI-0412)	NA	Oxidation Catalyst	**0.5 gm/hp-hr**
Emergency Engine, Diesel Fire Pump	Cricket Valley Energy (NY-0103)	NA	None	**0.1 gm/hp-hr**
Emergency Engines, < 500 HP, nat gas	All	NA	None	**1.0 g/hp-hr**

5.3 FLEXIBLE PERMIT LAER

A review of the recently issued FPI or PAL (Plantwide Applicability Limit) permits reveals no additional or new information that changes the flexible permit LAER demonstration. The design changes proposed in this PTI amendment application do not result in any changes to the LAER demonstration for the individual assembly plant processes. The minor changes to the emergency engines and the corresponding LAER demonstration does not impact the flexible permit VOC emission limit. Therefore, the current FPI limit of 3.0 pounds VOC per job and the proposed emission reduction techniques continue to demonstrate the lowest achievable emission rate for the proposed new assembly plant.

6.0 NON-ATTAINMENT OFFSET DEMONSTRATION

The design changes to the project do not result in an increase to the VOC emissions such that a change to the offset demonstration is warranted. The table below presents the VOC emissions and required offset from the original application and those same values after including the proposed changes.

Table 6.0 Project Offset Comparison

DACM Project PTI Application	VOC Emissions (tpy)	VOC Offsets (tons)
Original – Jan-Mar 2019	382.5	421
Update – April 2020	382.0	420.2

7.0 FLEXIBLE PERMIT INITIATIVE – OTHER CRITERIA POLLUTANTS - UPDATE

Consistent with PTI #14-19, the changes addressed in this permit application remain subject to facility wide limits for non-VOC pollutants. The basis for those limits continues to be valid and does not change as a result of this minor PTI amendment. FCA is not proposing to modify those limits with the exception of the 0.28 tpy increase of the particulate matter limitations (discussed above) and a minor correction for the CO figures. Specifically, during the development of this application, FCA identified an incorrect summation for the plant wide carbon monoxide ("CO") emissions previously used. As a result, the FPI limit for CO requires adjustment to reflect the accurate value. This CO value change is not due to the design changes but is an administrative error correction. See Table 7.0 for the proposed non-VOC pollutant FPI limits.

Table 7.0 FPI Limits for Non-VOCs – Tons per Year

PTI version	Sources*	PM /10/2.5 (tpy)	NOx (tpy)	CO (tpy)	SO_2 (tpy)	GHG-CO_{2e} (tpy)
PTI #14-19	Facility-wide	5.25	34.1	77.1**	0.55	118,876
PTI #14-19a, (amendment)	Facility-wide	5.53	34.1	77.1	0.55	118,876

* Not including emergency equipment
** Corrected value

8.0 STATE BACT

As noted previously, R336.702 requires that new sources of VOCs demonstrate that BACT will be satisfied for each emission unit. The paragraphs that follow provide FCA's demonstration that the proposed DACM project, as updated by this application, will incorporate BACT for VOC emissions.

8.1 BACT APPLICABILITY TO SOURCES OF VOCS

BACT is defined as that emission reduction technology which provides the maximum degree of reduction achievable based on energy, environmental and economic impacts and other costs associated with emission control. BACT is determined on a source-specific case-by-case basis and must be at least as stringent as any applicable New Source Performance Standards (NSPS) (i.e., in this case 40 CFR 60 Subpart MM).

US EPA's top-down BACT requirements can be classified in five distinct steps as follows:

STEP 1: Identify All Control Technologies
STEP 2: Eliminate Technically Infeasible Options
STEP 3: Rank Remaining Control Technologies by Control Effectiveness
STEP 4: Evaluate Most Effective Controls and Document Results
STEP 5: Select BACT

Although Michigan does not specifically require a top-down approach, the same process will satisfy the Rule 702 requirements in Michigan.

The above steps were followed (as needed) in this application, including a comprehensive review of potential control technologies utilizing the following sources:

- The RBLC (RACT/BACT/LAER Clearinghouse);
- Pollution control technology vendors;
- USEPA control technology documents;
- Review of recently issued BACT/LAER determinations/permits for automobile manufacturing facilities elsewhere in the country;
- Experts familiar with both the automobile industry and control of similar processes;
- FCA experience with pollution control technologies for similar operations; and,
- MDEQ-AQD permitting records.

Note that the same information used for development of the LAER analysis above can provide the basis for demonstration that BACT will be incorporated into the emission units for VOC emission reductions. The following describes the BACT determination for certain sources where BACT may require additional consideration beyond the LAER analysis provided previously.

8.1.1 LAER Demonstration for BACT Subject Sources

In Section 5 and in Appendix G, FCA provided details on LAER for the various emission units undergoing installation at the facility. As a result, if the proposed FPI limit and the demonstration that LAER was satisfied on the basis of standard emission limits (e.g., topcoat on a lbs VOC/GACS basis), FCA is relying on the LAER analysis and demonstration as a basis for BACT for the coating operations and other VOC sources.

However, for certain sources, VOC emissions are limited on an annual basis in permits and no performance metric or LAER based limit is easily identified or applied to those emission units. As a result, FCA has included a further explanation from a BACT perspective as presented below for such emission units:

8.1.2 Purge/Wipe/Cleaning

8.1.2.1 Purge

Purging materials are used to purge coating lines and guns either when changing coatings or when build-up occurs and requires flushing. These materials are used when production is ongoing and are therefore, exposed to the VOC control systems. Furthermore, the materials used for the clearcoat (solvent purge) are purged into a capture/collection system and disposed of as part of the waste that is shipped offsite.

FCA evaluated the various materials used in the purge system and notes that the amount of purge solvent used for both the primer application and the clearcoat application is minimized since it is a single-color or single material system. The physical properties of the purge are critical to the success of the cleaning process, as the purging process must be completed in a timely manner to avoid production interruptions due to clogging of paint lines/guns, etc. The purge product used must satisfy all process related requirements. Accordingly, FCA is not aware of purge materials that are both effective and would result in less VOC emissions from the primer and clearcoat applications.

For basecoat, which is a waterborne material, a water-based purge is used as well. Due to the number of color changes that occur in the basecoat booth and the need to avoid interruptions, the basecoat purge contains a small amount of VOCs (0.04 lbs/gallon). FCA is not aware of purge materials that are both effective and would result in less VOC emissions from the basecoat applications.

As noted, purging of the paint lines into a collection system is planned for the new coating operations. This operation captures approximately 60% of the purge solvent, which is ultimately reclaimed or disposed of offsite. FCA is not aware of other recycling systems or collection systems that are more effective at reducing emissions from purge. As noted previously, the purge operations will occur when the booth recirculation and VOC emission controls are operating. As a result, the remaining 40% of purge materials in the booths (primer, basecoat and clearcoat) volatilizes and is routed to concentrator(s) and the subsequent thermal oxidizer. FCA is not aware of other more effective emission reduction controls for purposes of purge operations.

8.1.2.2 Solvent Wipe

Solvent wiping materials are used to wipe vehicle surfaces to remove dust and debris prior to coating operations. Generally speaking, the wiping operations are conducted in enclosures that are not exhausted to emission controls or the operations are conducted in the in-plant environment.

When wiping vehicle surfaces, the specific physical characteristics and chemistry of the materials is important to the layering and coating profiles. As a result, wiping materials and systems are limited in terms of VOC emission reduction potential. As a result, FCA is not aware of other wiping materials that can be relied upon for emission reduction from solvent wiping.

The process of solvent wiping is necessary to maintain vehicle coating integrity. FCA knows of no process or wiping alternative that would be effective at maintain coating quality while reducing VOC emissions. Accordingly, FCA did not propose changes for wiping.

Due to the various locations where solvent wiping occurs (some occurs in open areas or sectioned areas of the plant) and the lack of exhaust points, FCA does not believe these operations lend themselves to be controlled with VOC emission control equipment.

8.1.2.3 Cleaning Solvents

Cleaning solvents are used throughout the facility, but primarily for booth and coating equipment cleaning. These materials are often used when production is reduced or not occurring at all. In order to be effective, these materials often must meet certain physical qualities, as coating materials are often difficult to clean. As a result, cleaning materials can contain a specified level of VOCs. FCA has based emission estimates on a usage rate per vehicle that is considered typical and also includes a portion being subject to emission controls when routine or periodic cleaning occurs (i.e., not during planned shutdowns of production).

Similar to wiping, there are no effective ways to clean the booths and related equipment that FCA is aware of that would also prove to be effective and reducing VOC emissions from solvent cleaning.

8.1.3 Sealers

Sealers planned for use at the new facility will consist of low VOC-containing sealers in the body shop, paint shop and assembly areas. The sealers planned for use contain VOCs at levels ranging from 0.003 lbs/gallon to 0.1 lbs/gallon. As a result, the VOC content of the sealer profile has reached levels where many of the sealers are essentially VOC free. FCA is not aware of other materials that would serve to reduce the VOC content and resultant emissions from the various sealer operations.

The sealers are typically applied as a pumpable material where a bead is imparted on a vehicle body seam or other location either manually or via a sealer robot. As a result, deadener is the only sealer that is spray applied. However, the VOC content of the spray deadener s less than 0.1 lbs gallon as well. FCA is not aware of other processes or application methods that would serve to reduce VOC emissions from sealers.

Although sealers can be cured as they pass through various ovens, the nature of these operations is that they are completed in discreet sections of the manufacturing process and do not lend themselves to a main application point. Accordingly, add-on controls for sealers are difficult to rely on due to the distribution throughout the plant. Accordingly, FCA believes that add-on controls for specific sealer applications is not technically feasible.

9.0 TOXIC AIR CONTAMINANTS AND DISPERSION MODELING

9.1 TOXIC - BEST AVAILABLE CONTROL TECHNOLOGY REQUIREMENTS

Michigan Rule 224 requires the application of Best Available Control Technology for toxics (T-BACT) for new or modified sources of toxic air contaminants for which a PTI is required to be submitted. However, Rule 224(2)(c) indicates that the requirement for T-BACT does not apply to "*An emission unit or units which only emits toxic air contaminants that are particulates or VOCs and which is in compliance with BACT or LAER requirements for particulates and VOCs.*" As indicated in Section 5 of this document, the proposed changes and new paint shop will meet the requirements of LAER and BACT for VOC. Therefore, the T-BACT requirement has been satisfied since the TACs resulting from operation of the coating operations are VOCs.

9.2 HEALTH BASED SCREENING LEVEL REQUIREMENTS

Michigan Rule 225 states that new or modified sources of toxic air contaminants (TACs) which are subject to the requirements to obtain a PTI "*shall not cause or allow the emission of the toxic air contaminant from the proposed new or modified emission unit or units in excess of the maximum allowable emission rate which results in a predicted maximum ambient impact that is more than the initial threshold screening level (ITSL) or initial risk screening level (IRSL) or both,"*.

The recommended dispersion model in the USEPA's "Guideline on Air Quality Models" (Appendix W to 40 CFR 51) is AERMOD. Therefore, AERMOD version 19191 was used to estimate the maximum potential ambient air impact concentrations of TACs from the new processes at the proposed plant pursuant to Michigan Rule 225.

The impact concentrations calculated in AERMOD are directly proportional to the emission rate used in the model (i.e., if a process is modeled with an emission rate of 1 lb/hr, but the actual emission rate of the TAC is 0.2 lb/hr, then the actual impact concentration will be 1/5 of the predicted impact concentration). This proportionality was used to simplify the modeling process to predict the maximum impact concentrations of many TACs using fewer modeling runs.

The modeling for TACs associated with the proposed project was completed using a non-pollutant specific emission rate from each exhaust stack of 1 lb/hr. The maximum ambient air impact concentration of a particular TAC from each stack can then be determined by scaling these non-pollutant specific impacts by the maximum potential emission rate of the TAC from each stack. The maximum ambient air impacts of the TAC from each stack were then summed to determine a total maximum ambient air impact for the TAC. While this method reduces the number of modeling iterations needed, it is overly conservative as the sum of maximum impacts per stack will almost always be greater than the true maximum impact, due to the fact that the maximum impact for each stack is not likely to coincide geographically (i.e., at the same receptor) or temporally (i.e., at the same time) with every other stack.

For a small number of TACs, a more refined approach was taken via TAC specific individual modeling runs based upon the maximum potential emissions from each process.

As mentioned in Section 4.4, FCA updated the dispersion modeling for TACs from coating operations based upon a higher hourly vehicle production rate (62 jobs/hr) than the rate included in the original modeling (48 jobs/hr). The updated modeling indicates that the maximum TACs impacts remain well

within the applicable thresholds. The updated TAC analysis is included as an attachment and also accounts for the changes described in other Sections.
Appendix C presents tables containing the calculated emissions for each TAC from each process. The emission rates were based upon the maximum potential usage rate of materials, maximum projected production rates, as well as the design of the oxidizer controls, coating transfer efficiencies, and paint zone solvent carryover tests where appropriate.

9.2.1 Stack Height and Building Downwash Consideration

The AERMOD dispersion model considers the influence of building structures on exhaust stack plumes. These conditions occur when the height of an exhaust stack is less than its Good Engineering Practice (GEP) stack height (generally 2.5 times the height of the influencing structure). A building will have an influence on an exhaust plume if the distance between the two is less than five times the height or width (whichever is smaller) of the building.

The location of the influencing structures at the existing facilities relative to the proposed exhaust stacks associated with the proposed new operations were calculated using the USEPA Building Profile Input Program - Prime (BPIP-Prime). BPIP-Prime calculates the projected influence of building widths and heights depending upon wind direction for use in the building downwash algorithms of the AERMOD model.

Appendix D provides an electronic copy of the dispersion modeling files, including the BPIP-PRIME files.

9.2.2 Meteorological Data

The most recent year of available surface and upper air meteorological data (2019) recorded at the nearest National Weather Service (NWS) Station to the facility was used to calculate TAC impact concentrations. The surface air meteorological data was recorded at the Coleman A. Young International Airport (DET) located in Detroit, Michigan, station number 14822. The upper air data was recorded at NWS station in White Lake, Michigan.

The meteorological data used in the AERMOD calculations was based upon one-minute readings from the NWS Automated Surface Observing System (ASOS). Pursuant to EGLE procedure, the meteorological data was processed using the adjusted frictional velocity (u*) to improve model performance during periods of low winds/stable conditions. The meteorological data was downloaded from the EGLE Internet site.

9.2.3 Dispersion Coefficients

The AERMOD model uses data that represent the dispersion of pollutants in rural or urban areas. Based on the land use procedures outlined in the *Guideline on Air Quality Models*, the majority of the land (>50%) in a 3-kilometer radius around the proposed facility is classified as urban. Therefore, the urban option was used in the air pollution modeling analysis.

9.2.4 Receptors

Receptor positions (i.e., locations where pollutant impact concentrations are calculated) were established based on the USEPA definition of ambient air, that is, "that portion of the atmosphere, external to buildings, to which the general public has access." It is the USEPA's policy that the portion

of air exempt from being considered ambient air is that which is owned or controlled by the source, where the source employs measures, which may include physical barriers, that are effective in precluding access to the land by the general public. JNAP precludes access to the facility through the use of fences, surveillance, and twenty-four-hour security personnel. Public access to the DACM property is precluded through the use of fences, surveillance, and twenty-four-hour security personnel.

Based on the USEPA definition of ambient air, an initial set of receptors with spacing of approximately 25 meters was placed along the fence and/or property lines of the facility and extended to 50 meters beyond the fence line. To ensure that the locations of the maximum ambient air impact concentrations were identified, an additional receptor grids with a spacing of 100 and 250 meters, extending to 300 and 4000 meters beyond the fence, respectively, were utilized.

The location of the calculated air pollutant impact concentrations is expressed in Universal Transverse Mercator (UTM) coordinates. Figure 3.1 presents the locations of influencing structures, exhaust stacks, and receptors.

9.2.5 Terrain Elevation

The AERMOD dispersion model is capable of accounting for terrain elevation when calculating impact concentrations. To ensure that the results of the dispersion modeling analysis were as accurate as possible, terrain elevations were included in this modeling analysis. The elevations were based upon Digital Elevation Model (DEM) terrain data gathered by the United States Geological Survey (USGS). The DEM data was obtained from the USGS's National Elevation Dataset which can be accessed via the internet and the 'National Map Viewer'.

9.2.6 Dispersion Modeling Results

Table C-15 in Appendix C presents the maximum ground-level TAC impact concentrations from the proposed operations, taking into account the changes described in Section 2.

As indicated in the table, the predicted ambient air impact concentrations of TACs are below the applicable Michigan Rule 225 thresholds.

10.0 CRITERIA POLLUTANT EMISSIONS IMPACT ANALYSIS

Construction or modification of major sources resulting in a proposed potential emission increase of criteria pollutants greater than corresponding significance levels must demonstrate compliance with both PSD increments and the NAAQS. The existing JNAP facility is a major source of VOCs, and as indicated in Section 3 of this document, the proposed DACM operations will result in a significant increase in potential emissions of VOCs. The area is considered an ozone non-attainment area (VOC and NOx as precursors).

10.1 OZONE IMPACT ANALYSIS

US EPA guidance respective to addressing impacts of single source emissions on ground level ozone are based upon a two-tier approach. The first tier is based upon the use of technically credible relationships between emissions of precursors (i.e., VOC) and ambient impacts based upon existing modeling results or studies. The second tier, when necessary, involves a case by case application of chemical transport modeling (e.g., Lagrangian models or Eulerian grid models).

Tier 1 demonstrations are typically based upon Modeled Emission Rates for Precursors (MERP). Per US EPA guidance, a MERP describes an emission rate of a precursor that is expected to result in a change in the ambient pollutant that would be less than a specific critical air quality threshold (i.e., the Significant Impact Level, or SIL). For ozone, that threshold is 1 ppb. MERP values are expressed in tons per year and are derived via the following equation:

$$MERP = (Applicable\ SIL) \times \frac{(Modeled\ emission\ rate\ from\ hypothetical\ source)}{(Modeled\ ambient\ impact\ from\ hypothetical\ source)}$$

MERPs are based upon geographical location, which take into account the area's sensitivity to precursor emissions and regional or local atmospheric conditions. Based upon a review of the data provided in US EPAs "Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program", FCA believes that the most representative source is a low-level source located in Macomb Co., Michigan. The ozone impacts and associated emission rates of precursors VOC and NO_X respective to the representative source are:

Precursor	Emission Rate (tpy)	Impact (ppb)
VOC	500	0.25
NO_X	500	0.94

Based upon the equation above, the MERPs for VOC and NO_X are:

$$VOC\ MERP = (1\ ppb) \times \frac{(500\ tpy)}{(0.25\ ppb)} = 2{,}000\ tpy$$

$$NOx\ MERP = (1\ ppb) \times \frac{(500\ tpy)}{(0.94\ ppb)} = 532\ tpy$$

As indicated in Section 3 of this document, the maximum potential emission rates of VOC and NO_X from the proposed project are 382.0 and 37.34 tpy, respectively. Each of these values are well below the MERP for their respective pollutants. Additionally, the sum of the ratios of the proposed emissions to the MERPs is well below 1.0:

$$VOC\ MERP\ Ratio = \frac{(382.0\ tpy)}{(2{,}000\ tpy)} = 0.19$$

$$NOx\ MERP\ Ratio = \frac{(37.34\ tpy)}{(532\ tpy)} = 0.07$$

$$Combined\ MERP\ Ratio = 0.19 + 0.07\ = 0.26$$

The sum of VOC and NO_X MERP ratios less than 1.0 indicates that the combined emissions will not result in emissions that will cause or contribute to a violation of the ozone NAAQS.

10.2 MINOR SOURCE MODELING POLICY – AQD 022

Pursuant to the AQD-022, the proposed project was not subject to the requirement to complete an analysis for CO, SO_2, or NO_X due to limited emissions and/or stack parameters meeting certain height requirements.

The potential emissions of $PM_{2.5}$ from the proposed project were just above 50% of the SER, and therefore FCA included a qualitative analysis to address impacts to the NAAQS. As indicated in Section 3, Table 3.1, the proposed changes to the facility result in a very slight increase in $PM_{2.5}$ emissions (0.25 tpy) from the original application. Therefore, FCA believes that the conclusion reached in the original qualitative assessment remains accurate, and there will be no adverse impacts to the NAAQS or PSD Increment for $PM_{2.5}$.

FCA also prepared a qualitative analysis of the NO_X impacts as part of the original application. During the public comment period, at the request of EGLE, FCA supplemented the qualitative analysis of NO_X with a quantitative analysis (e.g., dispersion modeling analysis of NO_X impacts). The dispersion modeling analysis confirmed that there would not be an adverse effect on the NO_2 NAAQS or PSD increment from the proposed project.

The potential to emit NO_X from the DACM facility will be exclusively generated by combustion of natural gas in the various heaters, hot water generators, and ovens. As noted in Sections 2 and 3 of this document the facility is not requesting a change in the natural gas fuel usage limitation. However, to account for slight variations to the exhaust stack locations and changes to the combustion equipment associated with the proposed changes, FCA has updated the dispersion modeling analysis for NO_2 for comparison to the NAAQS and PSD increments.

10.2.1 NO_X Modeling Analysis

As with the analysis of TAC impacts, to assess the air quality impact of potential emissions of NO_X from the proposed changes to DACM, air quality modeling was performed according to the recommendations of the USEPA "Guideline on Air Quality Models" using AERMOD version 19191.

EPA guidance for modeling of NO_2 describes three tiers of analysis. Tier 1 assumes that 100% of the NO_X emitted from sources is converted to NO_2. Tier 2 methods include the use of an ambient ratio, whereby a percentage of the NO_X is said to be converted to NO_2. This is either 80% for the original ambient ratio method, or a variable percentage in the Ambient Ratio Method 2 (ARM2) which is based upon NO_X and NO_2 monitoring data from the EPA's Air Quality System. Tier 3 analyses use either the Ozone Limiting Method (OLM) or the Plume Volume Molar Ratio Method (PVMRM) which take into

account the effect of the ratio of NO_X to NO_2 in the exhaust stack of a process, as well as the ground level ozone concentration's role in the conversion of NO_X to NO_2.

The evaluation of NO_2 impacts from the proposed changes to DACM was completed using the tier 2 ARM2 method. The ARM2 modeling was completed using the EPA default minimum and maximum parameters for ambient NO_2 to NO_X ratios of 0.5 and 0.9, respectively.

10.2.1.1 Meteorological Data

As recommended by the guideline, five years of meteorological data was used for the NO_X modeling analysis. The meteorological data was recorded at Station IDs 14822 and 4830 and was recorded from years 2015-2019.

The raw meteorological data measurements are processed using AERMET. One of the variables that is calculated by AERMET is friction velocity (u*, or u-star) which is used in turn to calculate other variables such as mixing height and initial horizontal and vertical dispersion. It has been determined that during periods of low wind speeds, the performance of AERMOD could be improved. Accordingly, optional meteorological data incorporating the modified u-star values was used. The meteorological data was processed by EGLE-AQD.

10.2.1.2 NOX Annual NAAQS

In addition to using Tier 2 modeling to compare the ambient air impacts of NO_2 to the 1-hour NO_2 NAAQS, dispersion modeling using default AERMOD settings was completed for comparison to the annual NO_2 NAAQS.

10.2.1.3 Single Source NOX Modeling Results

The Significant Impact Level (SIL) for NO_2 is 7.5 µg/m^3 for the 1-hour standard and is 1 µg/m^3 for the annual standard. Sources with maximum impacts below the SIL are said to not cause or contribute to predicted exceedances of the NAAQS. The table below presents the results of the NO_X modeling, and shows that the maximum annual impact is above the SILs. The maximum hourly NO_2 impact also exceeds the SIL. Therefore, a cumulative modeling analysis was required, and is discussed in the following section.

Table 10.1: NO_2 Impacts

Pollutant	Averaging Period	SIL (µg/m^3)	Maximum Impact (µg/m^3)
NO_2	1-hr	7.5	90.88
	Annual	1.0	8.31

Appendix D provides an electronic copy of the dispersion modeling files associated with the NO_X analysis.

10.2.1.4 Cumulative NO_X Modeling

Because the maximum impacts of NO_2 from DACM are not less than the applicable SILs, a cumulative modeling analysis, which includes not only the proposed facility, but also other nearby sources of NO_2 as well as a measured ambient background concentration was completed.

As with the single source analysis described above, the cumulative modeling analysis was completed using Tier 2 ARM2 method.

10.2.1.5 Ambient Background

For a cumulative modeling analysis and comparison to the NAAQS, a measured ambient background concentration is included. In the absence of site-specific data, background concentrations are typically obtained from local monitoring sites. The nearest NO_2 monitor that has been operating for at least three years are located on East 7 Mile Road in Detroit (station ID 26163019).

The average of the most recent three years (2017-2019) of measurements indicates an ambient concentration of NO_2 of 82.6 µg/m^3 for the one-hr standard and 29.0 µg/m^3 for the annual standard. These background concentrations were included in the cumulative modeling analysis for comparison to the NAAQS.

10.2.1.6 Off-Site Sources of NO2

In addition to the potential emissions from the proposed source and ambient background, the cumulative modeling analysis must include actual emissions from other nearby sources of the regulated pollutant. The term 'nearby' is not defined in the Guideline, or federal regulations. This is by design, as which sources should be included in a NAAQS modeling demonstration is determined on a case-by-case basis by the reviewing authority. In general, off-site sources whose emissions result in a significant impact gradient within the Significant Impact Area of subject facility are included.

Michigan Rule R336.1240 requires modeling demonstrations for comparison to the NAAQS and PSD Increments be made in accordance with the procedures in 40 CFR51.160 and Appendix W to 40CFR51, Guideline on Air Quality Models (or the "Guideline") which are adopted by reference in Michigan Rule R336.1902. Therefore, emissions from nearby sources of NO_2 were incorporated in accordance with the process presented in the Guideline.

Guideline Section 8.2.2 Requirements indicates that "*For purposes of demonstrating compliance in a PSD assessment, the regulatory modeling of inert pollutants shall use the emission input data shown in Table 8-2 for short and long-term NAAQS*." Table 8.2 indicates that the term "nearby" includes existing sources at the facility that are not affected by the modification. It further indicates that emissions of nearby sources for pollutants with short term thresholds (e.g., 1-hourt NO_2) be based upon temporally representative emissions when actually operating, reflective of the most recent two years. In addition, on August 3, 2017, the US EPA's, Office of Air Quality Planning & Standards presented guidance in the form of a webinar entitled "Appendix W - Section 8, Modeling Domain, Source Data and Background Concentrations". The content of that presentation includes an explanation stating that: "For the 'few' nearby sources to be explicitly modeled, typical/representative actual emissions (adjusted by operating level) should be used." FCA included the nearby sources in the modeling consistent with the Guideline's 8.2.2 Requirements and Table 8-2 instructions.

In addition to the inventory of nearby sources provided by EGLE, there are existing sources of NOx at the DACM facility, as well as FCA's JNAP facility. Certain building space heat at DACM is the only existing process at DACM facility that was incorporated into the modeling based upon temporally representative actual emissions. Existing sources of NO_X at the nearby JNAP facility include general building heat, existing boiler operations, and existing coating operations.

Temporally representative emissions of NO_X from natural gas combustion related to existing general building heat for each facility was determined based upon actual natural gas usage over the most recent two years, as well as the actual hours that building heat was utilized. Since the hours of operation of space heating is not tracked directly, it was determined based upon the hours during which the outside ambient temperature falls below 65 °F (an established metric used in the energy/heating industry). In order to determine the actual hours of operation of the heating units, FCA analyzed meteorological data for the most recent two years of the nearest NWS station (DET Station 14822). This data (actual fuel consumption and heating hours) was used to determine the actual operating level ($MMft^3/hr$) for each facility's building heat.

Appendix C provides the calculations of both the heating hours based upon meteorological data, and the temporally representative emission rates of the building heat for DACM and JNAP.

For each of the four existing boilers at the JNAP powerhouse, fuel usage data (natural gas) is available. Since the operation data is based upon daily use (rather than hourly use), FCA conservatively used the 75^{th} percentile of daily actual operating capacity to calculate a temporally representative hourly emission rate from each existing boiler.

The remainder of emissions from existing processes at JNAP are tied directly to the production rate (e.g., NO_X emissions from existing topcoat operations are directly related to production). Therefore, temporally representative emissions from these processes were based upon the actual emissions from the most recent two years as well as actual production hours.

In addition to the emissions from the proposed DACM facility, the emissions from the proposed tutone coating line and other new equipment proposed at the JNAP facility were included in the modeling analyses based upon proposed maximum allowable emissions.

10.2.1.7 Results of Cumulative NO2 Modeling

As presented in the table below, emissions from the proposed changes to DACM, in conjunction with emissions from nearby sources and a measured ambient background concentration result in ambient air impacts less than the NAAQS.

Table 10.2: Cumulative NO_2 IMPACTS and NAAQS

Pollutant	Averaging Period	Maximum Impact ($\mu g/m^3$)	Ambient Background ($\mu g/m^3$)	Maximum Ambient Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
NO_2	Annual	10.72	29.0	39.7	100
NO_2	1 hr	103.4	82.6	186.0	188

11.0 ADDITIONAL IMPACT ANALYSES

The impacts of air, ground and water pollution on soils, vegetation and visibility caused by the emissions of regulated pollutants from the proposed source and associated growth were assessed. As indicated in Section 2, the proposed changes to the PTI do not include any changes to allowable emissions and therefore, FCA believes that the analysis respective to growth, soil and vegetation impacts, analysis of threatened and endangered species, and impact on visibility presented in the original application remain valid.

12.0 ADMINISTRATIVE CHANGES

As noted in Section 1.0, there are certain amendments to terms and conditions in PTI 14-19 that FCA is requesting as part of this PTI application. The following changes should be made prior to issuing a revised PTI:

12.1 Proposed Revisions to Terms and Conditions

In Appendix E of this application, FCA has provided a redlined version of the terms and conditions of PTI #14-19 that addresses the various proposed changes included herein. The following provides a description of the requested changes and the basis for the request including the permit page numbers and sections:

Cover Page and throughout
The facility's name and address have changed to the following: Detroit Assembly Complex-Mack, 4000 St. Jean Street, Detroit, MI.

Table of Contents
Added a flexible group ("FGNGEMENG2") for the two 350 HP natural gas fired emergency engines.

Emission Unit Summary Table, Pgs 6-8

1. EUECOAT - Corrected the EU Description to more accurately reflect the discharge configuration.
2. EUSLR/ADH/DEAD – Removed the reference to the sealer oven that is not going to be installed
3. EUHWG10 – Removed
4. EUNEWNGMACK-2 – Proposed to change the name of the EU to include both Mack 1 and 2 facilities ("EUNEWNGMACK-1&2"), as new natural gas combustion equipment will be installed at both existing facilities. The total heat input rating of the equipment has been changed from 38.4 to 74.7 MMbtu/hr. These changes have been updated throughout the permit, but are identified once within this summary. The pages impacted by this update include: 8, 35, 36, 37, 38, 43 & 68.
5. EUGASTANK1 & 2 – Changed the tanks' size, ID# and installation date to "TBD"
6. EUCOOLANTTANK – Changed the tank size, ID#, and installation date to "TBD"
7. EUMETANK1 & 2 – Changed the tank size, #, ID# and installation date to "TBD".
8. EUBRKTANK- Added this tank that will hold brake fluid
9. Struck eleven (11) tanks from the list that have been removed from the facility's tank farm
10. EUEMERGEN3 & 4 – Changed "3" to 350 HP and added engine "4"
11. EUFIREPUMP3 - Removed

Page 12 of 74 – EUECOAT
Edited the Description to more accurately reflect the discharge configuration.

Page 14 of 74 – EUSLR/ADH/DEAD
1. Edited the Description to remove the reference to the sealer oven that is not going to be installed.
2. VIII. Stack/Vent Restrictions
   Removed the sealer oven stack from the table.

Flexible Group Summary Table, Pgs 35-36

1. FGAUTOASSEMBLY – Removed HWG10 as an associated emission unit
2. FGBOILERMACT – Removed HWG10 as an associated emission unit

3. FGEMERENG"1" – Added "1" to the FG name to reflect two different Emergency Engine flexible groups. Changed the number of member engines from three to two.
4. Created "FGEMERENG2 – Added new FG for the two emergency engines at 350 HP.
5. Noted missing FG's - FGTANKS and FGOLD

Page 37 of 74 – FGAUTOASSEMBLY

1. Remove HWG10 from the subject Emission Unit list.
2. I Emission Limits. Item #7. CO tpy limit. Administrative correction of the tpy limit from 72.5 to 77.2.

Page 38&39 of 74 – FGAUTOASSEMBLY

3. I. Emission Limits, Footnotes: A, C & E -Proposed language to clarify the condition.
4. V. Testing/Sampling, Items1-4.
   The language contained within the testing conditions includes periodic testing (once every five years) but provides an option to rely on the most recent test if it remains valid and representative. The language regarding documenting the valid test varies, however, in terms of what is required. For example, Condition V.5. requires the permittee to "document" annually that the test remains valid and representative, whereas Condition V.4 requires that the permittee has "submitted" an annual demonstration that the test remains valid and representative. Further, Condition V.3 requires the permittee to "maintain" a yearly demonstration. FCA believes that the conditions should be consistent and proposes that the language be revised to the following for each:

   Within 365 days of saleable vehicle production, the permittee shall conduct initial testing and, at least once every five years thereafter unless the permittee ***documents annually*** *that the most recent acceptable test remains valid and representative….*

Page 41 of 74 – FGAUTOASSEMBLY

1. VI. Monitoring/Recordkeeping - Item 2.
   Added the word "system" to offer perspective and clarity relative to the visual inspections of "each exhaust filter *system*,".

2. IX. Other Requirements – Item 2**.**
   FCA believes that the references to SC I.1 through SC 1.9 in this condition are incorrect since the standards identified are specific to VOC sources and do not include the other criteria pollutants identified in the emission limits table. Accordingly, the following edits should be made to clarify that the limits are specific to VOCs:

   2. The Department has determined that compliance with the limits listed in SC I.1 through SC1.2.~~9~~ provides a level of control that is at least equivalent to and not less stringent than the standards in 40 CFR 60.392, et seq. and R 336.1610. Accordingly, compliance with the limitations in this permit meets all applicable requirements of 40 CFR Part 60, Subpart MM and R 336.1610. (R 336.1610, 40 CFR 60, Subpart MM).

Page 43 of 74 – FGCONTROLS
In the Pollution Control Equipment, we are proposing to remove the reference to a dry filter particulate control system on the space heating units. FCA has modified the PM emission calculations for natural gas combustion sources, specifically the space heaters, to reflect no particulate removal. Even though air from the space heaters

likely realizes some particulate removal as it travels through the various filtering system within the plant air handling systems, no credit is taken for particulate removal when calculating emissions from the space heaters. All conditions that reference space heaters relative to particulate control have been proposed for modification and appear on pages: 43 & 68.

Page 50 of 74 – FGBOILERMACT
Removed a duplicative "HWG3" and the "HWG10" from the subject Emission Units lists.

Page 57 of 74 – FGNGEMENG"1"

1. Because a second FG for natural gas fired emergency engines is needed to accommodate the smaller 350 HP units, this FG has been given a label of "1". This change was made to each "FGNGEMENG" entry in the permit, as appropriate.
2. EUEMERGEN3 is removed from the Emission Unit list because it is now less than 500 HP and not a member of this FG.

Page 58 of 74 – VI. Design/Equipment Parameter(s) – Item 2
Propose to strike the underlying applicable requirement reference to the NSPS of 40 CFR 60.4230. The condition requires the engine not be greater than 770 HP, and the NSPS does not limit the size of the engine relative to the applicable emission standards.

Page 60 of 74 – VIII. Stack/Vent Restrictions
Propose to remove the stack SVGEN3 from the list in FGNGENG1as EUEMERGEN3 is not a member of that FG.

Page 62 of 74 – FGFIREPUMP
In the Description, reduced the number from three to two engines. Removed EUFIREPUMP3 from the Emission Unit list.

Page 65 of 74 – FGFIREPUMP

1. VIII. Stack/Vent Restrictions, Item 3
   Propose to remove the stack SVPUMP3 from the list in FGFIREPUMP as EUFIREPUMP3 will not be installed.
2. IX. Other Requirement(s), Items 1 and 2
   Propose to strike the underlying applicable requirement reference to the NESHAP of 40 CFR 63.6590 in Item 1and insert it in Item 2. Item 1 requires compliance with the NSPS, which is appropriate. Item 2 requires compliance with the RICE NESHAP standard, which only requires compliance with the NSPS. Language was added to Item 2 to clarify the inter-related nature of complying with both RICE NSPS and NESHAP standards.

Page 68 of 74 – FGNGEQUIP
1. Edited the Description to remove the value "three" from describing emergency engines.
2. Removed the "HWG10" from the subject Emission Units list.

Page 69 of 74 – VII. Reporting – Items 2 and 3

The following sections indicate that the hot water generators (HWG) are subject to 40 CFR 60 Subpart Dc. However, the HWGs have heat input levels of 5.0 MMBtu/hr which is not within the range of applicability under Subpart Dc. Accordingly, FCA requests that these conditions be removed from the subject PTI.

> *2. The permittee shall submit written notification of the date of construction of each Hot Water Generator in FGNGEQUIP to comply with the federal Standards of Performance for New Stationary Sources, 40 CFR 60.7. The permittee shall submit this notification to the AQD District Supervisor within 30 days after construction commences, as specified in 40 CFR 60.7. (40 CFR 60.7)*
>
> *3. The permittee shall submit written notification of the actual date of initial startup for each Hot Water Generator in FGNGEQUIP as provided by the federal Standards of Performance for New Stationary Sources, 40 CFR 60.7. Each notification shall include:*
> *a. The design heat input capacity and identification of fuels to be combusted.*
> *b. The annual capacity factor at which the permittee anticipates operating based on all fuels fired and based on each individual fuel fired.*
>
> *The permittee shall submit these notifications to the AQD District Supervisor within 15 days after initial startup occurs. (40 CFR 60.7, 40 CFR 60.48c(a))*

Page 70 of 74 – VIII. STACK/VENT RESTRICTION(S)

1. In this section, a table is included with stack parameters included for the various natural gas fired equipment. A statement preempts that the table that indicates: "*The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:"*

   FCA notes that the HWGs exhaust points were modeled exiting the building in a horizontal direction and therefore, should be otherwise noted that they are **not** exhausting unobstructed vertically upward. Clarifying language is proposed.

2. Propose to remove stack #3, EUSLROVEN and stack #13, SVHWG10 from the list as the corresponding emission unit will not be installed.

3. The diameter of HWG's #1-9 has changed from 12" to 14".

Page 71 of 74 – FGTANKS
Propose to add a second methanol tank, EUMETANK2, to the Emission Unit list

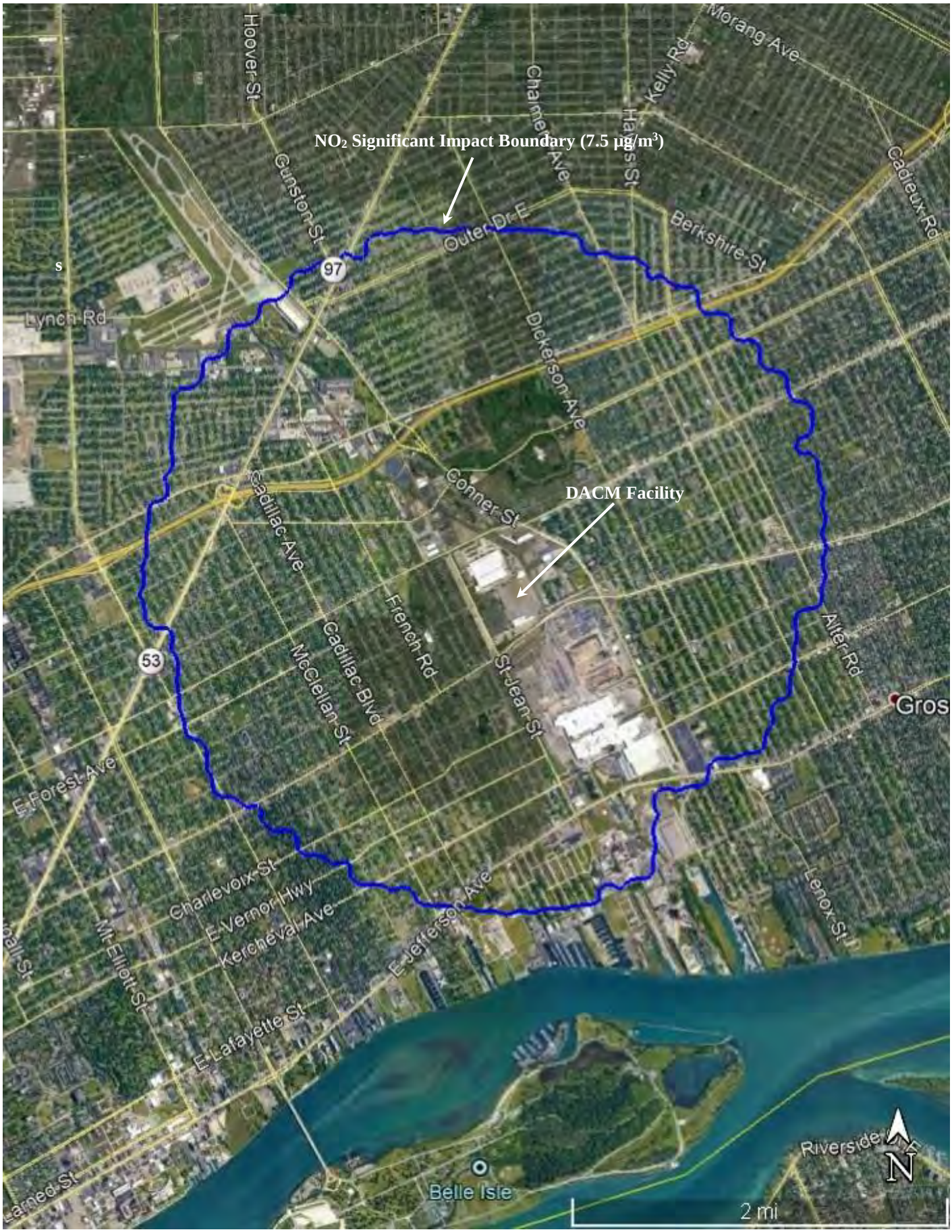
Page 73 of 74 – FGOLD
Propose to add a second methanol tank, EUMETANK2, to the Emission Unit list

13.0 CONCLUSION

FCA is requesting a revised PTI to allow for minor changes associated with the DACM project that is already undergoing construction pursuant to PTI #14-19. These proposed changes are minor and administrative in nature, and are supported by an appropriate demonstration that the facility will comply with the provisions of State and Federal air quality regulations.

FIGURES

Figure 1. FCA DACM NO_2 Significant Impact Area
April 2020



APPENDIX A

PERMIT TO INSTALL APPLICATION FORM

EGLE

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY

PERMIT TO INSTALL APPLICATION

For authority to install, construct, reconstruct, relocate, or modify process, fuelburning or refuse burning equipment and/or control equipment. Permits to install are required by administrative rules pursuant to Section 5505 of 1994 PA 451, as amended.

FOR EGLE USE ONLY
APPLICATION NUMBER

Please type or print clearly. The "Application Instructions" and "Information Required for an Administratively Complete Permit to Install Application" are available on the Air Quality Division (AQD) Permit Web Page at www.deq.state.mi.us/aps/nsr_information.shtml. Please call the AQD at 5172846804 if you have not been contacted within 15 days of your application submittal.

1. FACILITY CODES: State Registration Number (SRN) and North American Industry Classification System (NAICS)

SRN: N 2 1 5 5 NAICS:

2. APPLICANT NAME: (Business License Name of Corporation, Partnership, Individual Owner, Government Agency)
FCA US LLC, Detroit Assembly Complex Mack

3. APPLICANT ADDRESS: (Number and Street)
4000 St. Jean Street

MAIL CODE:

CITY: (City, Village or Township)
Detroit

STATE: MI

ZIP CODE: 48214

COUNTY: Wayne

4. EQUIPMENT OR PROCESS LOCATION: (Number and Street – if different than Item 3)

CITY: (City, Village or Township)

ZIP CODE:

COUNTY:

5. GENERAL NATURE OF BUSINESS:
Automobile and Light Duty Truck Manufacturing

6. EQUIPMENT OR PROCESS DESCRIPTION: (A Description MUST Be Provided Here. Include Emission Unit IDs. Attach additional sheets if necessary; number and date each page of the submittal.)
The Detroit Assembly Complex - Mack (DACM) will manufacture FCA motor vehicles in a body shop, new paint shop and general assembly building. PTI 14-19 was issued for the new facility in April of 2019. This application addresses minor updates to the design of the facility and propopsed changes to the terms and conditions of PTI 14-19.

7. REASON FOR APPLICATION: (Check all that apply.)

☒ INSTALLATION / CONSTRUCTION OF NEW EQUIPMENT OR PROCESS
☐ RECONSTRUCTION / MODIFICATION / RELOCATION OF EXISTING EQUIPMENT OR PROCESS – DATE INSTALLED:
☒ OTHER – DESCRIBE PROPOSED MINOR CHANGES TO PTI TERMS & CONDITIONS

8. IF THE EQUIPMENT OR PROCESS THAT WILL BE COVERED BY THIS PERMIT TO INSTALL (PTI) IS CURRENTLY COVERED BY ANY ACTIVE PERMITS, LIST THE PTI NUMBER(S): 14-19

9. DOES THIS FACILITY HAVE AN EXISTING RENEWABLE OPERATING PERMIT (ROP)? ☒ NOT APPLICABLE ☐ PENDING APPLICATION ☐ YES

PENDING APPLICATION OR ROP NUMBER:

10. AUTHORIZED EMPLOYEE:
Michael Brieda

TITLE:
Plant Manager

PHONE NUMBER: (Include Area Code)
313-252-6500

SIGNATURE:

DATE:
4/29/2020

EMAIL ADDRESS:
Michael.brieda@fcagroup.com

11. CONTACT: (If different than Authorized Employee. The person to contact with questions regarding this application)
Sandra Walker

PHONE NUMBER: (Include Area Code)
248-512-1143

CONTACT AFFILIATION:
FCA Air Compliance Engineer

EMAIL ADDRESS:
Sandra.walker@fcagroup.com

12. IS THE CONTACT PERSON AUTHORIZED TO NEGOTIATE THE TERMS AND CONDITIONS OF THE PERMIT TO INSTALL? ☒ YES ☐ NO

FOR EGLE USE ONLY DO NOT WRITE BELOW

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203:

DATE PERMIT TO INSTALL APPROVED:	SIGNATURE:
DATE APPLICATION / PTI VOIDED:	SIGNATURE:
DATE APPLICATION DENIED:	SIGNATURE:

A PERMIT CERTIFICATE WILL BE ISSUED UPON APPROVAL OF A PERMIT TO INSTALL

APPENDIX B

EMISSION CALCULATIONS

Criteria Pollutant Emission Calculations
FCA MAAP/DAC - Mack Project - Revised April 2020

Facility VOC Summary - Updated

April 2020 Update

Production 261,870 veh/yr

Emission Unit	TPY
Ecoat	1.60
Liquid Primer	41.25
Topcoat	137.59
FBP Sealer	28.89
TCF Sealer	
Primer Repair	0.61
Repair	0.94
Body Wipe	32.73
Purge/Clean	129.38
Fuel Fill	0.34
Washer Fluid	0.30
TANKS	1.33
Touch up	0.25
Low Bake Repair	0.94
Glass Install	see sealers
Natural Gas	5.01
Emergency Engines	0.85

382.02 tpy

Offset Ratio

420.22 tons

PTI - March 2019 version

Production 261,870 veh/yr

Emission Unit	TPY
Ecoat	1.60
Liquid Primer	41.25
Topcoat	137.59
FBP Sealer	29.04
TCF Sealer	
Primer Repair	0.61
Repair	0.94
Body Wipe	32.73
Purge/Clean	129.38
Fuel Fill	0.34
Washer Fluid	0.30
TANKS	1.74
Touch up	0.25
Low Bake Repair	0.94
Glass Install	see sealers
Natural Gas	5.05
Emergency Engines	0.70

382.48 tpy

Offset Ratio

420.73 tons

Criteria Pollutant Emission Calculations **Topcoat**
FCA MAAP Project - Revised February 11, 2019

	Coating Usage[3]	VOC (lbs/gal)[4]		TE	"OSL" % Carryover @100%TE[1]			
Coating Family	Gals/vehicle	Formula	Analytical	%	Booth	"observation"	Flash-off zone	Bake Oven
Basecoat	0.731	1.810	1.940	72.5%	46.5%	10.0%	21.8%	21.7%
Clearcoat	0.823	3.660	3.890	69.0%	54.1%	15.6%	0.0%	30.3%

	Capture Efficiency (%)				Control Efficiency (%) RTO[2]				Control Efficiency (%) Concentrator			
	Booth	"observation"	Flash-off	Oven	Booth	"observation"	Flash-off	Oven	Booth	"observation"	Flash-off	Oven
New Paintshop												
Basecoat	100%	100%	100%	100%	95.0%	0.0%	95.0%	95.0%	90.0%	0.0%	90.0%	0.0%
Clearcoat	100%	100%	100%	100%	95.0%	0.0%	0.0%	95.0%	90.0%	0.0%	90.0%	0.0%

Production Rate (Jobs/year)[5] 288,057

Emissions	Coating	VOC Generated (lbs)						VOC Controlled (lbs)					VOC Emitted (lbs)					VOC (lbs)	VOC (tons)
Coating Family	Gals	Booth - Formula	Booth - Analytical	observation	Flash-off zone	Bake Oven	Total	Booth-Formula	Booth-Analytical	observation	Flash-off zone	Bake Oven	Booth-Formula - via Conc/RTO	Booth-Analytical via Conc/RTO	observation	Flash-off zone via Conc/RTO	Bake Oven via RTO	TOTAL	TOTAL
Basecoat	210,570	104,811	137,717	29,617	64,564	64,268	400,977	89,613	117,748	0	55,202	61,055	15,198	19,969	29,617	9,362	3,213	77,358	38.7
Clearcoat	237,071	268,981	344,250	99,266	0	192,806	905,303	229,978	294,334	0	0	183,165	39,002	49,916	99,266	0	9,640	197,825	98.9
TOTALS:													54,200	69,885	128,883	9,362	12,854	275,183	**137.6**

Notes:

1 - OSL taken from SHAP original etimates

2- Control Efficiency assumed to be 90% or 95% minimum for each device

3- BC and CC Usage based upon max vehicle size for larger models

4 - VOC Content from EDS/SDS Sheets (Max Formula and Analytical)

5- Production Rate for topcoat includes reprocess rate of 10%

Criteria Pollutant Emission Calculations
FCA MAAP Project - Revised February 11, 2019

Primer

	Coating Usage	VOC (lbs/gal)		TE	"OSL" % Carryover @100%TE			
Coating Family	Gals/Vehicle	Formula	Analytical	%	Booth	"observation"	Flash-off zone	Bake Oven
Liquid Primer NT (LFP 2000)	0.277	3.100	3.000	75.0%	50.0%	10.0%	20.0%	20.0%
Liquid Primer T (LFP 2000M)	0.063	3.160	3.160	75.0%	50.0%	10.0%	20.0%	20.0%
Monocoat (CSRC9517R)	0.152	3.830	3.830	75.0%	50.0%	10.0%	20.0%	20.0%

	Capture Efficiency (%)				Control Efficiency (%) RTO				Control Efficiency (%) Concentrator			
	Booth	observation	Flash-off	Oven	Booth	"observation"	Flash-off	Oven	Booth	"observation"	Flash-off	Oven
New Paintshop												
Liquid Primer NT (LFP 2000)	100%	100%	100%	100%	95.0%	0.0%	95.0%	95.0%	90.0%	0.0%	90.0%	0.0%
Liquid Primer T (LFP 2000M)	100%	100%	100%	100%	95.0%	0.0%	95.0%	95.0%	90.0%	0.0%	90.0%	0.0%
Monocoat (CSRC9517R)	100%	100%	100%	100%	95.0%	0.0%	95.0%	95.0%	90.0%	0.0%	90.0%	0.0%

Production Rate (Jobs/year) 261,870

Emissions	Coating	VOC Generated (lbs)						VOC Controlled (lbs)					VOC Emitted (lbs)					VOC (lbs)	VOC (tons)
Coating Family	Gals	Booth - Formula	Booth - Analytical	observation	Flash-off zone	Bake Oven	Total	Booth-Formula	Booth-Analytical	observation	Flash-off zone	Bake Oven	Booth-Formula	Booth-Analytical	observation	Flash-off zone via RTO	Bake Oven via RTO	TOTAL	TOTAL
Liquid Primer NT (LFP 2000)	72,538	56,217	81,605	16,321	32,642	32,642	219,427	48,065	69,772	0	27,909	31,010	8,151	11,833	16,321	4,733	1,632	42,670	21.3
Liquid Primer T (LFP 2000M)	16,498	12,786	19,550	3,910	7,820	7,820	51,886	10,932	16,715	0	6,686	7,429	1,854	2,835	3,910	1,134	391	10,124	5.1
Monocoat (CSRC9517R)	39,804	38,113	57,169	11,434	22,868	22,868	152,450	32,586	48,879	0	19,552	21,724	5,526	8,289	11,434	3,316	1,143	29,709	14.9
TOTALS:													15,532	22,957	31,665	9,183	3,166	82,503	41.3

Notes:

1 - OSL based upon other facility experience and engineering estimates

2- Control Efficiency assumed to be 90% or 95% minimum per device

3- Coating Usage includes 100% tutone usage

4 - VOC Content from EDS/SDS Sheets

5- Production Rate assumed to apply to all coatings

Criteria Pollutant Emission Calculations **E-Coat**
FCA MAAP Project - Revised February 11, 2019

	Coating Usage	(lbs/gal)	TE	"OSL" % Carryover	
Coating Family	Gals/Vehicle	Formula	%	Tank	Bake Oven
Resin (Emulsion)	1.700	0.080	100.0%	15.0%	85.0%
Pigment (Paste)	0.200	0.540	100.0%	15.0%	85.0%

	Capture Efficiency (%)		Control Efficiency (%) RTO	
	Tank	Oven	Tank	Oven
New Paintshop				
Resin (Emulsion)	100%	100%	95.0%	95.0%
Pigment (Paste)	100%	100%	95.0%	95.0%

Production Rate (Jobs/year) 261,870

Emissions	Coating	VOC Generated (lbs)			VOC Controlled (lbs)		VOC Emitted (lbs)		VOC (lbs)	VOC (tons)
Coating Family	Gals	Tank	Bake Oven	Total	Tank	Bake Oven	Tank	Bake Oven via RTO	TOTAL	TOTAL
Resin (Emulsion)	445,179	5,342	30,272	35,614	5,075	28,759	267	1,514	1,781	0.9
Pigment (Paste)	52,374	4,242	24,040	28,282	4,030	22,838	212	1,202	1,414	0.7
TOTALS:							479	2,716	3,195	1.6

Notes:

1 - OSL taken from SHAP original estimates

2- Control Efficiency assumed to be 95% minimum

3- Coating Usage provided from paint operations

4 - VOC Content from EDS/SDS Sheets

Criteria Pollutant Emission Calculations **Sealer - updated**
FCA MAAP Project - Revised April, 2020

Source & Material	Coating Usage Gals/Vehicle	VOC (lbs/gal)1	TE %	% Emission Location Body Shop Area/ Paint Decks
Body				
Terokal 2400	0.100	0.000	100.0%	100.0%
Terostat 4510	0.147	0.000	100.0%	100.0%
Terostat 4000	0.098	0.004	100.0%	100.0%
Versilok Resin	0.048	0.000	100.0%	100.0%
Versilok Cure		0.000	100.0%	100.0%
Betamate	0.071	0.020	100.0%	100.0%
Spray Deadener	0.580	0.075	100.0%	100.0%
Paint				
Purfoam Catalyst	0.031	0.000013	100.0%	100.0%
Purfoam Polyol	0.490	0.000013	100.0%	100.0%
Henkel PV 904.2	1.400	0.100	100.0%	100.0%
Henkel PV 1035.1	0.250	0.090	100.0%	100.0%
Final Assembly				
Glass Bonding	0.143	0.090	100.0%	100.0%

Source	Capture Efficiency (%) Area/Deck	Control Efficiency (%) Area/Deck
Paint Shop	100%	0%
Body Shop Sealers	100%	0%

1 - VOC Content from JNAP 2017 VOC report or directly from EDS

Production Rate (Jobs/year): 261,870

Emissions

Material	Coating Gals	VOC Generated (lbs) Area/Deck	VOC Emitted (lbs) Area/Deck	VOC Emitted (tons/yr) Area/Deck
Terokal 2400	26,187	0	0	0.00
Terostat 4510	38,364	0	0	0.00
Terostat 4000	25,663	94	94	0.05
Versilok Resin	12,465	0	0	0.00
Versilok Cure	12,465	0	0	0.00
Betamate	18,488	370	370	0.18
Spray Deadener	151,885	11,391	11,391	5.70
Purfoam Catalyst	8,118	0.106	0.106	0.000
Purfoam Polyol	128,316	1.668	1.7	0.001
Henkel PV 904.2	366,618	36,662	36,662	18.33
Henkel PV 1035.1	65,468	5,892	5,892	2.95
Glass Bonding	37,447	3,370	3,370	1.69
TOTALS:	891,484	57,781	57,781	28.89

Criteria Pollutant Emission Calculations **Purge and Clean**
FCA MAAP Project - Revised February 11, 2019

	Material Usage	VOC (lbs/gal)	"OSL" % Carryover @100%TE			
Coating Family	Gallons Per veh[1]	Formula[2]	Booth[4]	"observation"	Flash-off	Bake Oven
Purge Gage for Primer/CC	0.204	7.11	40.0%	0.0%	0.0%	0.0%
WB Purge	0.104	0.04	40.0%	0.0%	0.0%	0.0%
Cleaning Solvents Topcoat[3]	0.200	5.000	100.0%	0.0%	0.0%	0.0%
Cleaning Solvents Primer[3]	0.008	7.000	100.0%	0.0%	0.0%	0.0%
Sealer Cleaner	0.010	7.240	100.0%	0.0%	0.0%	0.0%

	Capture Efficiency (%)				Control Efficiency (%) Concentrator/RTO			
New Paintshop	Booth	"observation"	Flash-off	Oven	Booth	"observation"	Flash-off	Oven
Purge Primer CC and WB	100%	0%	0%	0%	85.50%	0.0%	95.0%	95.0%
Cleaning Solvents Topcoat[3]	25%	0%	0%	0%	85.50%	0.0%	95.0%	95.0%
Cleaning Solvents Primer[3]	25%	0%	0%	0%	85.50%	0.0%	95.0%	95.0%
Sealer Cleaner	0%	0%	0%	0%	85.50%	0.0%	95.0%	95.0%

Production Rate (Jobs/year) 261,870

Emissions	Material	VOC Generated (lbs)					VOC Controlled (lbs)				VOC Emitted (lbs)				VOC (lbs)	VOC (tons)
Coating Family	Gals	Booth	"observation"	Flash-off	Bake Oven	Total	Booth	"observation"	Flash-off	Bake Oven	Booth	"observation"	Flash-off	Bake Oven via RTO	TOTAL	TOTAL
Purge Gage for Primer/CC	53,448	152,005	0	0	0	152,005	129,964	0	0	0	22,041	0	0	0	22,041	11.0
WB Purge	27,234	436	0	0	0	436	93	0	0	0	343	0	0	0	343	0.2
Cleaning Solvents Topcoat	52,374	261,870	0	0	0	261,870	55,975	0	0	0	205,895	0	0	0	205,895	102.9
Cleaning Solvents Primer	2,095	14,665	0	0	0	14,665	3,135	0	0	0	11,530	0	0	0	11,530	5.8
Sealer cleaner	2,619	18,959	0	0	0	18,959	0	0	0	0	18,959	0	0	0	18,959	9.5
TOTALS:						447,935	189,167				258,768	0	0	0	258,768	129.4

1 - Usage per vehicle from paint operations

2 - VOC content from EDS Information for WB Purge AP3320 - cleaning solvents from SHAP (3 cleaners) average VOC content extrapolated

3 - Assumes that 25% of the cleaning materials will be emitted in the booths and will be subject to controls - usage for topcoat from SHAP; usage for primer from Brampton

4 - Assumes 60% purge capture rate and 40% emitted in controlled portion of booth

Criteria Pollutant Emission Calculations **Repair Primer**
FCA MAAP Project - Revised February 11, 2019

	Coating Usage	VOC (lbs/gal)		B/O Split	
Coating Family	Gals/Vehicle1	Formula	Analytical	Booth	Bake Oven
Primer Repair Coating	0.0015	3.100	3.000	100.0%	0.0%

	Capture Efficiency (%)		Control Efficiency (%)	
	Booth	Oven	Booth	Oven
New Paintshop				
Primer Repair Coating	100%	100%	0.0%	0.0%
	100%	100%	0.0%	0.0%

Production Rate (Jobs/year) 261,870

Emissions	Coating	VOC Generated (lbs)			VOC Controlled (lbs)		VOC Emitted (lbs)			
Coating Family	Gals	Booth	Bake Oven	Total	Booth-Formula	Bake Oven	Booth-Formula	Bake Oven via RTO	TOTAL	TOTAL (TPY)
Primer Repair Coating	393	1,218	0	1,218	0	0	1,218	0	1,218	0.61
TOTALS:							1,218	0	1,218	0.61

1- Based upon JNAP 2017 Usage (0.00125) adjusted to 0.0015 gal/veh

Criteria Pollutant Emission Calculations
FCA MAAP Project - Revised February 11, 2019

Body Wipe

	Material Usage	VOC (lbs/gal)				
Coating Family	Lbs Per veh[1]	Formula	Booth	"observation"	Flash-off	Bake Oven
Solvent Wipe	0.25000	NA	100.0%	0.0%	0.0%	0.0%

	Capture Efficiency (%)				Control Efficiency (%)			
New Paintshop	Booth	"observation"	Flash-off	Oven	Booth	"observation"	Flash-off	Oven
Solvent Wipe	0%	100%	100%	100%	0.0%	0.0%	0.0%	0.0%

Production Rate (Jobs/year) 261,870

Emissions	Coating	VOC Generated (lbs)					VOC Controlled (lbs)				VOC Emitted (lbs)				VOC (lbs)	VOC (tons)
Coating Family	lbs	Booth	"observation"	Flash-off	Bake Oven	Total	Booth-Formula	"observation"	Flash-off	Bake Oven	Booth-Formula	"observation"	Flash-off	Bake Oven via RTO	TOTAL	TOTAL
Solvent Wipe	65,468	65,468	0	0	0	65,468	65,468	0	0	0	65,468	0	0	0	65,468	32.7
TOTALS:											65,468	0	0	0	65,468	32.7

1 - Usage per vehicle based upon JNAP Solvent Wipe usage per vehicle which is 0.12 lbs/veh (increased to 0.25 for additional primer application impact)

Criteria Pollutant Emission Calculations **Final Repair**
FCA MAAP Project - Revised February 11, 2019

	Coating Usage			VOC (lbs/gal)		B/O Split	
Coating Family	Gals/Vehicle[1,2]	Formula	Analytical	gal/gal	%	Booth	Bake Oven[3]
Repair Coatings	0.0015	4.800	4.800	0.59	100.0%	100.0%	0.0%

	Capture Efficiency (%)		Control Efficiency (%)	
	Booth	Oven	Booth	Oven
New Paintshop				
Repair Coatings	100%	100%	0.0%	0.0%
	100%	100%	0.0%	0.0%

roduction Rate (Jobs/year) 261,870

Emissions		VOC Generated (lbs)			VOC Controlled (lbs)		VOC Emitted (lbs)			
Coating Family	Gals	Booth	Bake Oven	Total	Booth-Analytical	Bake Oven	Booth-Analytical	Bake Oven	TOTAL	TOTAL
Repair Coatings	393	1,885	0	1,885	0	0	1,885	0	1,885	0.9
TOTALS:									1,885	0.9

1- Based upon JNAP 2017 Usage adjusted to 0.0015

2- Representative of two booths

3- There is no oven in Final Repair

Criteria Pollutant Emission Calculations **TANKS- Updated**
FCA MAAP Project - Revised April 2020

TANKS VOC EMISSION ESTIMATES					
		Annual Usage - gals	**gals/veh**	**lbs/yr (TANKS)[2]**	**Tons Per Year[1]**
15,000 Gal AST 1	Gasoline	1,191,508.5	4.55	1284.65	0.64
15,000 Gal AST 2	Gasoline	1,191,508.5	4.55	1284.65	0.64
6,000 Gal AST	Methanol	65,467.5	0.5	42.91	0.02
6,000 Gal AST	Methanol	65,467.5	0.5	42.91	0.02
			TOTAL		**1.33**

1 - Emissions adjusted for production level of 261,870 vehicles

2 - Emissions from gasoline tanks - working losses reduced by 90% pursuant to R336.1703

Criteria Pollutant Emission Calculations **Fuel Fill**
FCA MAAP Project - Revised February 11, 2019

GAS FILLING STATION	**GASOLINE ANTIFREEZE & DIESEL**			JNAP December (25,710 Built Units)
EMISSION ID	**EU-GASFILL**			
Material Description	**Emission Factor**	**USAGE (gal)[1]**	**lb VOC / U.M**	**LBs. VOC Emitted**
Gasoline		296,312		
Anti-freeze		42,714		
Gas Spillage Factor	0.000120			35.56
Gas Displacement Factor	0.001760			26.08
Gas ORVR Control	95.00%			61.63
Gas Tank Emissions				
Total Gasoline Emissions				
Diesel Spillage Factor	0.000120			
Diesel Displacement Factor	0.001760			
Total Diesel Emissions				
Antifreeze Spillage Factor	0.000120			5.13
Antifreeze Displacement Factor	0.0000176			0.75
Total Antifreeze Emissions				**5.88**
The RVP from 9/16 to 5/15 is 9.0 and RVP from May 16 to 9/15 is 7.4				
Emissions calculated using tanks version 4.0.9d			**Overall Total (lb)**	**67.51**
			Lbs/Unit (monthly avg)	**0.003**
Projected Annual Production[3]	261,870		**Projected tpy**	**0.34**

Notes:
1 - Based upon JNAP 2017 December Information in VOC Report
2 - Based upon JNAP Annual 2017 Information in annual VOC Report
3 - Projected Production Level of 262K

Criteria Pollutant Emission Calculations
FCA MAAP Project - Revised February 11, 2019

Washer Fluid

WINDSHIELD FILLING STATION	**WINDSHIELD**		**17-Dec**	
Material Description	**Emission Factor**	**USAGE(gallons)[1]**	**lb VOC / U.M**	**LBs. VOC Emitted**
Washer Fluid		13,852	7.00	
Windshield Spillage Factor	0.000120			11.64
Windshield Displacement Factor	0.000494			47.90
Total Windshield Fluid Emissions		**Overall Total (lb)**		**59.54**

		Lbs/Unit (monthly avg)[1]	**0.002**
Projected Annual Production	261,870	**Projected tpy**	**0.30**

Notes:
1 - Based upon JNAP 2017 December Information in VOC Report
2 - Based upon JNAP Annual 2017 Information in annual VOC Report

Criteria Pollutant Emission Calculations
FCA MAAP/DAC - Mack Project - Revised April 2020

Natural Gas Updated

Emission Unit/Group Identification	Control Equipment Description / Emission Unit Description	Source Capacity/ Rating (MMBtu/hr)[1]	Source Operating Rate (MMcf/yr)	Annual Source Operating Basis[4]	Potential Hours of Operation	CRITERIA POLLUTANTS										GREENHOUSE GASES[5]			
						PM-10		NO_x		VOCs		CO		SO2		CO_2	CH_4	N_2O	CO_2e
						EF	Potential	EF	Potential	EF	Potential	EF	Potential	EF	Potential	EF	EF	EF	Potential
						lb/mmscf	(tpy)	lb/mmscf	(tpy)	lb/mmscf	(tpy)	lb/mmscf	(tpy)	lb/mmscf	(tpy)	lbs/mmcf	lbs/mmcf	lbs/mmcf	(tpy)
																GWP Pot	25	298	
Paint Shop	**Combustion Equipment**																		
RTO	Thermal Oxidizer	16.5	135.9	94%	8,760	7.6	0.52	50	3.40	5.5	0.37	84	5.71	0.6	0.04	116,888	2.2	0.22	7,948.84
Conc Desorp	Desorption Heater	5.0	41.17	94%	8,760	7.6	0.16	36	0.74	5.5	0.11	84	1.73	0.6	0.01	116,888	2.2	0.22	2,408.74
HWGs 1-9[6]	Hot Water Generator	45.0	197.1	50%	8,760	7.6	0.75	36	3.55	5.5	0.54	84	8.28	0.6	0.06	116,888	2.2	0.22	11,531.19
Paint -ASH	Air Supply Houses	149.5	432.2	33%	8,760	7.6	0.03	36	7.78	5.5	1.19	84	18.15	0.6	0.13	116,888	2.2	0.22	25,284.06
Paint - Space heat	Space Heat[8]	6.5	18.8	33%	8,760	7.6	0.07	36	0.34	5.5	0.05	84	0.79	0.6	0.01	116,888	2.2	0.22	1,099.31
Ovens[6]	Ovens (lowered by 20, no sealer oven	154.0	674.5	50%	8760	7.6	0.05	36	12.14	5.5	1.85	84	28.33	0.6	0.20	116,888	2.2	0.22	39,462.31
Ovens	Ovens w/separate exhaust	24.0	105.1	50%	8760	7.6	0.40	36	1.89	5.5	0.29	84	4.42	0.6	0.03	116,888	2.2	0.22	6,149.97
New Mack 1 & 2[7]	Miscellaneous (AHU/ASH)	43.1	124.6	33%	8760	7.6	0.01	36	2.24	5.5	0.34	84	5.23	0.6	0.04	116,888	2.2	0.22	7,289.25
New Mack 1 & 2[7]	Space Heat[8]	31.6	91.3	33%	8760	7.6	0.35	36	1.64	5.5	0.25	84	3.84	0.6	0.03	116,888	2.2	0.22	5,344.32
	New Plant - (tpy)	475.2	1,821				**2.33**		**33.72**		**5.01**		**76.47**		**0.55**				**106,518**

Notes
Updates in blue
1 - Based upon total heat input information from ME on 12/19/18
2- NOx Emission Factors for HWGs based upon most recent manufacturer's data
3- Air Supply Houses, Air Makeup Units, Ovens and Space Heaters determined based upon installation total of 408.7 MMBtu/hr
4 - Based on information from heat load estimates
5 - GHG calculation based on GWP's of CO2=1, CH4=25, N2O = 298.
6 - Reduced oven heat input by 20 MMBtu/hr for sealer oven and reduced HWGs to 9 units and 45 MMBtu/hr
7 - Updated Mack 1 and 2 information
8 - Space Heaters PM emissions calculation includes no filter removal credit

Criteria Pollutant Emission Calculations **PM Emissions Updated**
FCA MAAP/DAC - Mack Project - Revised April 2020

Particulate Matter (all PM assumed to be PM-10 and PM2.5)

Combustion Equipment[1]

	MMBtu/hr	Fuel		Tons/yr
RTO	16.5	Nat Gas		0.52
Conc Desorp	5	Nat Gas		0.16
HWGs	45	Nat Gas		0.75
Paint ASH/Space heat	156	Nat Gas		0.10
Ovens	154	Nat Gas		0.05
Ovens - separate exhaust	24	Nat Gas		0.40
Mack 1&2 ASH/Space heat	74.7	Nat Gas		0.36
			Subtotal	**2.33**

Coating Equipment

	# of EU	gr/dscf	cfm	lbs/hr/line	hrs/yr	Tons/yr
Primer Obs (1 Line)[2]	1	0.0004	36,000	0.12	8,760	**0.54**
Basecoat Obs (2 lines)[2]	2	0.0004	25,000	0.09	8,760	**0.75**
Clearcoat Obs (2 lines)[2]	2	0.00059	31,250	0.16	8,760	**1.38**
					Subtotal	**2.68**

Basecoat/Clearcoat/Primer - booths routed to concentrator then to an RTO[3]

		Conversion to lbs/hr				
(grains/1000 cf)	apply 98% for baghouse (filter box) (grns/1000 cf)	Booth Air Exhaust to Concentrator (cfm)	grains/min	lbs/min (7000 grains/lb)	lbs/hr
1.5	0.03	161487	4.8	0.0007	0.042
	0.042 lbs/hr	8760 hrs/yr	2000 lbs/ton		0.18 tons/yr
				Coating Subtotal	**0.18**

Sanding/Repair

	# of EU	lbs/hr/EU	hrs/yr	lbs/yr	tpy
Paintspot Repair Total PM (lb/hr/ station)	3	0.026	8760	683	**0.34**

(repair estimates based upon stack test EFs)

5.67 **Tons/year PM2.5**
(Includes 0.137 tpy from emergency engines)

1 - Combustion Emissions based upon AP-42 factors and annual utilization heat input capacity for each type of combustion unit.

2 - Observation zone PM emission rates from 2014 stack test on similar observation zone and booth.

3 - Grains/dscf used for coating Booths based upon 1.5 grain/1000 cf with 98% additional filtration/controls for recirulation - assumes all PM emitted makes it through the RTO

Criteria Pollutant Emission Calculations **Emerg Eng Updated**
FCA MAAP/DAC - Mack Project - Revised April 2020

Emissions Unit	Engine kW Rating	Engine HP Rating	Engine Efficiency (%)	Calculated (MMBtu/Hr)	Annual Operating Hours	Emission Factors (lb/MMBtu) Unless Noted						
						SO_2	NOx (gm/hp-hr)	CO (gm/hp-hr)	PM-10, Primary	PM-2.5, Primary	VOC (gm-hp-hr)	GHG - lbs/MMBtu
Emergency Generator (2 units)		770.0	35	5.600	500.0	0.000588	2.00	4.00	0.0095	0.0194	0.500	110.0
				Total Pounds (annual)		1.65	1,696.04	3,392.07	26.60	54.35	424.01	308,000.66
				Single Engine	TPY	0.0008	0.85	1.70	0.013	0.027	0.21	154.00
			No. Engines	2	TPY	0.0016	1.70	3.39	0.027	0.054	0.42	308.00

Emissions Unit	Engine kW Rating	Engine HP Rating	Engine Efficiency (%)	Calculated (MMBtu/Hr)	Annual Operating Hours	Emission Factors (lb/MMBtu) Unless Noted						
						SO_2	NOx (gm/hp-hr)	CO (gm/hp-hr)	PM-10, Primary	PM-2.5, Primary	VOC (gm-hp-hr)	GHG - lbs/MMBtu
Emergency Generator (2 units)		350.0	35	2.545	500.0	0.000588	2.00	4.00	0.0095	0.0194	1.000	110.0
				Total Pounds (annual)		0.75	770.93	1,541.85	12.09	24.70	385.46	140,000
				Single Engine	TPY	0.0004	0.39	0.77	0.006	0.012	0.19	70.00
			No. Engines	2	TPY	0.0007	0.77	1.54	0.012	0.025	0.39	210.00

VOC emission factor different for smaller engines due to LAER

Emissions Unit	Engine	Number of Engines	Annual Operation	Emission Factors (g/HP-hr) Manufacturer cert, spec sheet or SCC factor					Annual Emissions (tons/yr)				
	HP Rating		(hrs)	SO_2	NOx	CO	PM	VOC	SO_2	NOx	CO	PM	VOC
Diesel Fired Emerg. Fire Pump Engines	350	2	500	0.004	3.00	2.6	0.150	0.10	0.002	1.157	1.003	0.058	0.039

1 Mechanical horsepower to BTU per hour: 2544.43 BTU/hr

TOTAL VOC	0.848 tpy
TOTAL PM2.5	0.137 tpy
TOTAL NOx	3.62 tpy
TOTAL SO2	0.004 tpy
TOTAL CO	5.94 tpy
TOTAL GHG	518.00 tpy

Blue text indicates April 2020 update

1) Basis
   a) The emissions units on this sheet are fueled by Natural Gas and/or diesel.
      Emissions estimated based on NSPS, or emission factors for combustion of natural gas/diesel (SCC Code 2-02-002-02) per Reference c).
   b) No startup, shutdown or malfunctions.
   c) The SCC code is 2-02-002-02 for Natural Gas burning industrial reciprocating internal combustion engines.
   d) Natural gas % ash and %S content are negligible per Reference a).
   e) HP and annual operating hours per Reference b).
   f) Engine Efficiency (%) represents an engineering estimate - 35%
   g) NOx and CO emission factor from applicable NSPS
2) Equations
   a) Calculated Engine Btu/Hr = Total Horsepower Rating x 2,545.46 x 1/(Engine Efficiency (%)/100)
   b) Natural Gas Usage (MMCF) = Calculated Engine Btu/Hr x Annual Operating Hours x (1/Natural Gas Heat Content (Btu/CF)) x (1 MMCF/1,000,000 CF)

APPENDIX C

TOXIC AIR CONTAMINANT and NO_2 – IMPACT SUMMARY

Table C-1. Exhaust Stack Parameters
FCA Detroit Assembly Complex Mack - April 2020

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Stack Height (ft)	Temperature (°F)	Exit Velocity (fps)	Stack Diameter (ft)	Flow Rate (acfm)
New Point Sources - DACM								
PUMP2	MAP - PUMP2	337,049	4,694,745	15	300	81.76	0.62	1,505
PUMP3	MAP - PUMP3	337,044	4,694,747	15	300	81.76	0.62	1,505
PRMOBS	MAP Prime Obs	337,074	4,694,115	120	75	48.93	3.67	31,000
C1BCOBS	MAP Color 1 BC Obs	337,095	4,694,118	120	75	47.16	3.00	20,000
C1CCOBS	MAP Color 1 CC Obs	337,059	4,694,191	120	75	50.13	3.33	26,251
C2BCOBS	MAP Color 2 BC Obs	337,104	4,694,123	120	75	47.16	3.00	20,000
C2CCOBS	MAP Color 2 CC Obs	337,067	4,694,195	120	75	50.13	3.33	26,251
BOOTHCONC	MAP Booth Conc	337,043	4,694,169	130	90	48.83	7.00	112,750
RTO	MAP RTO	337,083	4,694,225	130	260	48.48	5.67	73,367
RPRCS	MAP Rapid Reprocess	337,049	4,694,209	120	70	41.18	6.50	81,995
SPOTPRM	MAP Spot Prime	337,103	4,694,053	120	70	40.79	4.17	33,374
HWG1	MAP HWG1	336,953	4,694,228	15	200	24.58	1.17	1,577
HWG2	MAP HWG2	336,953	4,694,227	15	200	24.58	1.17	1,577
HWG3	MAP HWG3	336,954	4,694,226	15	200	24.58	1.17	1,577
HWG4	MAP HWG4	337,007	4,694,118	15	200	24.58	1.17	1,577
HWG5	MAP HWG5	337,008	4,694,116	15	200	24.58	1.17	1,577
HWG6	MAP HWG6	337,123	4,694,025	90	200	24.58	1.17	1,577
HWG7	MAP HWG7	337,125	4,694,026	90	200	24.58	1.17	1,577
HWG8	MAP HWG8	337,126	4,694,026	90	200	24.58	1.17	1,577
HWG9	MAP HWG9	337,128	4,694,027	90	200	24.58	1.17	1,577
GEN1A	MAP 350 hp NG Generator	336,975	4,694,625	10	200	170.47	0.62	3,138
GEN1B	MAP 350 hp NG Generator	337,137	4,694,260	10	200	170.47	0.62	3,138
GEN2	MAP 770 hp NG Generator	337,149	4,694,065	10	200	170.47	0.62	3,138
GEN3	MAP 770 hp NG Generator	337,096	4,694,010	10	200	170.47	0.62	3,138
PRMHT1	MAP Primer Oven 1 Heater Box	337,035	4,694,207	120	287	43.96	1.00	2,072
PRMHT2	MAP Primer Oven 2 Heater Box	337,043	4,694,211	120	287	43.96	1.00	2,072
C1OVHT	MAP Color 1 Oven Heater Box	337,030	4,694,170	120	282	53.22	0.83	1,728
C2OVHT	MAP Color 2 Oven Heater Box	337,038	4,694,174	120	282	53.22	0.83	1,728
Existing Point Sources - DACM								
PUMP1	MAP - PUMP1	337,270	4,693,960	15	300	81.76	0.62	1,505
Nearby New Process Point Sources -FCA JNAP (Tutone)								
C12TTRTO	JNAP Color 1 Color 2 and TT Booth RTO Exhaust Stack	337,867	4,692,892	113	300	70.32	6.50	140,000
TT2	JNAP TT CC obs	337,896	4,692,996	113	70	18.08	9.00	69,000
TT1	JNAP TT BC obs	337,928	4,693,011	113	70	21.05	10.00	99,200
TTCONC	JNAP Concentrator exhaust for tutone line	337,843	4,692,879	113	90	48.00	7.83	95,500
TTOVRTO	Tutone oven RTO	337,819	4,692,954	70	300	40.00	2.00	7,540
RR1	Rapid Reprocess 1	337,758	4,692,884	70	75	56.02	5.00	66,000
RR2	Rapid reprocess 2	337,746	4,692,878	70	75	56.02	5.00	66,000
Nearby Existing Point Sources - FCA JNAP								
ECRTO1	JNAP Ecoat RTO 1	337,906	4,693,057	69	542	130.36	1.30	10,380
ECRTO2	JNAP Ecoat RTO 2	337,895	4,693,052	69	542	29.78	3.30	15,282
L1BC1BTH	Line one Basecoat booth	337,968	4,693,034	91	70	32.68	10.00	154,000
L2BC1BTH	Line 2 BC Booth	337,977	4,693,015	91	70	32.68	10.00	154,000
L3BC1BTH	Line 3 BC Booth exhaust	337,986	4,692,992	125	70	35.44	10.00	167,000
L1CCBTH	line 1 CC booth exhaust	337,867	4,692,983	91	70	32.75	9.00	125,000
LINE2CCBTH	Line 2 CC Booth Exhaust	337,875	4,692,963	91	70	32.75	9.00	125,000
LINE3CCBTH	Line 3 CC Booth exhaust	337,882	4,692,943	125	70	32.89	10.00	155,000
C1CONC	Color 1 concentrator exhaust	337,873	4,692,895	113	90	40.00	7.33	101,369
C2CONC	JNAP Existing Color 2 Concentrator	337,886	4,692,900	113	90	40.00	7.33	101,369
C3CONC	Color 3 booth concentrator exhaust	337,830	4,692,872	113	90	40.00	9.00	152,681
C1OVRTO	JNAP Color 1 Oven RTO	337,811	4,692,944	91	798	92.51	2.20	21,102

Table C-1. Exhaust Stack Parameters
FCA Detroit Assembly Complex Mack - April 2020

Source ID	Source Description	Easting (X) (m)	Northing (Y) (m)	Stack Height (ft)	Temperature (°F)	Exit Velocity (fps)	Stack Diameter (ft)	Flow Rate (acfm)
Nearby Existing Point Sources - FCA JNAP (Continued)								
C2OVRTO	JNAP Color 2 Oven RTO	337,817	4,692,933	94	798	92.51	2.20	21,100
C3OVRTO	JNAP Color 3 Oven RTO	337,828	4,692,918	125	798	35.89	3.10	16,253
C3BTRTO	Color 3 Booth RTO	337,819	4,692,868	113	600	25.76	4.59	25,611
JANPPWDR	JNAP powder Antichip Oven	337,766	4,693,024	87	80	34.63	7.00	79,959
N2155_1	FCA JNAP EUBOILER4	338,014	4,693,176	100	100	164.04	4.00	123,685
N2155_2	FCA JNAP EUBOILER3	338,020	4,693,161	75	100	164.04	4.00	123,685
N2155_4	FCA JNAP EUBOILER2	338,018	4,693,166	75	100	164.04	4.00	123,685
N2155_5	FCA JNAP EUBOILER1	338,016	4,693,171	75	100	164.04	4.00	123,685
LOWBAKE	Composite Stack of 5 low bake repair stations	337,838	4,693,211	58	70	40.00	2.83	15,132
JEFFPW	JNAP Emergency Fire Pump West	337,524	4,693,316	16	300	40.00	0.75	1,060
JEFFPE	JNAP Emergency Fire Pump East	338,427	4,693,141	16	300	40.00	0.75	1,060
Nearby Sources - EGLE Provided Off-Site								
A7809	U S STEEL GREAT LAKES WORKS	326,000	4,683,000	76	240	39.04	7.62	106,944
A9831	MARATHON PETROLEUM COMPANY LP	322,000	4,683,150	133	476	20.34	4.44	18,875
B2169	CARMEUSE LIME Inc, RIVER ROUGE OPERATION	324,525	4,682,560	71	450	4.79	23.80	127,859
B2810	DTE Electric Company - River Rouge Power Plant	325,800	4,682,000	425	320	524.46	12.83	4,068,238
N6631	DEARBORN INDUSTRIAL GENERATION	322,600	4,685,595	60	1073	482.94	17.75	7,170,184
P0408	EES COKE BATTERY LLC	326,126	4,683,543	187	783	85.63	17.41	1,222,871
B2814	DETROIT THERMAL BEACON HEATING PLANT	331,560	4,689,140	250	415	75.30	10.00	354,859
M4148	DETROIT RENEWABLE POWER, LLC	331,054	4,692,742	337	312	136.80	7.58	370,728
B3567	SAINT MARY'S CEMENT	323,850	4,683,450	40	70	32.81	1.000	1,546
New Area Sources DACM								
PSROOF	Mack Assembly PS PH Vents	na	na	na	na	na	na	na
MAEP1NG[1]	New MAEP1 NG Combustion	na	na	na	na	na	na	na
MAEP2NG[1]	New MAEP2 NG Combustion	na	na	na	na	na	na	na
GASVENT1	Area source representing the vent on gasoline storage tank 1	na	na	na	na	na	na	na
GASVENT2	Area source representing the vent on gasoline storage tank 2	na	na	na	na	na	na	na
WWFVENT1	Area source representing the vent on the windshield Washer fluid tank 1	na	na	na	na	na	na	na
WWFVENT2	Area source representing the vent on the windshield Washer fluid tank 2	na	na	na	na	na	na	na
Existing Area Sources DACM								
MAEP1NGE	Existing MAEP1 NG Combustion	na	na	na	na	na	na	na
MAEP2NGE	Existing MAEP2 NG Combustion	na	na	na	na	na	na	na
New Nearby Aera Sources - FCA JNAP (Tutone)		na	na	na	na	na	na	na
TTNG	Various NG combustion sources in paint associated with TT	na	na	na	na	na	na	na
RRADD	Rapid reprocess building addition ASH	na	na	na	na	na	na	na
CTVVNG	CTVV building addition NG combustion	na	na	na	na	na	na	na
Existing Nearby Existing Sources - FCA JNAP								
N2155_7	Area Source representing EU Heaters	na	na	na	na	na	na	na

Table C-2. TAC Emission Calculations from E-coat Materials.
FCA Detroit Assembly Complex Mack - April 2020

		Ecoat Resin	Ecoat Paste				
		E6480 ED7100	E6481 ED7100				
		E-COAT		Max Hourly		Max Hourly - Annual Average	
CAS	Chemical	E-Coat Resin (% by wt.)	E-Coat Pigment (% by wt.)	Conc (lb/hr)	RTO (lb/hr)	Conc (lb/hr) - an avg	RTO (lb/hr) - an avg
107-98-2	Propylenegylcol monomethyl ether	0.2	0.8	0.000	0.149	0.000	0.072
111-76-2	2-Butoxy Ethanol	0.2		0.000	0.093	0.000	0.045
770-35-4	Phenoxyisopropanol	0.5		0.000	0.232	0.000	0.112
5131-66-8	n-Butoxypropanol		3.8	0.000	0.266	0.000	0.128
15821-83-7	1-Propanol-2-butoxy		0.2	0.000	0.014	0.000	0.007
	Weight per Gallon:	8.80	11.28				
	Amount per Veh (gal/veh)	1.7	0.2				

Max Production	261,870	veh/yr
Max Line Speed	62	veh/hr
Fraction From Tank	0.15	lb/lb
Fraction From Oven	0.85	lb/lb
Concentrator Capture	1	lb/lb
RTO Destruction	0.95	lb/lb

Example Calculation: n-Butoxypropanol - Maximum lb/hr

RTO (tank and oven): [(0.2 gal/veh)*(11.28 lb/gal)*(62 veh/hr)*(0.038)*(0.15)*(1.0) +
(0.2 gal/veh)*(11.28 lb/gal)*(62 veh/hr)*(0.038)*(0.85)](1-0.95) = 0.266 lb/hr

Note: The e-coat exhaust is designed such that both the booth and the oven exhaust go directly to the RTO. Setting the value for the capture of the concentrator in the above equations to 1.0 accounts for all emissions being routed through the RTO.

Table C-3. TAC Emission Calculations from Liquid Primer Materials.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Pollutant	LFP2000 Primer	LFP200M Roof Prime Tutone	CSRC9571R Roof Color	Max Hourly			Max Hourly - Annual Average		
		Percent by weight			Observation Emissions	Concentrator Emissions	Oxidizer Emissions	Observation Emissions	Concentrator Emissions	Oxidizer Emissions
	Color Code:	GTW	JWD	GW7						
	Supplier Code:	HWB204622	HWB18JWD	HWB90394						
					(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
50-00-0	Formaldehyde (from Resin)	0.08					0.0042			0.00201
64-17-5	Ethanol	0.70	0.70		0.0803	0.0830	0.0454	0.0387	0.04003	0.02189
67-63-0	Isopropyl Alcohol		0.40	1.20	0.1597	0.1650	0.0902	0.0770	0.07955	0.04350
71-23-8	Propyl Alcohol	1.30	1.20		0.1440	0.1488	0.0814	0.0694	0.07175	0.03923
71-36-3	1-Butanol	1.00	0.90		0.1108	0.1145	0.0626	0.0534	0.05519	0.03018
78-83-1	Isobutanol			0.50	0.0665	0.0687	0.0376	0.0321	0.03315	0.01812
95-63-6	1,2,4-Trimethyl Benzene	3.20	3.00	4.10	0.5455	0.5637	0.3082	0.2630	0.27180	0.14861
98-82-8	Cumene	0.20	0.10	0.20	0.0266	0.0275	0.0150	0.0128	0.01326	0.00725
100-41-4	Ethylbenzene	0.60	0.40	0.10	0.0665	0.0687	0.0376	0.0320	0.03311	0.01811
107-98-2	Propylene Glycol Monomethyl Ether			4.10	0.5455	0.5637	0.3082	0.2630	0.27180	0.14861
108-65-6	1-Methoxy-2-propyl Acetate			11.40	1.5168	1.5674	0.8570	0.7314	0.75573	0.41322
108-87-2	Methylcyclohexane		0.30		0.0344	0.0356	0.0195	0.0166	0.01715	0.00938
123-86-4	N-Butyl Acetate	5.20	4.20	3.30	0.5760	0.5952	0.3254	0.2777	0.28699	0.15692
142-82-5	Heptane		0.60		0.0689	0.0712	0.0389	0.0332	0.03431	0.01876
624-54-4	Pentyl Propionate			6.60	0.8782	0.9074	0.4962	0.4234	0.43753	0.23923
763-69-9	Ethyl-3-ethoxypropionate		4.60		0.5279	0.5455	0.2983	0.2545	0.26303	0.14382
1330-20-7	Xylene	3.80	2.70	0.80	0.4209	0.4350	0.2378	0.2030	0.20972	0.11467
34590-94-8	Dipropyl. Gly. Mono-Methyl Ether	3.80	2.00	2.90	0.4209	0.4350	0.2378	0.2030	0.20972	0.11467
64741-66-8	Petroleum Distillates		0.60		0.0689	0.0712	0.0389	0.0332	0.03431	0.01876
64742-49-0	Naphtha, hydrotreated light		0.60		0.0689	0.0712	0.0389	0.0332	0.03431	0.01876
64742-95-6	SC 100 / Aromatic 100	6.30	6.00	8.10	1.0778	1.1137	0.6089	0.5196	0.53697	0.29360
70657-70-4	2-Methoxy-1-propyl Acetate			0.10	0.0133	0.0137	0.0075	0.0064	0.00663	0.00362
	Weight per Gallon (lb/gal):	8.60	8.91	10.33						

Max Production	261,870	veh/yr
Max Line Speed	62	veh/hr
Primer Application	0.277	gal/veh
Primer TE	0.75	(a)
OSL test - Booth, Flash	0.7	(b)
OSL test - Observation	0.1	(c)
OSL test - Oven	0.2	(d)
Fraction to Obs Stack	0.075	(a)*(c)
Fraction to Concentrator	0.775	(1-a)+(a*b)
Fraction Direct to RTO	0.15	(a)*(d)
Total	1.00	
Concentrator Capture	0.9	lb/lb
RTO Destruction Efficiency	0.95	lb/lb

Example Calculation: Emissions of Isobutanol (max hourly)

Observation Stack:
(0.50/100)*(10.33 lb/gal)*(48 veh/hr)*(0.277 gal/vel)*(0.075) = 0.0665 lb/hr

Concentrator Stack:
(0.50/100)*(10.33 lb/gal)*(48 veh/hr)*(0.277 gal/vel)*(0.775)*(1-0.90) = 0.0687 lb/hr

RTO Stack:
[(0.50/100)*(10.33 lb/gal)*(48 veh/hr)*(0.277 gal/vel)*(0.775)*(0.90)]*(1-0.95) +
[(0.50/100)*(10.33 lb/gal)*(48 veh/hr)*(0.277 gal/vel)*(0.15)]*(1-0.95) = 0.0376 lb/hr

Table C-4. TAC Emission Calculations from Solvent Wipe Process.
FCA Detroit Assembly Complex Mack - April 2020

			Max hourly Emissions Rate	Max hourly Emission Rate - Annual
CAS	**Chemical**	**Solvent Wipe (% by wt.)**	**Penthouse (lb/hr)**	**Penthouse (lb/hr)**
67-63-0	Isopropyl Alcohol	100%	31.00	14.947

Max Production	261,870	veh/yr
Max Line Speed	62	veh/hr
Total VOC from wipe per vehicle	0.5	lb/veh

Table C-5. TAC Emission Calculations from Water-Based Basecoat Materials.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Pollutant	Rugged Brown	Ivory Tricoat	Bright White	Billet Silver	Maximum Steel	Diamond Black Crystal	Blue Streak	Granite Crystal	Patriot Blue	Flame Red	Velvet Red	Black Forest	Max Hourly			Max Hourly - Annual Average		
		Percent by weight												Observation Emissions	Concentrator Emissions	Oxidizer Emissions	Observation Emissions	Concentrator Emissions	Oxidizer Emissions
	Color Code:	GTW	JWD	GW7	JSC	KAR	KXJ	KCL	LAU	RPX	PR4	NRV	KGZ						
	Supplier Code:	HWB204622	HWB18JWD	HWB90394	HWB301191	HWB301201	HWB17KXJ	HWB196273	HWB301220	HWB17RPX	HWB18PR4	HWB701715	HWB9828						
														(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
50-00-0	Formaldehyde (from Resin) [1]	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65			0.1100			0.05835
57-55-6	Propylene Glycol			2.29							2.7			0.8712	0.9255	0.5110	0.4621	0.49086	0.27102
64-17-5	Ethanol		0.10		0.12				0.11				0.11	0.0355	0.0377	0.0208	0.0188	0.01999	0.01104
67-56-1	Methyl Alcohol		0.20		0.11	0.14	0.1	0.12	0.13	0.1	0.1		0.13	0.0586	0.0622	0.0343	0.0311	0.03299	0.01822
78-83-1	Isobutanol				0.45				0.28					0.1331	0.1414	0.0781	0.0706	0.07498	0.04140
95-63-6	1,2,4-Trimethyl Benzene				0.11									0.0325	0.0346	0.0191	0.0173	0.01833	0.01012
107-21-1	Ethylene Glycol													0.0000	0.0000	0.0000	0.0000	0.00000	0.00000
107-98-2	Propylene Glycol Monomethyl Ether			0.66		0.47	1.2	0.34	0.55	1.4	0.8		0.93	0.4062	0.4315	0.2383	0.2154	0.22886	0.12636
108-01-0	Dimethylaminoethanol		0.50	0.34	0.74	0.37	0.5	0.86	0.58	0.4	0.5	0.31	0.78	0.2481	0.2636	0.1455	0.1316	0.13979	0.07718
108-10-1	Methyl Isobutyl Ketone				0.18				0.10				0.12	0.0532	0.0565	0.0312	0.0282	0.02999	0.01656
111-76-2	2-Butoxy Ethanol		0.10		0.84	0.16		0.22	0.57	0.1	0.2	0.1		0.2484	0.2639	0.1457	0.1318	0.13996	0.07728
112-25-4	Ethylene Glycol Monohexyl Ether				0.15									0.0444	0.0471	0.0260	0.0235	0.02499	0.01380
112-34-5	2-(2-Butoxyethoxy)ethanol			1.75		0.7	1.8		0.63	1.7	2.1	0.10	1.14	0.6776	0.7198	0.3974	0.3594	0.38178	0.21079
872-50-4	N-Methyl-2-Pyrrolidone			0.24							0.3			0.0968	0.1028	0.0568	0.0513	0.05454	0.03011
1569-01-3	Propylene Glycol Monopropyl Ether				0.23	0.38	1.1	0.11	0.48	0.5			0.85	0.3105	0.3298	0.1821	0.1647	0.17493	0.09659
5131-66-8	1-Butoxy-2-Propanol	25.00	10.50	6.94	9.38	10.53	9.2	8.75	9.29	7.9	8.1	9.21	9.44	7.0646	7.5048	4.1436	3.7469	3.98033	2.19769
15821-83-7	1-Propanol-2-Butoxy		0.5		0.48	0.11	0.5		0.47	0.4	0.4	0.47	0.48	0.1464	0.1555	0.0859	0.0776	0.08248	0.04554
25322-69-4	Propane-1,2-diol, propoxylated	5												1.4129	1.5010	0.8287	0.7494	0.79607	0.43954
34590-94-8	Dipropyl. Gly. Mono-Methyl Ether	3.00	2.20	0.70	1.84	2.12		1.75	1.95	1.7			1.33	0.8477	0.9006	0.4972	0.4496	0.47764	0.26372
64741-65-7	Petroleum Distillates	3.00	2.20	2.59	1.77	2.85	3.2	2.85	2.62	2.3	3.1	2.15	2.73	1.0003	1.0626	0.5867	0.5305	0.56358	0.31117
64742-95-6	SC 100 / Aromatic 100				0.28			0.11	0.17					0.0828	0.0880	0.0486	0.0439	0.04665	0.02576
	Weight per Gallon (lb/gal):	8.60	8.91	10.33	9.00	8.70	8.59	8.78	8.69	8.83	9.82	8.68	8.65						

Notes: 1 - Formaldehyde may be emitted from topcoat during the curing of melamine resin in the ovens. To account for an annual average production of formaldehyde, the weighted average amount of resin was used, taking into account the expect color speciation, and conversion of 5% of the resin to formaldehyde.

Max Production	288,057	veh/yr
Max Line Speed	62	veh/hr
BC Application	0.731	gal/veh
BC TE	0.725	(a)
OSL test - Booth, Flash	0.683	(b)
OSL test - Observation	0.1	(c)
OSL test - Oven	0.217	(d)
Fraction to Observation	0.0725	(a)*(c)
Fraction to Concentrator	0.7702	(1-a)+(a*b)
Fraction Direct to RTO	0.1573	(a)*(d)
Total	1.00	
Concentrator Capture	0.9	lb/lb
RTO Destruction Efficiency	0.95	lb/lb

Example Calculation: Emissions of Isobutanol

(0.45/100)*(9.0 lb/gal)*(48 veh/hr)*(0.731 gal/vel)=	1.84	lb/hr used
(1.422 lb/hr)(0.0725) =	0.1331	lb/hr emitted BC Observation
(1.42 lb/hr)*(0.7702)*(1-0.90) =	0.1414	lb/hr emitted Concentrator
[(1.42 lb/hr)*(0.7702)*(0.90) + (1.42)*(0.1573)]*(1-0.95) =	0.0781	lb/hr emitted RTO

Table C-6. TAC Emission Calculations from Clearcoat Materials.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Clearcoat HCNCTXAR Clear Comp A (% by wt.)	Clearcoat HCNCTXBR Clear Comp B (% by wt.)	Max Hourly Observation (lb/hr)	Max Hourly Concentrator (lb/hr)	Max Hourly Oxidizer (lb/hr)	Max Hourly - Annual Average Observation (lb/hr)	Max Hourly - Annual Average Concentrator (lb/hr)	Max Hourly - Annual Average Oxidizer (lb/hr)
50-00-0	Formaldehyde (from Resin)[1]	1.05%		0.00	0.000	0.081	0.00	0.000	0.043
64-17-5	Ethanol		0.40%	0.092	0.058	0.035	0.049	0.031	0.0187
67-64-1	Acetone	1.80%		0.435	0.276	0.167	0.231	0.147	0.0884
71-23-8	Propyl Alcohol[2]		0.70%	0.161	0.102	0.062	0.085	0.054	0.0327
71-36-3	Butan-1-ol			0.000	0.000	0.000	0.000	0.000	0.0000
71-41-0	Amyl Alcohol		3.10%	0.713	0.453	0.273	0.378	0.240	0.1448
78-83-1	Isobutanol[3]	3.60%		0.871	0.553	0.333	0.462	0.293	0.1768
108-10-1	Methyl Isobutyl Ketone		3.10%	0.713	0.453	0.273	0.378	0.240	0.1448
108-21-4	Isopropyl Acetate		7.70%	1.772	1.125	0.678	0.940	0.597	0.3597
112-07-2	Ethylene Glycol Butyl Ether	0.09%		0.022	0.014	0.008	0.012	0.007	0.0044
123-86-4	n-Butyl Acetate		13.70%	3.153	2.001	1.207	1.672	1.061	0.6401
137-32-6	2-Methylbutan-1-ol		1.70%	0.391	0.248	0.150	0.207	0.132	0.0794
624-54-4	Pentyl Propionate	22.60%	12.80%	8.414	5.341	3.220	4.462	2.833	1.7081
763-69-9	Ethyl 3-Ethoxypropanoate	11.48%		2.777	1.763	1.063	1.473	0.935	0.5639
1119-40-0	Dimethyl Glutarate[6]	6.11%		1.478	0.938	0.566	0.784	0.498	0.3001
1330-20-7	Xylene	0.30%		0.073	0.046	0.028	0.038	0.024	0.0147
34590-94-8	Dipropyl. Gly. Mono-Methyl Ether	9.80%		2.371	1.505	0.908	1.258	0.798	0.4813
64742-48-9	Naphtha	0.24%		0.058	0.037	0.022	0.031	0.020	0.0118
	Density (lb/gal)	8.81	8.38						
	Ratio	1	1						

Notes: 1 - Formaldehyde may be emitted from topcoat during the curing of melamine resin in the ovens. To account for an annual average production of formaldehyde, the average amount of resin in Clearcoat was used, and conversion of 5% of the resin to formaldehyde.

Max Production	288,057	veh/yr	
Max Line Speed	62	veh/hr	
CC Application	0.823	gal/veh	(1:1 ratio)
CC TE	0.69	(a)	
OSL test - Booth, Observation, Flash	0.541	(b)	
OSL test - Observation	0.156	(c)	
OSL test - Oven	0.303	(d)	
Fraction to Observation	0.108	(a)*(c)	
Fraction to Concentrator	0.683	(1-a)+(a*b)	
Fraction direct to RTO	0.209	(a)*(d)	
total	1.00		
Concentrator Capture	0.9	lb/lb	
Oxidizer Destruction	0.95	lb/lb	

Example Calculation: Emissions of Pentyl Propionate

(0.823 gal/veh*0.5)*(48 veh/hr)*(8.81 lb/gal)*(0.2260) +
(0.823 gal/veh*0.5)*(48 veh/hr)*(8.38 lb/gal)*(0.1289) = 78.16 lb/hr used

(60.51 lb/hr)*(0.108) = 8.414 lb/hr emitted CC Observation

(60.51 lb/hr)*(0.683)*(1-0.90) = 5.341 lb/hr emitted Concentrator

[(60.51 lb/hr)*(0.683)*(0.905) + (60.51)*(0.209)]*(1-0.95)= 3.220 lb/hr emitted RTO

Table C-7. TAC Emission Calculations from Paint Shop Sealer Materials.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Henkel Teroson PV 904.2 (% by wt.)	Henkel Teroson PV 1035.1 (% by wt.)	Sealer Oven Emissions[1] Max (lb/hr)	Sealer Oven Emissions[1] (lb/hr - an avg)
64742-48-9	Aromatic Hydrocarbons	0.82%	0.50%	9.503	4.582
64742-95-6	Heavy Naphtha	0.10%		1.035	0.499
	VOC Formula (lb/gal)	**0.10**	**0.09**		
	Density (lb/gal)	**11.93**	**13.09**		
	Usage (gal/veh)	**1.400**	**0.250**		
	Usage (lb/veh)	**16.70**	**3.27**		
	Max Usage (lb/hr)	**1,035.19**	**202.95**		
	Max Usage (lb/hr - annual avg)	**499.13**	**97.86**		
	Max VOC Emissions (lb/hr)	8.68	1.395		
	Max VOC Emissions (lb/hr) an avg	4.19	0.673		

1 - Sealer TAC emissions are the lesser of the TAC usage or VOC emission rate.

Max Production	261,870	veh/yr
Max line Speed	62	veh/hr

Example Calculation: Naphtha

Maximum Hourly:
(1.4 gal/veh)*(11.93 lb/gal)*(0.10)*(48 veh/hr) = 1.035 lb/hr

Annual Hourly Average:
(1.4 gal/veh)*(11.93 lb/gal)*(0.10)*(261,870 veh/yr)*(1 yr/8,760 hr) = 0.499 lb/hr

Table C-8. TAC Emission Calculations from Paint Purge and Booth Cleaning Materials.
FCA Detroit Assembly Complex Mack - April 2020

		S-521	EQ35540	Gage S-718	Chemico 7915	Aqua Purge AP320	PP7218 Polypurge		Max hourly Emissions Rate			Max hourly Emissions Rate - Annual			
CAS	Chemical	Sealer Cleaner (% by wt)	Primer Cleaner (% by wt)	TC Cleaner 1 (% by wt)	TC Cleaner 2 (% by wt)	BC Purge (% by wt)	Prime/CC Purge (% by wt)	Sealer Deck (lb/hr)	Observation (lb/hr)	Concentrator (lb/hr)	Oxidizer (lb/hr)	Sealer Deck (lb/hr)	Observation (lb/hr)	Concentrator (lb/hr)	Oxidizer (lb/hr)
67-56-1	Methyl Alcohol					5.00%		0.000		0.1088	0.0490	0.0000		0.1088	0.0236
67-63-0	Isopropyl Alcohol		5.0%				10.0%	0.000		0.3641	0.2941	0.0000		0.1755	0.1418
67-64-1	Acetone							0.000		0.0000	0.0000	0.0000		0.0000	0.0000
71-36-3	n-Butanol	5.0%	10.0%				0.6%	0.225		0.0303	0.2742	0.1083		0.0042	0.1322
78-83-1	Isobutanol		5.0%					0.000		0.0043	0.1323	0.0000		0.0021	0.0638
78-93-3	Methyl Ethyl Ketone						0.3%	0.000		0.0108	0.0049	0.0000		0.0000	0.0023
91-20-3	Naphthalene		0.5%					0.000		0.0004	0.0132	0.0000		0.0002	0.0064
95-63-6	1,2,4-Trimethyl Benzene	5.0%	5.0%				0.4%	0.225		0.0187	0.1387	0.1083		0.0021	0.0669
97-85-8	Isobutyl isobutyrate		3.0%					0.000		0.0026	0.0794	0.0000		0.0013	0.0383
98-82-8	Cumene	1.0%	1.0%					0.045		0.0009	0.0265	0.0217		0.0004	0.0128
100-41-4	Ethylbenzene	5.0%	5.0%				6.2%	0.225		0.2274	0.2326	0.1083		0.0021	0.1122
102-71-6	Triethanolamine				5.0%			0.000		0.1352	4.1156	0.0000		0.0652	1.9844
107-21-1	Ethylene Glycol					0.5%		0.000		0.0109	0.0049	0.0000		0.0000	0.0024
108-10-1	Methyl Isobutyl Ketone	10.0%	50.0%				12.1%	0.449		0.4787	1.5184	0.2167		0.0209	0.7321
108-21-4	Isopropyl Acetate		5.0%					0.000		0.0043	0.1323	0.0000		0.0021	0.0638
108-88-3	Toluene		5.0%				0.5%	0.000		0.0223	0.1404	0.0000		0.0021	0.0677
110-43-0	Heptan-2-one						0.7%	0.000		0.0252	0.0113	0.0000		0.0000	0.0055
111-76-2	2-Butoxy Ethanol		3.0%	60.0%	30.0%			0.000		1.5228	46.3699	0.0000		0.7342	22.3577
123-86-4	n-Butyl Acetate	100.0%	20.0%				33.4%	4.493		1.2188	1.0697	2.1665		0.0084	0.5158
1330-20-7	Xylene	10.0%	41.5%				34.9%	0.449		1.2914	1.6627	0.2167		0.0174	0.8017
64742-47-8	Hydrotreated Light Distillate		5.0%					0.000		0.0043	0.1323	0.0000		0.0021	0.0638
64742-49-0	Light Aliphatic Naphtha		2.5%					0.000		0.0022	0.0661	0.0000		0.0010	0.0319
64742-89-8	Light Solvent Naphtha		7.5%					0.000		0.0065	0.1984	0.0000		0.0031	0.0957
64742-94-5	Heavy Aromatic Naphtha		5.0%					0.000		0.0043	0.1323	0.0000		0.0021	0.0638
64742-95-6	SC 100 / Aromatic 100	10.0%	5.0%				0.8%	0.449		0.0331	0.1452	0.2167		0.0021	0.0700
	VOC Formula (lb/gal)	**7.24**	**7.00**	**2.96**	**2.09**	**0.04**	**7.11**								
	Density (lb/gal)	**7.25**	**7.01**	**8.17**	**8.72**	**8.44**	**7.11**								
	Usage (gal/veh)	**0.01**	**0.008**	**0.20**	**0.20**	**0.104**	**0.204**								
	Usage (lb/veh)	**0.072**	**0.056**	**1.635**	**1.744**	**0.878**	**1.450**								
	Max. Usage (lb/hr)	**4.49**	**3.47**	**101.35**	**108.13**	**54.42**	**89.93**								
	Annualized Usage (lb/hr)	**2.17**	**1.68**	**48.87**	**52.13**	**26.24**	**43.36**								

Cleaners
- RTO operating when cleaners are used (i.e., cleaners controlled)
- No carryover = No Obs Emissions

Purge
- Fraction reclaim for Prime, BC, and CC
- Control for both BC and CC Purge
- No Carryover = No Obs Emissions

Max Production	261,870	veh/yr
Max Line Speed	62	veh/hr
Cleaners Control fraction	0.25	lb/lb
Concentrator Capture	0.9	lb/lb
Oxidizer Destruction	0.95	lb/lb
Purge Reclaim	0.6	fraction reclaim

Example Calculation - Sealer Booth Cleaner: N-Butanol

(0.072 lb/veh)*(48 veh/hr)*(0.05) = 0.225 lb/hr Sealer Oven Emissions

Example Calculation - Prime Booth Cleaner: N-Butanol

controlled:
(0.056 lb/veh)*(48 veh/hr)*(0.10)*(1-0.25)*(1-0.95) = 0.0087 lb/hr Concentrator
(0.0556 lb/veh)*(48 veh/hr)*(0.10)*(0.25)*(1-0.95) = 0.0039 lb/hr RTO
uncontrolled:
(0.056 lb/veh)*(48 veh/hr)*(0.10)*(1-0.25) = 0.2606 lb/hr RTO

Example Calculation - Prime/CC Purge: N-Butanol

(1-0.6)*(1.450 lb/veh)*(48 veh/hr)*(0.006)*(1-0.95) = 0.0216 lb/hr Concentrator
(1-0.6)*(1.450 lb/veh)*(48 veh/hr)*(0.006)*(0.95)*(1-0.95) + 0.0097 lb/hr RTO
(1-0.6)*(1.450 lb/veh)*(48 veh/hr)*(0.006)*(1-0.95) =

Total Concentrator 0.0303 lb/hr
Total RTO 0.2742 lb/hr

Table C-9. TAC Emission Calculations from Rapid Reprocess.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Pollutant	Rugged Brown	Ivory Tricoat	Bright White	Billet Silver	Maximum Steel	Diamond Black Crystal	Blue Streak	Granite Crystal	Patriot Blue	Flame Red	Velvet Red	Black Forest	Clear Comp A	Clear Comp B	Emissions	
																Max hr	Annual hr
		Percent by weight														(lb/hr)	(lb/hr)
57-55-6	Propylene Glycol			2.29							2.7					0.0247	0.0119
64-17-5	Ethanol		0.10		0.12				0.11				0.11		0.39	0.0030	0.0015
67-56-1	Methyl Alcohol		0.20		0.11	0.14	0.1	0.12	0.13	0.1	0.1		0.13			0.0017	0.0008
67-64-1	Acetone															0.0000	0.0000
71-23-8	Propyl Alcohol2														0.68	0.0053	0.0026
71-41-0	Amyl Alcohol														4.73	0.0369	0.0178
78-83-1	Isobutanol				0.45				0.28					3.6		0.0295	0.0142
95-63-6	1,2,4-Trimethyl Benzene				0.11									1.8		0.0147	0.0071
107-21-1	Ethylene Glycol														0.68	0.0053	0.0026
107-98-2	Propylene Glycol Monomethyl Ether			0.66		0.47	1.2	0.34	0.55	1.4	0.8		0.93			0.0115	0.0055
108-01-0	Dimethylaminoethanol		0.50	0.34	0.74	0.37	0.5	0.86	0.58	0.4	0.5	0.31	0.78		4.73	0.0369	0.0178
108-10-1	Methyl Isobutyl Ketone				0.18				0.1				0.12		3.14	0.0245	0.0118
108-21-4	Isopropyl Acetate														7.69	0.0599	0.0289
111-76-2	2-Butoxy Ethanol		0.10		0.84	0.16		0.22	0.57	0.1	0.2	0.1				0.0070	0.0034
112-07-2	Ethylene Glycol Butyl Ether													0.09		0.0007	0.0004
112-25-4	Ethylene Glycol Monohexyl Ether				0.15											0.0013	0.0006
112-34-5	2-(2-Butoxyethoxy)ethanol			1.75		0.7	1.8		0.63	1.7	2.1	0.1	1.14			0.0192	0.0092
123-86-4	n-Butyl Acetate														13.66	0.1065	0.0513
763-69-9	Ethyl 3-Ethoxypropanoate													11.48		0.0941	0.0454
872-50-4	N-Methyl-2-Pyrrolidone			0.24							0.3					0.0027	0.0013
1119-40-0	Dimethyl Glutarate6													6.11		0.0501	0.0241
1330-20-7	Xylene													0.3		0.0025	0.0012
1569-01-3	Propylene Glycol Monopropyl Ether				0.23	0.38	1.1	0.11	0.48	0.5			0.85			0.0088	0.0042
5131-66-8	1-Butoxy-2-Propanol	25.00	10.50	6.94	9.38	10.53	9.2	8.75	9.29	7.9	8.1	9.21	9.44			0.2000	0.0964
15821-83-7	1-Propanol-2-Butoxy		0.50		0.48	0.11	0.5		0.47	0.4	0.4	0.47	0.48			0.0041	0.0020
25322-69-4	Propane-1,2-diol, propoxylated	5.00														0.0400	0.0193
34590-94-8	Dipropyl. Gly. Mono-Methyl Ether	3.00	2.20	0.70	1.84	2.12		1.75	1.95	1.7			1.33	9.8		0.0803	0.0387
64741-65-7	Petroleum Distillates	3.00	2.20	2.59	1.77	2.85	3.2	2.85	2.62	2.3	3.1	2.15	2.73			0.0283	0.0137
64742-48-9	Naphtha													0.24		0.0020	0.0009
64742-95-6	SC 100 / Aromatic 100				0.28			0.11	0.17							0.0023	0.0011
	Weight per Gallon (lb/gal):	8.60	8.91	10.33	9.00	8.70	8.59	8.78	8.69	8.83	9.82	8.68	8.65	8.81	8.38		
	Maximum Hourly Coating usage (gal/hr)	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.093	0.09300	0.09300		
	Maximum Annual Average Hourly Coating Usage (gal/hr)	0.0448	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.044841	0.04484		

Example Calculation: Emissions of N-Methyl_pyrrolidone

(0.3/100)*(9.82 lb/gal)(0.135 gal/hr) = 0.0027 lb/hr

(0.3/100)*(9.82 lb/gal)(0.07 gal/hr) = 0.0013 lb/hr annual average

Table C-10. TAC Emission Calculations from Spot Prime.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Pollutant	Flash Primer DPX1828	Emissions	
			Max hr	Annual hr
			(lb/hr)	(lb/hr)
67-63-0	Isopropyl Alcohol	25	0.1978	0.0954
71-36-3	butanol	11.8	0.0934	0.0450
78-83-1	Isobutanol	17	0.1345	0.0648
100-41-4	Ethylbenzene	1.7	0.0134	0.0065
107-98-2	Propylene Glycol Monomethyl Ether	25	0.1978	0.0954
108-88-3	Toluene	25	0.1978	0.0954
112-07-2	2-Butoxyethylacetate	4.8	0.0380	0.0183
123-42-2	4-Hydroxy4-Methylpentan-2-one	20.5	0.1622	0.0782
123-86-4	N-Butyl Acetate	25	0.1978	0.0954
872-50-4	N-Methyl-2-Pyrrolidone	9.1	0.0720	0.0347
1330-20-7	Xylene	9	0.0712	0.0343
	Weight per Gallon (lb/gal):	8.51		
	Maximum Hourly Coating usage (gal/hr)	0.0930		
Maximum Annual Average Hourly Coating Usage (gal/hr)		0.0448		

Example Calculation: Emissions of Isopropyl Alcohol

(25/100)*(8.51 lb/gal)*(0.072 gal/hr) = 0.1978 lb/hr

(25/100)*(8.51 lb/gal)*(0.0448 gal/hr) = 0.0954 lb/hr (annual average)

Table C-11. TAC Emission Calculations from Purfoam Application.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Betafoam Renue (lb/gal)	Betafoam 89100 (lb/gal)	PURFoam Emissions[1] Max (lb/hr)	PURFoam Emissions[1] (lb/hr - an avg)
101-68-8	MDI	3.80E-09	3.40E-08	1.10E-06	5.30E-07
3033-62-3	Bis(N,N-dimethylaminoethyl)ether	2.30E-04	8.60E-09	7.43E-03	3.58E-03
	VOC Formula (lb/gal)	**0.00023**	**0.000086**		
	Usage (gal/veh)	**0.521**	**0.521**		
	Max Usage (gal/hr)	**32.30**	**32.30**		
	Max Usage (gal/hr - annual avg)	**15.57**	**15.57**		

Max Production	261,870	veh/yr
Max line Speed	62	veh/hr

Example Calculation: MDI

(0.521 gal/veh)*(48 veh/hr)*(3.4e-8 lb MDI/gal) = 1.10E-06 lb/hr

(0.521 gal/veh)*(261,870 veh/hr)*(1 yr/8,760 hr)*(3.4e-8 lb MDI/gal) = 5.30E-07 lb/hr (annual average)

Table C-12 TAC Emission Calculations from Natural Gas Combustion.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Name	Natural Gas Combustion Emission Factor (lb/MMcf)	Potency Equivalency Factor for PAH	Emission Rate: Primer Obs Max hourly (lb/hr)	BC Obs Max hourly (lb/hr)	CC Obs Max hourly (lb/hr)	Indirect Fire Oven Max hourly (lb/hr)	RTO Max hourly (lb/hr)	HWG[1] Max hourly (lb/hr)	PH Vents Max hourly (lb/hr)	Mack 1 NG Max hourly (lb/hr)	Mack 2 NG Max hourly (lb/hr)
50-00-0	Formaldehyde	7.50E-02	na	9.00E-04	1.35E-03	1.35E-03	1.80E-03	2.19E-03	3.38E-03	8.10E-03	2.80E-03	2.80E-03
50-32-8	Benzo(a)pyrene	1.20E-06	1	1.44E-08	2.16E-08	2.16E-08	2.88E-08	2.11E-07	5.40E-08	1.30E-07	4.48E-08	4.48E-08
53-70-3	Dibenzo(a,h)anthracene	1.20E-06	1.1	1.58E-08	2.38E-08	2.38E-08	3.17E-08	2.32E-07	5.94E-08	1.43E-07	4.93E-08	4.93E-08
56-49-5	3-Methylchloranthrene	1.80E-06	5.7	1.23E-07	1.85E-07	1.85E-07	2.46E-07	1.80E-06	4.62E-07	1.11E-06	3.83E-07	3.83E-07
56-55-3	Benz(a)anthracene	1.80E-06	0.1	2.16E-09	3.24E-09	3.24E-09	4.32E-09	3.16E-08	8.10E-09	1.94E-08	6.72E-09	6.72E-09
71-43-2	Benzene	2.10E-03	na	2.52E-05	3.78E-05	3.78E-05	5.04E-05	3.69E-04	9.45E-05	2.27E-04	7.84E-05	7.84E-05
83-32-9	Acenaphthene	1.80E-06	na	2.16E-08	3.24E-08	3.24E-08	4.32E-08	3.16E-07	8.10E-08	1.94E-07	6.72E-08	6.72E-08
85-01-8	Phenanathrene	1.70E-05	na	2.04E-07	3.06E-07	3.06E-07	4.08E-07	2.98E-06	7.65E-07	1.84E-06	6.35E-07	6.35E-07
86-73-7	Fluorene	2.80E-06	na	3.36E-08	5.04E-08	5.04E-08	6.72E-08	4.91E-07	1.26E-07	3.02E-07	1.05E-07	1.05E-07
91-20-3	Naphthalene	6.10E-04	na	7.32E-06	1.10E-05	1.10E-05	1.46E-05	1.07E-04	2.75E-05	6.59E-05	2.28E-05	2.28E-05
91-57-6	2-Methylnaphthalene	2.40E-05	na	2.88E-07	4.32E-07	4.32E-07	5.76E-07	4.21E-06	1.08E-06	2.59E-06	8.96E-07	8.96E-07
106-97-8	Butane	2.10E+00	na	2.52E-02	3.78E-02	3.78E-02	5.04E-02	3.69E-01	9.45E-02	2.27E-01	7.84E-02	7.84E-02
108-88-3	Toluene	3.40E-03	na	4.08E-05	6.12E-05	6.12E-05	8.16E-05	5.97E-04	1.53E-04	3.67E-04	1.27E-04	1.27E-04
109-66-0	Pentane	2.60E+00	na	3.12E-02	4.68E-02	4.68E-02	6.24E-02	4.56E-01	1.17E-01	2.81E-01	9.71E-02	9.71E-02
110-54-3	Hexane	1.80E+00	na	2.16E-02	3.24E-02	3.24E-02	4.32E-02	3.16E-01	8.10E-02	1.94E-01	6.72E-02	6.72E-02
120-12-7	Anthracene	2.40E-06	na	2.88E-08	4.32E-08	4.32E-08	5.76E-08	4.21E-07	1.08E-07	2.59E-07	8.96E-08	8.96E-08
129-00-0	Pyrene	5.00E-06	na	6.00E-08	9.00E-08	9.00E-08	1.20E-07	8.78E-07	2.25E-07	5.40E-07	1.87E-07	1.87E-07
191-24-2	Benzo(g,h,i)perylene	1.20E-06	na	1.44E-08	2.16E-08	2.16E-08	2.88E-08	2.11E-07	5.40E-08	1.30E-07	4.48E-08	4.48E-08
193-39-5	Indeno(1,2,3-cd)pyrene	1.80E-06	0.1	2.16E-09	3.24E-09	3.24E-09	4.32E-09	3.16E-08	8.10E-09	1.94E-08	6.72E-09	6.72E-09
208-96-8	Acenaphthylene	1.80E-06	na	2.16E-08	3.24E-08	3.24E-08	4.32E-08	3.16E-07	8.10E-08	1.94E-07	6.72E-08	6.72E-08
205-82-3	Benzo(k)fluoranthene	1.80E-06	0.1	2.16E-09	3.24E-09	3.24E-09	4.32E-09	3.16E-08	8.10E-09	1.94E-08	6.72E-09	6.72E-09
205-99-2	Benzo(b)fluoranthene	1.80E-06	0.1	2.16E-09	3.24E-09	3.24E-09	4.32E-09	3.16E-08	8.10E-09	1.94E-08	6.72E-09	6.72E-09
206-44-0	Fluoranthene	3.00E-06	na	3.60E-08	5.40E-08	5.40E-08	7.20E-08	5.27E-07	1.35E-07	3.24E-07	1.12E-07	1.12E-07
218-01-9	Chrysene	1.80E-06	0.01	2.16E-10	3.24E-10	3.24E-10	4.32E-10	3.16E-09	8.10E-10	1.94E-09	6.72E-10	6.72E-10
7439-96-5	Manganese	3.80E-04	na	4.56E-06	6.84E-06	6.84E-06	9.12E-06	6.67E-05	1.71E-05	4.10E-05	1.42E-05	1.42E-05
7439-97-6	Mercury	2.60E-04	na	3.12E-06	4.68E-06	4.68E-06	6.24E-06	4.56E-05	1.17E-05	2.81E-05	9.71E-06	9.71E-06
7439-98-7	Molybdenum	1.10E-03	na	1.32E-05	1.98E-05	1.98E-05	2.64E-05	1.93E-04	4.95E-05	1.19E-04	4.11E-05	4.11E-05
7440-02-0	Nickel	2.10E-03	na	2.52E-05	3.78E-05	3.78E-05	5.04E-05	3.69E-04	9.45E-05	2.27E-04	7.84E-05	7.84E-05
7440-38-2	Arsenic	2.00E-04	na	2.40E-06	3.60E-06	3.60E-06	4.80E-06	3.51E-05	9.00E-06	2.16E-05	7.47E-06	7.47E-06
7440-39-3	Barium	4.40E-03	na	5.28E-05	7.92E-05	7.92E-05	1.06E-04	7.72E-04	1.98E-04	4.75E-04	1.64E-04	1.64E-04
7440-41-7	Beryllium	1.20E-05	na	1.44E-07	2.16E-07	2.16E-07	2.88E-07	2.11E-06	5.40E-07	1.30E-06	4.48E-07	4.48E-07
7440-43-9	Cadmium	1.10E-03	na	1.32E-05	1.98E-05	1.98E-05	2.64E-05	1.93E-04	4.95E-05	1.19E-04	4.11E-05	4.11E-05
7440-48-4	Cobalt	8.40E-05	na	1.01E-06	1.51E-06	1.51E-06	2.02E-06	1.47E-05	3.78E-06	9.07E-06	3.14E-06	3.14E-06
7440-50-8	Copper	8.50E-04	na	1.02E-05	1.53E-05	1.53E-05	2.04E-05	1.49E-04	3.83E-05	9.18E-05	3.17E-05	3.17E-05
7782-49-2	Selenium	2.40E-05	na	2.88E-07	4.32E-07	4.32E-07	5.76E-07	4.21E-06	1.08E-06	2.59E-06	8.96E-07	8.96E-07
95-50-1	1,2 Dichlorobenzene [1]	1.20E-03	na	1.44E-05	2.16E-05	2.16E-05	2.88E-05	2.11E-04	5.40E-05	1.30E-04	4.48E-05	4.48E-05
541-73-1	1,3 Dichlorobenzene [1]	1.20E-03	na	1.44E-05	2.16E-05	2.16E-05	2.88E-05	2.11E-04	5.40E-05	1.30E-04	4.48E-05	4.48E-05
106-46-7	1,4 Dichlorobenzene [1]	1.20E-03	na	1.44E-05	2.16E-05	2.16E-05	2.88E-05	2.11E-04	5.40E-05	1.30E-04	4.48E-05	4.48E-05
57-97-6	7,12-Dimethylbenz(a)anthracen	1.60E-05	65	1.25E-05	1.87E-05	1.87E-05	2.50E-05	1.83E-04	4.68E-05	1.12E-04	3.88E-05	3.88E-05

NG Usage Rate		Max hourly		Annual Operating Basis	Max hourly - Annual Average	
New Paint Shop						
45	MMBtu/hr HWG (total)	0.045	$MMft^3/hr$	0.5	0.0225	$MMft^3/hr$
21.5	MMBtu/hr RTO	0.0215	$MMft^3/hr$	1	0.0215	$MMft^3/hr$
154	Direct Fire Oven Burners	0.154	$MMft^3/hr$	0.5	0.077	$MMft^3/hr$
24	Indirect Fire Oven Burners	0.024	$MMft^3/hr$	0.5	0.012	$MMft^3/hr$
12	MMBtu/hr Primer ASH	0.0120	$MMft^3/hr$	0.33	0.00396	$MMft^3/hr$
18	MMBtu/hr BC ASH	0.0180	$MMft^3/hr$	0.33	0.00594	$MMft^3/hr$
18	MMBtu/hr CC ASH	0.0180	$MMft^3/hr$	0.33	0.00594	$MMft^3/hr$
108.0	MMBtu/hr Misc PH vent	0.1080	$MMft^3/hr$	0.33	0.03564	$MMft^3/hr$
Additions to Existing Buildings						
74.7	MMBtu/hr Mack 1 & 2 NG Combustion	0.075	$MMft^3/hr$	0.33	0.024651	$MMft^3/hr$
475.2	MMBtu/hr TOTAL	0.475	$MMft^3/hr$		0.209131	$MMft^3/hr$

Table C-12 TAC Emission Calculations from Natural Gas Combustion.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Name	Emission Rate								
		Primer Obs Hourly Ann Avg (lb/hr)	BC Obs Hourly Ann Avg (lb/hr)	CC Obs Hourly Ann Avg (lb/hr)	Indirect Fire Oven Hourly Ann Avg (lb/hr)	RTO Hourly Ann Avg (lb/hr)	HWG[1] Hourly Ann Avg (lb/hr)	PH Vents Hourly Ann Avg (lb/hr)	Mack 1 NG Hourly Ann Avg (lb/hr)	Mack 2 NG Hourly Ann Avg (lb/hr)
50-00-0	Formaldehyde	2.97E-04	4.46E-04	4.46E-04	9.00E-04	1.90E-03	1.69E-03	2.67E-03	9.24E-04	9.24E-04
50-32-8	Benzo(a)pyrene	4.75E-09	7.13E-09	7.13E-09	1.44E-08	1.18E-07	2.70E-08	4.28E-08	1.48E-08	1.48E-08
53-70-3	Dibenzo(a,h)anthracene	5.23E-09	7.84E-09	7.84E-09	1.58E-08	1.30E-07	2.97E-08	4.70E-08	1.63E-08	1.63E-08
56-49-5	3-Methylchloranthrene	4.06E-08	6.09E-08	6.09E-08	1.23E-07	1.01E-06	2.31E-07	3.66E-07	1.26E-07	1.26E-07
56-55-3	Benz(a)anthracene	7.13E-10	1.07E-09	1.07E-09	2.16E-09	1.77E-08	4.05E-09	6.42E-09	2.22E-09	2.22E-09
71-43-2	Benzene	8.32E-06	1.25E-05	1.25E-05	2.52E-05	2.07E-04	4.73E-05	7.48E-05	2.59E-05	2.59E-05
83-32-9	Acenaphthene	7.13E-09	1.07E-08	1.07E-08	2.16E-08	1.77E-07	4.05E-08	6.42E-08	2.22E-08	2.22E-08
85-01-8	Phenanathrene	6.73E-08	1.01E-07	1.01E-07	2.04E-07	1.67E-06	3.83E-07	6.06E-07	2.10E-07	2.10E-07
86-73-7	Fluorene	1.11E-08	1.66E-08	1.66E-08	3.36E-08	2.76E-07	6.30E-08	9.98E-08	3.45E-08	3.45E-08
91-20-3	Naphthalene	2.42E-06	3.62E-06	3.62E-06	7.32E-06	6.01E-05	1.37E-05	2.17E-05	7.52E-06	7.52E-06
91-57-6	2-Methylnaphthalene	9.50E-08	1.43E-07	1.43E-07	2.88E-07	2.36E-06	5.40E-07	8.55E-07	2.96E-07	2.96E-07
106-97-8	Butane	8.32E-03	1.25E-02	1.25E-02	2.52E-02	2.07E-01	4.73E-02	7.48E-02	2.59E-02	2.59E-02
108-88-3	Toluene	1.35E-05	2.02E-05	2.02E-05	4.08E-05	3.35E-04	7.65E-05	1.21E-04	4.19E-05	4.19E-05
109-66-0	Pentane	1.03E-02	1.54E-02	1.54E-02	3.12E-02	2.56E-01	5.85E-02	9.27E-02	3.20E-02	3.20E-02
110-54-3	Hexane	7.13E-03	1.07E-02	1.07E-02	2.16E-02	1.77E-01	4.05E-02	6.42E-02	2.22E-02	2.22E-02
120-12-7	Anthracene	9.50E-09	1.43E-08	1.43E-08	2.88E-08	2.36E-07	5.40E-08	8.55E-08	2.96E-08	2.96E-08
129-00-0	Pyrene	1.98E-08	2.97E-08	2.97E-08	6.00E-08	4.93E-07	1.13E-07	1.78E-07	6.16E-08	6.16E-08
191-24-2	Benzo(g,h,i)perylene	4.75E-09	7.13E-09	7.13E-09	1.44E-08	1.18E-07	2.70E-08	4.28E-08	1.48E-08	1.48E-08
193-39-5	Indeno(1,2,3-cd)pyrene	7.13E-10	1.07E-09	1.07E-09	2.16E-09	1.77E-08	4.05E-09	6.42E-09	2.22E-09	2.22E-09
208-96-8	Acenaphthylene	7.13E-09	1.07E-08	1.07E-08	2.16E-08	1.77E-07	4.05E-08	6.42E-08	2.22E-08	2.22E-08
205-82-3	Benzo(k)fluoranthene	7.13E-10	1.07E-09	1.07E-09	2.16E-09	1.77E-08	4.05E-09	6.42E-09	2.22E-09	2.22E-09
205-99-2	Benzo(b)fluoranthene	7.13E-10	1.07E-09	1.07E-09	2.16E-09	1.77E-08	4.05E-09	6.42E-09	2.22E-09	2.22E-09
206-44-0	Fluoranthene	1.19E-08	1.78E-08	1.78E-08	3.60E-08	2.96E-07	6.75E-08	1.07E-07	3.70E-08	3.70E-08
218-01-9	Chrysene	7.13E-11	1.07E-10	1.07E-10	2.16E-10	1.77E-09	4.05E-10	6.42E-10	2.22E-10	2.22E-10
7439-96-5	Manganese	1.50E-06	2.26E-06	2.26E-06	4.56E-06	3.74E-05	8.55E-06	1.35E-05	4.68E-06	4.68E-06
7439-97-6	Mercury	1.03E-06	1.54E-06	1.54E-06	3.12E-06	2.56E-05	5.85E-06	9.27E-06	3.20E-06	3.20E-06
7439-98-7	Molybdenum	4.36E-06	6.53E-06	6.53E-06	1.32E-05	1.08E-04	2.48E-05	3.92E-05	1.36E-05	1.36E-05
7440-02-0	Nickel	8.32E-06	1.25E-05	1.25E-05	2.52E-05	2.07E-04	4.73E-05	7.48E-05	2.59E-05	2.59E-05
7440-38-2	Arsenic	7.92E-07	1.19E-06	1.19E-06	2.40E-06	1.97E-05	4.50E-06	7.13E-06	2.47E-06	2.47E-06
7440-39-3	Barium	1.74E-05	2.61E-05	2.61E-05	5.28E-05	4.33E-04	9.90E-05	1.57E-04	5.42E-05	5.42E-05
7440-41-7	Beryllium	4.75E-08	7.13E-08	7.13E-08	1.44E-07	1.18E-06	2.70E-07	4.28E-07	1.48E-07	1.48E-07
7440-43-9	Cadmium	4.36E-06	6.53E-06	6.53E-06	1.32E-05	1.08E-04	2.48E-05	3.92E-05	1.36E-05	1.36E-05
7440-48-4	Cobalt	3.33E-07	4.99E-07	4.99E-07	1.01E-06	8.27E-06	1.89E-06	2.99E-06	1.04E-06	1.04E-06
7440-50-8	Copper	3.37E-06	5.05E-06	5.05E-06	1.02E-05	8.37E-05	1.91E-05	3.03E-05	1.05E-05	1.05E-05
7782-49-2	Selenium	9.50E-08	1.43E-07	1.43E-07	2.88E-07	2.36E-06	5.40E-07	8.55E-07	2.96E-07	2.96E-07
95-50-1	1,2 Dichlorobenzene [1]	4.75E-06	7.13E-06	7.13E-06	1.44E-05	1.18E-04	2.70E-05	4.28E-05	1.48E-05	1.48E-05
541-73-1	1,3 Dichlorobenzene [1]	4.75E-06	7.13E-06	7.13E-06	1.44E-05	1.18E-04	2.70E-05	4.28E-05	1.48E-05	1.48E-05
106-46-7	1,4 Dichlorobenzene [1]	4.75E-06	7.13E-06	7.13E-06	1.44E-05	1.18E-04	2.70E-05	4.28E-05	1.48E-05	1.48E-05
57-97-6	7,12-Dimethylbenz(a)anthracen	4.12E-06	6.18E-06	6.18E-06	1.25E-05	1.02E-04	2.34E-05	3.71E-05	1.28E-05	1.28E-05

Table C-13. TAC Emission Calculations from Natural Gas Combustion in Emergency Generators.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Name	Natural Gas Combustion Emission Factor (lb/MMBtu)	Gen 1A Max hourly (lb/hr)	Gen1B Max hourly (lb/hr)	Gen2 Max hourly (lb/hr)	Gen3 Max hourly (lb/hr)	Gen 1A Hourly Ann Avg (lb/hr)	Gen1B Max hourly (lb/hr)	Gen 2 Hourly Ann Avg (lb/hr)	Gen 3 Hourly Ann Avg (lb/hr)
50-00-0	Formaldehyde	2.05E-02	5.22E-02	5.22E-02	1.15E-01	1.15E-01	2.98E-03	2.98E-03	6.55E-03	6.55E-03
56-23-5	Carbon tetrachloride	1.77E-05	4.51E-05	4.51E-05	9.91E-05	9.91E-05	2.57E-06	2.57E-06	5.66E-06	5.66E-06
67-56-1	Methyl alcohol	3.06E-03	7.79E-03	7.79E-03	1.71E-02	1.71E-02	4.45E-04	4.45E-04	9.78E-04	9.78E-04
67-66-3	Chloroform	1.37E-05	3.49E-05	3.49E-05	7.67E-05	7.67E-05	1.99E-06	1.99E-06	4.38E-06	4.38E-06
71-43-2	Benzene	1.58E-03	4.02E-03	4.02E-03	8.85E-03	8.85E-03	2.30E-04	2.30E-04	5.05E-04	5.05E-04
74-84-0	Ethane	7.04E-02	1.79E-01	1.79E-01	3.94E-01	3.94E-01	1.02E-02	1.02E-02	2.25E-02	2.25E-02
75-01-4	Vinyl chloride	7.18E-06	1.83E-05	1.83E-05	4.02E-05	4.02E-05	1.04E-06	1.04E-06	2.29E-06	2.29E-06
75-07-0	Acetaldehyde	2.79E-03	7.10E-03	7.10E-03	1.56E-02	1.56E-02	4.05E-04	4.05E-04	8.92E-04	8.92E-04
75-34-3	1,1-Dichloroethane	1.13E-05	2.88E-05	2.88E-05	6.33E-05	6.33E-05	1.64E-06	1.64E-06	3.61E-06	3.61E-06
78-84-2	isobutyraldehyde	4.86E-05	1.24E-04	1.24E-04	2.72E-04	2.72E-04	7.06E-06	7.06E-06	1.55E-05	1.55E-05
78-87-5	1,2 dichloropropane	1.30E-05	3.31E-05	3.31E-05	7.28E-05	7.28E-05	1.89E-06	1.89E-06	4.16E-06	4.16E-06
79-00-5	1,1,2-Trichloroethane	1.53E-05	3.89E-05	3.89E-05	8.57E-05	8.57E-05	2.22E-06	2.22E-06	4.89E-06	4.89E-06
79-34-5	1,1,2,2 tetrachloroethane	2.53E-05	6.44E-05	6.44E-05	1.42E-04	1.42E-04	3.68E-06	3.68E-06	8.09E-06	8.09E-06
91-20-3	Naphthalene	9.71E-05	2.47E-04	2.47E-04	5.44E-04	5.44E-04	1.41E-05	1.41E-05	3.10E-05	3.10E-05
100-41-4	Ethylbenzene	2.48E-05	6.31E-05	6.31E-05	1.39E-04	1.39E-04	3.60E-06	3.60E-06	7.93E-06	7.93E-06
100-42-5	Styrene	1.19E-05	3.03E-05	3.03E-05	6.66E-05	6.66E-05	1.73E-06	1.73E-06	3.80E-06	3.80E-06
106-93-4	Ethylene dibromide	2.13E-05	5.42E-05	5.42E-05	1.19E-04	1.19E-04	3.09E-06	3.09E-06	6.81E-06	6.81E-06
106-99-0	1,3-Butadiene	6.63E-04	1.69E-03	1.69E-03	3.71E-03	3.71E-03	9.63E-05	9.63E-05	2.12E-04	2.12E-04
107-02-8	Acrolein	2.63E-03	6.69E-03	6.69E-03	1.47E-02	1.47E-02	3.82E-04	3.82E-04	8.41E-04	8.41E-04
107-06-2	1,2 dichloroethane	1.13E-05	2.88E-05	2.88E-05	6.33E-05	6.33E-05	1.64E-06	1.64E-06	3.61E-06	3.61E-06
108-88-3	Toluene	5.58E-04	1.42E-03	1.42E-03	3.12E-03	3.12E-03	8.11E-05	8.11E-05	1.78E-04	1.78E-04
108-90-7	Chlorobenzene	1.29E-05	3.28E-05	3.28E-05	7.22E-05	7.22E-05	1.87E-06	1.87E-06	4.12E-06	4.12E-06
542-75-6	1,3-Dichloropropene	1.27E-05	3.23E-05	3.23E-05	7.11E-05	7.11E-05	1.85E-06	1.85E-06	4.06E-06	4.06E-06
1330-20-7	Isomers of xylene	1.95E-04	4.96E-04	4.96E-04	1.09E-03	1.09E-03	2.83E-05	2.83E-05	6.23E-05	6.23E-05
na	PAH	0.000141	3.59E-04	3.59E-04	7.90E-04	7.90E-04	2.05E-05	2.05E-05	4.51E-05	4.51E-05

NG Usage Rate		Max hourly		Annual Operating Basis	Max hourly - Ann Average	
350	hp Life Safety	2.5	MMBtu/hr	0.057	0.145	MMBtu/hr
350	hp Life Safety	2.5	MMBtu/hr	0.057	0.145	MMBtu/hr
770	hp Generator	5.6	MMBtu/hr	0.057	0.320	MMBtu/hr
770	hp Life Safety	5.6	MMBtu/hr	0.057	0.320	MMBtu/hr
2240	hp TOTAL	16.291	MM**Btu**/hr		0.930	MMBtu/hr

Table C-14. TAC Emission Calculations from Diesel Fired Emergency Engines.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Name	Diesel RICE Emission Factor (lb/MMBtu)	Potency Equivalency Factor for PAH	Each Engine Max hourly (lb/hr)	Each Engine Hourly Ann Avg (lb/hr)
50-00-0	Formaldehyde	1.18E-03	na	2.90E-03	1.65E-04
50-32-8	Benzo(a)pyrene	1.88E-07	1	4.61E-07	2.63E-08
53-70-3	Dibenz(a,h)anthracene	5.83E-07	1.1	1.57E-06	8.98E-08
56-55-3	Benzo(a)anthracene	1.68E-06	0.1	4.12E-07	2.35E-08
71-43-2	Benzene	9.33E-04	na	2.29E-03	1.31E-04
75-07-0	Acetaldehyde	7.67E-04	na	1.88E-03	1.07E-04
83-32-9	Acenaphthene	1.42E-06	na	3.49E-06	1.99E-07
85-01-8	Phenanthrene	2.94E-05	na	7.22E-05	4.12E-06
86-73-7	Fluorene	2.92E-05	na	7.17E-05	4.09E-06
91-20-3	Naphthalene	8.48E-05	na	2.08E-04	1.19E-05
106-99-0	1,3-Butadiene	3.91E-05	na	9.60E-05	5.48E-06
107-02-8	Acrolein	9.25E-05	na	2.27E-04	1.30E-05
108-88-3	Toluene	4.09E-04	na	1.00E-03	5.73E-05
115-07-1	Propylene	2.58E-03	na	6.33E-03	3.61E-04
129-00-0	Pyrene	4.78E-06	na	1.17E-05	6.70E-07
191-24-2	Benzo(g,h,i)perylene	4.89E-07	na	1.20E-06	6.85E-08
193-39-5	Indeno(1,2,3-cd)pyrene	3.75E-07	0.1	9.20E-08	5.25E-09
205-99-2	Benzo(b)fluoranthene	9.91E-08	0.1	2.43E-08	1.39E-09
207-08-9	Benzo(k)fluoranthene	1.55E-07	0.1	3.80E-08	2.17E-09
208-96-8	Acenaphthylene	5.06E-06	na	1.24E-05	7.09E-07
218-01-9	Chrysene	3.53E-07	0.01	8.66E-09	4.95E-10
1330-20-7	Isomers of xylene	2.85E-03	na	7.00E-03	3.99E-04

NG Usage Rate		Max hourly		Annual Operating Basis	Max hourly - Ann Average	
350	hp Fire Pump Engine (each)	2.5	MMBtu/hr	0.057	0.140	MMBtu/hr

Table C-15. TAC Emissions Summary and Ambient Air Impact Concentrations.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Prime Obs (lb/hr)	BC1 Obs (lb/hr)	BC2 Obs (lb/hr)	CC1 Obs (lb/hr)	CC2 Obs (lb/hr)	Concentrator (lb/hr)	RTO (lb/hr)	Rapid Reprocess (lb/hr)	Spot Prime (lb/hr)	General Building Ventilation [2] (lb/hr)	Prime Oven 1 Heater (lb/hr)	Prime Oven 2 Heater (lb/hr)	Color 1 Oven Heater (lb/hr)
50-00-0	formaldehyde	.0009	.0007	.0007	.0007	.0007	-	.19780037	-	-	.0081	.00045	.00045	.00045
50-00-0	formaldehyde	.0003	.0002	.0002	.0002	.0002	-	.10544692	-	-	.002673	.00023	.00023	.00023
50-32-8	benzo(a)pyrene	.000000014	.000000011	.000000011	.000000011	.000000011	-	.00000021	-	-	.00000013	.000000007	.000000007	.000000007
50-32-8	benzo(a)pyrene	.000000014	.000000011	.000000011	.000000011	.000000011	-	.00000021	-	-	.00000013	.000000007	.000000007	.000000007
53-70-3	Dibenzo(a,h)anthracene	.000000005	.000000004	.000000004	.000000004	.000000004	-	.00000013	-	-	.00000005	.000000004	.000000004	.000000004
56-23-5	Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	-	-	-
56-23-5	Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	-	-	-
56-49-5	3-Methylchloranthrene	.0000000406	.0000000305	.0000000305	.0000000305	.0000000305	-	.00000101	-	-	.00000037	.0000000308	.0000000308	.0000000308
56-55-3	Benz(a)anthracene	.0000000007	.0000000005	.0000000005	.0000000005	.0000000005	-	.00000002	-	-	.00000001	.0000000005	.0000000005	.0000000005
57-55-6	propylene glycol	-	.154	.154	-	-	.491	.27102062	.00594	-	-	-	-	-
64-17-5	ethyl alcohol	.0803	.0118	.0118	.0307	.0307	.179	.10143966	.00152	-	-	-	-	-
67-56-1	methanol	-	.0195	.0195	-	-	.171	.08332311	.00083	-	-	-	-	-
67-56-1	methanol	-	.0195	.0195	-	-	.171	.08332311	.00083	-	-	-	-	-
67-63-0	isopropyl alcohol	.077	-	-	-	-	.255	.18531261	-	.095	14.9469	-	-	-
67-64-1	acetone	-	-	-	.1452	.1452	.276	.16669535	-	-	-	-	-	-
67-66-3	Chloroform	-	-	-	-	-	-	-	-	-	-	-	-	-
71-23-8	n-propyl alcohol	.144	-	-	.0537	.0537	.251	.14302419	.00265	-	-	-	-	-
71-36-3	n-butanol	.0534	-	-	-	-	.059	.16239872	-	.045	.10832719	-	-	-
71-41-0	amyl alcohol	-	-	-	.1261	.1261	.24	.14483164	.00889	-	-	-	-	-
71-43-2	benzene	.000008	.000006	.000006	.0000062	.0000062	-	.00020685	-	-	.00007484	.00001	.00001	.00001
71-43-2	benzene	.000025	.000019	.000019	.0000189	.0000189	-	.00036855	-	-	.0002268	.00001	.00001	.00001
71-43-2	benzene	.000008	.000006	.000006	.0000062	.0000062	-	.00020685	-	-	.00007484	.00001	.00001	.00001
75-01-4	Vinyl chloride	-	-	-	-	-	-	-	-	-	-	-	-	-
75-01-4	Vinyl chloride	-	-	-	-	-	-	-	-	-	-	-	-	-
75-07-0	Acetaldehyde	-	-	-	-	-	-	-	-	-	-	-	-	-
75-07-0	Acetaldehyde	-	-	-	-	-	-	-	-	-	-	-	-	-
75-34-3	1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
78-83-1	isobutyl alcohol	.0665	.0444	.0444	.2903	.2903	.767	.5812924	.01475	.134	-	-	-	-
78-84-2	isobutyraldehyde	-	-	-	-	-	-	-	-	-	-	-	-	-
78-87-5	1,2 dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-
78-87-5	1,2 dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-
78-93-3	methyl ethyl ketone	-	-	-	-	-	.011	.00485607	-	-	-	-	-	-
79-00-5	1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
79-34-5	1,1,2,2 tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
83-32-9	Acenaphthene	.000000007	.000000005	.000000005	.000000005	.000000005	-	.00000018	-	-	.00000006	.000000005	.000000005	.000000005
85-01-8	Phenanathrene	.000000067	.00000005	.00000005	.00000005	.00000005	-	.00000167	-	-	.00000061	.000000051	.000000051	.000000051
86-73-7	Fluorene	.000000011	.000000008	.000000008	.000000008	.000000008	-	.00000028	-	-	.0000001	.000000008	.000000008	.000000008
91-20-3	naphthalene	.000002416	.000001812	.000001812	.000001812	.000001812	.00021	.00643705	-	-	.00002174	.00000183	.00000183	.00000183
91-20-3	naphthalene	.00000732	.00000549	.00000549	.00000549	.00000549	.00043	.01333293	-	-	.00006588	.00000366	.00000366	.00000366
91-20-3	naphthalene	.000002416	.000001812	.000001812	.000001812	.000001812	.00021	.00643705	-	-	.00002174	.00000183	.00000183	.00000183
91-57-6	2-Methylnaphthalene	.000000095	.000000071	.000000071	.000000071	.000000071	-	.00000236	-	-	.00000086	.000000072	.000000072	.000000072
95-50-1	1,2 Dichlorobenzene 1	.000004752	.000003564	.000003564	.000003564	.000003564	-	.0001182	-	-	.00004277	.0000036	.0000036	.0000036
95-63-6	1,2,4-trimethylbenzene	.263	.0058	.0058	-	-	.292	.22562361	.00356	-	.10832719	-	-	-
95-63-6	1,2,4-trimethylbenzene	.5455	.0108	.0108	-	-	.617	.46603676	.00737	-	.22467126	-	-	-
97-85-8	Isobutyl isobutyrate	-	-	-	-	-	.001	.03826181	-	-	-	-	-	-

Notes:
1 - For TACs with annual thresholds, the annual average lb/hr emission rate is used. For all other averaging periods, the max hourly emission rate is used.
2 - Emissions vented into the general in-plant environment (e.g., space heaters, solvent wipe) were modeled as area sources on the roof of each building, simulating release from general roof top ventilation.

Table C-15. TAC Emissions Summary and Ambient Air Impact Concentrations.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Prime Obs (lb/hr)	BC1 Obs (lb/hr)	BC2 Obs (lb/hr)	CC1 Obs (lb/hr)	CC2 Obs (lb/hr)	Concentrator (lb/hr)	RTO (lb/hr)	Rapid Reprocess (lb/hr)	Spot Prime (lb/hr)	General Building Ventilation [2] (lb/hr)	Prime Oven 1 Heater (lb/hr)	Prime Oven 2 Heater (lb/hr)	Color 1 Oven Heater (lb/hr)
98-82-8	cumene	.0128	-	-	-	-	.014	.02000333	-	-	.02166544	-	-	-
98-82-8	cumene	.0128	-	-	-	-	.014	.02000333	-	-	.02166544	-	-	-
100-42-5	Styrene	-	-	-	-	-	-	-	-	-	-	-	-	-
100-42-5	Styrene	-	-	-	-	-	-	-	-	-	-	-	-	-
100-41-4	ethylbenzene	.0665	-	-	-	-	.296	.27016938	-	.013	.22467126	-	-	-
100-41-4	ethylbenzene	.032	-	-	-	-	.035	.1302645	-	.006	.10832719	-	-	-
101-68-8	MDI	-	-	-	-	-	-	-	-	-	.00000053	-	-	-
102-71-6	triethanolamine	-	-	-	-	-	.135	4.115622	-	-	-	-	-	-
106-46-7	1,4 Dichlorobenzene 1	.0000048	.0000036	.0000036	.0000036	.0000036	-	.0001182	-	-	.00004277	.000004	.000004	.000004
106-46-7	1,4 Dichlorobenzene 1	.0000048	.0000036	.0000036	.0000036	.0000036	-	.0001182	-	-	.00004277	.000004	.000004	.000004
106-93-4	Ethylene dibromide	-	-	-	-	-	-	-	-	-	-	-	-	-
106-93-4	Ethylene dibromide	-	-	-	-	-	-	-	-	-	-	-	-	-
106-97-8	butane	.0252	.0189	.0189	.0189	.0189	-	.36855	-	-	.2268	.0126	.0126	.0126
106-99-0	1,3-Butadiene	-	-	-	-	-	-	-	-	-	-	-	-	-
106-99-0	1,3-Butadiene	-	-	-	-	-	-	-	-	-	-	-	-	-
107-02-8	Acrolein	-	-	-	-	-	-	-	-	-	-	-	-	-
107-02-8	Acrolein	-	-	-	-	-	-	-	-	-	-	-	-	-
107-06-2	1,2 dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
107-21-1	ethylene glycol	-	-	-	-	-	.011	.0048979	.00265	-	-	-	-	-
107-98-2	propylene glycol monomethyl ether	.5455	.1354	.1354	-	-	.995	.69517417	.00575	.198	-	-	-	-
108-01-0	dimethylethanolamine	-	.0439	.0439	-	-	.14	.07718272	.00889	-	-	-	-	-
108-01-0	dimethylethanolamine	-	.0827	.0827	-	-	.264	.14552494	.01843	-	-	-	-	-
108-10-1	methyl isobutyl ketone	-	.0177	.0177	.2378	.2378	.988	1.82274503	.01224	-	.44934252	-	-	-
108-21-4	isopropyl acetate	-	-	-	.5907	.5907	1.129	.81054	.02997	-	-	-	-	-
108-65-6	1-Methoxy-2-propyl Acetate	1.5168	-	-	-	-	1.567	.85701089	-	-	-	-	-	-
108-87-2	Methylcyclohexane	.0344	-	-	-	-	.036	.01945271	-	-	-	-	-	-
108-88-3	toluene	.0000408	.0000306	.0000306	.0000306	.0000306	.022	.14094888	-	.198	.0003672	.00002	.00002	.00002
108-90-7	Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
108-90-7	Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-
109-66-0	pentane	.0312	.0234	.0234	.0234	.0234	-	.4563	-	-	.2808	.0156	.0156	.0156
110-43-0	Heptan-2-one	-	-	-	-	-	.025	.01133084	-	-	-	-	-	-
110-54-3	hexane	.0071	.0053	.0053	.0053	.0053	-	.1773	-	-	.064152	.0054	.0054	.0054
111-76-2	2-butoxyethanol	-	.0439	.0439	-	-	.874	22.4796497	.00169	-	-	-	-	-
112-07-2	ethylene glycol monobutyl ether acetate	-	-	-	.0038	.0038	.007	.00442055	.00018	.018	-	-	-	-
112-25-4	ethylene glycol monohexyl ether	-	.0078	.0078	-	-	.025	.01379942	.0003	-	-	-	-	-
115-07-1	Propylene	-	-	-	-	-	-	-	-	-	-	-	-	-
120-12-7	Anthracene	.0000000095	.0000000071	.0000000071	.0000000071	.0000000071	-	.00000024	-	-	.000000086	.000000007	.000000007	.000000007
112-34-5	butyl carbitol	-	.1198	.1198	-	-	.382	.21079382	.00462	-	-	-	-	-
123-42-2	4-Hydroxy4-Methylpentan-2-one	-	-	-	-	-	-	-	-	.162	-	-	-	-
123-86-4	n-butyl acetate	.576	-	-	1.0509	1.0509	3.815	2.60193885	.05323	.198	4.4934252	-	-	-
129-00-0	Pyrene	.00000002	.000000015	.000000015	.000000015	.000000015	-	.00000049	-	-	.00000018	.000000015	.000000015	.000000015
137-32-6	2-Methyl-1-butanol	-	-	-	.069165503	.069165503	.132	.0794238	-	-	-	-	-	-
142-82-5	Heptane	.0689	-	-	-	-	.071	.03890542	-	-	-	-	-	-
191-24-2	Benzo(g,h,i)perylene	.0000000048	.0000000036	.0000000036	.0000000036	.0000000036	-	.00000012	-	-	.00000004	.0000000036	.0000000036	.0000000036
193-39-5	Indeno(1,2,3-cd)pyrene	.0000000007	.0000000005	.0000000005	.0000000005	.0000000005	-	.00000002	-	-	.00000001	.0000000005	.0000000005	.0000000005
205-82-3	Benzo(k)fluoranthene	.0000000007	.0000000005	.0000000005	.0000000005	.0000000005	-	.00000002	-	-	.00000001	.0000000005	.0000000005	.0000000005

Notes:
1 - For TACs with annual thresholds, the annual average lb/hr emission rate is used. For all other averaging periods, the max hourly emission rate is used.
2 - Emissions vented into the general in-plant environment (e.g., space heaters, solvent wipe) were modeled as area sources on the roof of each building, simulating release from general roof top ventilation.

Table C-15. TAC Emissions Summary and Ambient Air Impact Concentrations.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Prime Obs (lb/hr)	BC1 Obs (lb/hr)	BC2 Obs (lb/hr)	CC1 Obs (lb/hr)	CC2 Obs (lb/hr)	Concentrator (lb/hr)	RTO (lb/hr)	Rapid Reprocess (lb/hr)	Spot Prime (lb/hr)	General Building Ventilation [2] (lb/hr)	Prime Oven 1 Heater (lb/hr)	Prime Oven 2 Heater (lb/hr)	Color 1 Oven Heater (lb/hr)
205-99-2	Benzo(b)fluoranthene	.0000000007	.0000000005	.0000000005	.0000000005	.0000000005	-	.00000002	-	-	.00000001	.0000000005	.0000000005	.0000000005
206-44-0	Fluoranthene	.0000000119	.0000000089	.0000000089	.0000000089	.0000000089	-	.0000003	-	-	.00000011	.000000009	.000000009	.000000009
207-08-9	Benzo(k)fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-
208-96-8	Acenaphthylene	.00000000713	.00000000535	.00000000535	.00000000535	.00000000535	-	.00000018	-	-	.00000006	.0000000054	.0000000054	.0000000054
218-01-9	Chrysene	.00000000007	.00000000005	.00000000005	.00000000005	.00000000005	-	.000000002	-	-	.0000000006	.00000000005	.00000000005	.00000000005
541-73-1	1,3 Dichlorobenzene 1	.0000048	.0000036	.0000036	.0000036	.0000036	-	.0001182	-	-	.00004277	.0000036	.0000036	.0000036
542-75-6	1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-
542-75-6	1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-
624-54-4	n-pentyl proprionate	.4234	-	-	1.4875	1.4875	3.27	1.94729314	-	-	-	-	-	-
763-69-9	ethyl-3-ethyloxypropionate	.2545	-	-	.491	.491	1.198	.70768131	.02268	-	-	-	-	-
770-35-4	Phenoxyisopropanol	-	-	-	-	-	-	.11180295	-	-	-	-	-	-
872-50-4	N-methylpyrrolidone	-	.0323	.0323	-	-	.103	.05677762	.00137	.072	-	-	-	-
1119-40-0	dimethyl glutarate	-	-	-	.2613	.2613	.498	.30010611	.01207	-	-	-	-	-
1330-20-7	mixed xylenes	.203	-	-	.0128	.0128	.252	.93107703	.00059	.034	.21665438	-	-	-
1569-01-3	1-propoxy-2-propanol	-	.0549	.0549	-	-	.175	.09658572	.00212	-	-	-	-	-
3033-62-3	Bis(N,N-dimethylaminoethyl)ether	-	-	-	-	-	-	-	-	-	.00358218	-	-	-
5131-66-8	propylene glycol n-butyl ether (alpha iso	-	1.249	1.249	-	-	3.98	2.32582247	.0482	-	-	-	-	-
7439-96-5	Manganese	.0000015	.0000011	.0000011	.0000011	.0000011	-	.00003743	-	-	.00001354	.00000114	.00000114	.00000114
7439-97-6	Mercury	.000001	.0000008	.0000008	.0000008	.0000008	-	.00002561	-	-	.00000927	.00000078	.00000078	.00000078
7439-97-6	Mercury	.0000031	.0000023	.0000023	.0000023	.0000023	-	.00004563	-	-	.00002808	.00000156	.00000156	.00000156
7439-98-7	Molybdenum	.0000132	.0000099	.0000099	.0000099	.0000099	-	.00019305	-	-	.0001188	.0000066	.0000066	.0000066
7440-02-0	nickel	.0000252	.0000189	.0000189	.0000189	.0000189	-	.00036855	-	-	.0002268	.0000126	.0000126	.0000126
7440-38-2	arsenic	.0000024	.0000018	.0000018	.0000018	.0000018	-	.0000351	-	-	.0000216	.0000012	.0000012	.0000012
7440-39-3	Barium	.0000528	.0000396	.0000396	.0000396	.0000396	-	.0007722	-	-	.0004752	.0000264	.0000264	.0000264
7440-41-7	berylium	.00000014	.00000011	.00000011	.00000011	.00000011	-	.00000211	-	-	.0000013	.00000007	.00000007	.00000007
7440-41-7	berylium	.00000005	.00000004	.00000004	.00000004	.00000004	-	.00000118	-	-	.00000043	.00000004	.00000004	.00000004
7440-43-9	cadmium	.0000132	.0000099	.0000099	.0000099	.0000099	-	.00019305	-	-	.0001188	.0000066	.0000066	.0000066
7440-48-4	Cobalt	.00000101	.00000076	.00000076	.00000076	.00000076	-	.00001474	-	-	.00000907	.0000005	.0000005	.0000005
7440-50-8	Copper	.0000102	.00000765	.00000765	.00000765	.00000765	-	.00014918	-	-	.0000918	.0000051	.0000051	.0000051
7782-49-2	Selenium	.00000029	.00000022	.00000022	.00000022	.00000022	-	.00000421	-	-	.00000259	.00000014	.00000014	.00000014
8006-61-9	Gasoline								-		-			
15821-83-7	propylene glycol n-butyl ether (beta ison	-	.0259	.0259	-	-	.082	.05228214	.001	-	-	-	-	-
25322-69-4	Propane-1,2-diol, propoxylated	-	.2498	.2498	-	-	.796	.43953711	.00964	-	-	-	-	-
34590-94-8	dipropylene glycol methyl ether	.203	.1499	.1499	.4192	.4192	1.486	.85974174	.01936	-	-	-	-	-
64741-65-7	heavy alkylate naphtha	-	.3334	.3334	-	-	1.063	.58670209	.01416	-	-	-	-	-
64741-66-8	Petroleum Distillates	.0332	-	-	-	-	.034	.01875859	-	-	-	-	-	-
64742-47-8	Hydrotreated Light Distillate	-	-	-	-	-	.002	.06376969	-	-	-	-	-	-
64742-48-9	hydrotreated heavy napht	-	-	-	.0194	.0194	.037	.02222605	.00098	-	9.50336161	-	-	-
64742-49-0	Naphtha, hydrotreated light	.0689	-	-	-	-	.073	.10503478	-	-	-	-	-	-
64742-89-8	Light Solvent Naphtha	-	-	-	-	-	.007	.19838808	-	-	-	-	-	-
64742-94-5	Heavy Aromatic Naphtha	-	-	-	-	-	.002	.06376969	-	-	-	-	-	-
64742-95-6	light aromatic solvent naphtha (petroleu	.5196	.0146	.0146	-	-	.586	.38937261	.00056	-	.71578219	-	-	-
70657-70-4	2-Methoxy-1-propyl Acetate	.0133	-	-	-	-	.014	.00751764	-	-	-	-	-	-
57-97-6	7,12-Dimethylbenz(a)anthracene	.0000041	.0000031	.0000031	.0000031	.0000031	-	.00010244	-	-	.00003707	.0000031	.0000031	.0000031
	Sum of PAH													

Notes:
1 - For TACs with annual thresholds, the annual average lb/hr emission rate is used. For all other averaging periods, the max hourly emission rate is used.
2 - Emissions vented into the general in-plant environment (e.g., space heaters, solvent wipe) were modeled as area sources on the roof of each building, simulating release from general roof top ventilation.

Table C-15. TAC Emissions Summary and Ambient Air Impact Concentrations.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Color 2 Oven Heater (lb/hr)	HWG 1 (lb/hr)	HWG 2 (lb/hr)	HWG 3 (lb/hr)	HWG 4 (lb/hr)	HWG 5 (lb/hr)	HWG 6 (lb/hr)	HWG 7 (lb/hr)	HWG 8 (lb/hr)	HWG 9 (lb/hr)	NG Generator 1A (lb/hr)	NG Generator 1B	NG Generator 2 (lb/hr)	NG Generator 3 (lb/hr)
50-00-0	formaldehyde	.00045	.00034	.00034	.00034	.00034	.00034	.00034	.00034	.00034	.00034	.05218	.05218	.1148	.1148
50-00-0	formaldehyde	.00023	.00017	.00017	.00017	.00017	.00017	.00017	.00017	.00017	.00017	.00298	.00298	.00655	.00655
50-32-8	benzo(a)pyrene	.000000007	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	-	-	-	-
50-32-8	benzo(a)pyrene	.000000007	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	-	-	-	-
53-70-3	Dibenzo(a,h)anthracene	.000000004	.000000003	.000000003	.000000003	.000000003	.000000003	.000000003	.000000003	.000000003	.000000003	-	-	-	-
56-23-5	Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	.	.	.00001	.00001
56-23-5	Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	.	.	.00001	.00001
56-49-5	3-Methylchloranthrene	.0000000308	.0000000231	.0000000231	.0000000231	.0000000231	.0000000231	.0000000231	.0000000231	.0000000231	.0000000231	-	-	-	-
56-55-3	Benz(a)anthracene	.0000000005	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	-	-	-	-
57-55-6	propylene glycol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64-17-5	ethyl alcohol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67-56-1	methanol	-	-	-	-	-	-	-	-	-	-	.00779	.00779	.01714	.01714
67-56-1	methanol	-	-	-	-	-	-	-	-	-	-	.00779	.00779	.01714	.01714
67-63-0	isopropyl alcohol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67-64-1	acetone	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67-66-3	Chloroform	-	-	-	-	-	-	-	-	-	-	.00003	.00003	.00008	.00008
71-23-8	n-propyl alcohol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71-36-3	n-butanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71-41-0	amyl alcohol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71-43-2	benzene	.00001	.	.	.	.	.	.	.	.	.	.00023	.00023	.00051	.00051
71-43-2	benzene	.00001	.00001	.00001	.00001	.00001	.00001	.00001	.00001	.00001	.00001	.00402	.00402	.00885	.00885
71-43-2	benzene	.00001	.	.	.	.	.	.	.	.	.	.00023	.00023	.00051	.00051
75-01-4	Vinyl chloride	-	-	-	-	-	-	-	-	-	-	.	.	.	.
75-01-4	Vinyl chloride	-	-	-	-	-	-	-	-	-	-	.	.	.	.
75-07-0	Acetaldehyde	-	-	-	-	-	-	-	-	-	-	.00041	.00041	.00089	.00089
75-07-0	Acetaldehyde	-	-	-	-	-	-	-	-	-	-	.00041	.00041	.00089	.00089
75-34-3	1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	.	.	.	.
78-83-1	isobutyl alcohol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
78-84-2	isobutyraldehyde	-	-	-	-	-	-	-	-	-	-	.00001	.00001	.00002	.00002
78-87-5	1,2 dichloropropane	-	-	-	-	-	-	-	-	-	-	.	.	.	.
78-87-5	1,2 dichloropropane	-	-	-	-	-	-	-	-	-	-	.	.	.	.
78-93-3	methyl ethyl ketone	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79-00-5	1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	.00004	.00004	.00009	.00009
79-34-5	1,1,2,2 tetrachloroethane	-	-	-	-	-	-	-	-	-	-	.00006	.00006	.00014	.00014
83-32-9	Acenaphthene	.000000005	.000000004	.000000004	.000000004	.000000004	.000000004	.000000004	.000000004	.000000004	.000000004	-	-	-	-
85-01-8	Phenanathrene	.000000051	.000000038	.000000038	.000000038	.000000038	.000000038	.000000038	.000000038	.000000038	.000000038	-	-	-	-
86-73-7	Fluorene	.000000008	.000000006	.000000006	.000000006	.000000006	.000000006	.000000006	.000000006	.000000006	.000000006	-	-	-	-
91-20-3	naphthalene	.00000183	.000001373	.000001373	.000001373	.000001373	.000001373	.000001373	.000001373	.000001373	.000001373	.00001	.00001	.00003	.00003
91-20-3	naphthalene	.00000366	.000002745	.000002745	.000002745	.000002745	.000002745	.000002745	.000002745	.000002745	.000002745	.00025	.00025	.00054	.00054
91-20-3	naphthalene	.00000183	.000001373	.000001373	.000001373	.000001373	.000001373	.000001373	.000001373	.000001373	.000001373	.00001	.00001	.00003	.00003
91-57-6	2-Methylnaphthalene	.000000072	.000000054	.000000054	.000000054	.000000054	.000000054	.000000054	.000000054	.000000054	.000000054	-	-	-	-
95-50-1	1,2 Dichlorobenzene 1	.0000036	.0000027	.0000027	.0000027	.0000027	.0000027	.0000027	.0000027	.0000027	.0000027	-	-	-	-
95-63-6	1,2,4-trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95-63-6	1,2,4-trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
97-85-8	Isobutyl isobutyrate	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
1 - For TACs with annual thresholds, the annual average lb/hr emission rate is used. For all other averaging periods, the max hourly emission rate is used.
2 - Emissions vented into the general in-plant environment (e.g., space heaters, solvent wipe) were modeled as area sources on the roof of each building, simulating release from general roof top ventilation.

Table C-15. TAC Emissions Summary and Ambient Air Impact Concentrations.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Color 2 Oven Heater (lb/hr)	HWG 1 (lb/hr)	HWG 2 (lb/hr)	HWG 3 (lb/hr)	HWG 4 (lb/hr)	HWG 5 (lb/hr)	HWG 6 (lb/hr)	HWG 7 (lb/hr)	HWG 8 (lb/hr)	HWG 9 (lb/hr)	NG Generator 1A (lb/hr)	NG Generator 1B	NG Generator 2 (lb/hr)	NG Generator 3 (lb/hr)
98-82-8	cumene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
98-82-8	cumene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100-42-5	Styrene	-	-	-	-	-	-	-	-	-	-	.	.	.	.
100-42-5	Styrene	-	-	-	-	-	-	-	-	-	-	.	.	.	.
100-41-4	ethylbenzene	-	-	-	-	-	-	-	-	-	-	.00006	.00006	.00014	.00014
100-41-4	ethylbenzene	-	-	-	-	-	-	-	-	-	-	.	.	.00001	.00001
101-68-8	MDI	-	-	-	-	-	-	-	-	-	-	-	-	-	-
102-71-6	triethanolamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-
106-46-7	1,4 Dichlorobenzene 1	.000004	.000003	.000003	.000003	.000003	.000003	.000003	.000003	.000003	.000003	-	-	-	-
106-46-7	1,4 Dichlorobenzene 1	.000004	.000003	.000003	.000003	.000003	.000003	.000003	.000003	.000003	.000003	-	-	-	-
106-93-4	Ethylene dibromide	-	-	-	-	-	-	-	-	-	-	.	.	.00001	.00001
106-93-4	Ethylene dibromide	-	-	-	-	-	-	-	-	-	-	.	.	.00001	.00001
106-97-8	butane	.0126	.00945	.00945	.00945	.00945	.00945	.00945	.00945	.00945	.00945	-	-	-	-
106-99-0	1,3-Butadiene	-	-	-	-	-	-	-	-	-	-	.0001	.0001	.00021	.00021
106-99-0	1,3-Butadiene	-	-	-	-	-	-	-	-	-	-	.0001	.0001	.00021	.00021
107-02-8	Acrolein	-	-	-	-	-	-	-	-	-	-	.00038	.00038	.00084	.00084
107-02-8	Acrolein	-	-	-	-	-	-	-	-	-	-	.00669	.00669	.01473	.01473
107-06-2	1,2 dichloroethane	-	-	-	-	-	-	-	-	-	-	.00003	.00003	.00006	.00006
107-21-1	ethylene glycol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
107-98-2	propylene glycol monomethyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108-01-0	dimethylethanolamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108-01-0	dimethylethanolamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108-10-1	methyl isobutyl ketone	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108-21-4	isopropyl acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108-65-6	1-Methoxy-2-propyl Acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108-87-2	Methylcyclohexane	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108-88-3	toluene	.00002	.00002	.00002	.00002	.00002	.00002	.00002	.00002	.00002	.00002	.00142	.00142	.00312	.00312
108-90-7	Chlorobenzene	-	-	-	-	-	-	-	-	-	-	.	.	.	.
108-90-7	Chlorobenzene	-	-	-	-	-	-	-	-	-	-	.00003	.00003	.00007	.00007
109-66-0	pentane	.0156	.0117	.0117	.0117	.0117	.0117	.0117	.0117	.0117	.0117	-	-	-	-
110-43-0	Heptan-2-one	-	-	-	-	-	-	-	-	-	-	-	-	-	-
110-54-3	hexane	.0054	.00405	.00405	.00405	.00405	.00405	.00405	.00405	.00405	.00405	-	-	-	-
111-76-2	2-butoxyethanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
112-07-2	ethylene glycol monobutyl ether acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-
112-25-4	ethylene glycol monohexyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-
115-07-1	Propylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120-12-7	Anthracene	.000000007	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	.000000005	-	-	-	-
112-34-5	butyl carbitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
123-42-2	4-Hydroxy4-Methylpentan-2-one	-	-	-	-	-	-	-	-	-	-	-	-	-	-
123-86-4	n-butyl acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-
129-00-0	Pyrene	.000000015	.000000011	.000000011	.000000011	.000000011	.000000011	.000000011	.000000011	.000000011	.000000011	-	-	-	-
137-32-6	2-Methyl-1-butanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
142-82-5	Heptane	-	-	-	-	-	-	-	-	-	-	-	-	-	-
191-24-2	Benzo(g,h,i)perylene	.0000000036	.0000000027	.0000000027	.0000000027	.0000000027	.0000000027	.0000000027	.0000000027	.0000000027	.0000000027	-	-	-	-
193-39-5	Indeno(1,2,3-cd)pyrene	.0000000005	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	-	-	-	-
205-82-3	Benzo(k)fluoranthene	.0000000005	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	-	-	-	-

Notes:
1 - For TACs with annual thresholds, the annual average lb/hr emission rate is used. For all other averaging periods, the max hourly emission rate is used.
2 - Emissions vented into the general in-plant environment (e.g., space heaters, solvent wipe) were modeled as area sources on the roof of each building, simulating release from general roof top ventilation.

Table C-15. TAC Emissions Summary and Ambient Air Impact Concentrations.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Color 2 Oven Heater (lb/hr)	HWG 1 (lb/hr)	HWG 2 (lb/hr)	HWG 3 (lb/hr)	HWG 4 (lb/hr)	HWG 5 (lb/hr)	HWG 6 (lb/hr)	HWG 7 (lb/hr)	HWG 8 (lb/hr)	HWG 9 (lb/hr)	NG Generator 1A (lb/hr)	NG Generator 1B	NG Generator 2 (lb/hr)	NG Generator 3 (lb/hr)
205-99-2	Benzo(b)fluoranthene	.0000000005	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	.0000000004	-	-	-	-
206-44-0	Fluoranthene	.000000009	.0000000068	.0000000068	.0000000068	.0000000068	.0000000068	.0000000068	.0000000068	.0000000068	.0000000068	-	-	-	-
207-08-9	Benzo(k)fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
208-96-8	Acenaphthylene	.0000000054	.00000000405	.00000000405	.00000000405	.00000000405	.00000000405	.00000000405	.00000000405	.00000000405	.00000000405	-	-	-	-
218-01-9	Chrysene	.00000000005	.00000000004	.00000000004	.00000000004	.00000000004	.00000000004	.00000000004	.00000000004	.00000000004	.00000000004	-	-	-	-
541-73-1	1,3 Dichlorobenzene 1	.0000036	.0000027	.0000027	.0000027	.0000027	.0000027	.0000027	.0000027	.0000027	.0000027	-	-	-	-
542-75-6	1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	.	.	.	.
542-75-6	1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	.	.	.	.
624-54-4	n-pentyl proprionate	-	-	-	-	-	-	-	-	-	-	-	-	-	-
763-69-9	ethyl-3-ethyloxypropionate	-	-	-	-	-	-	-	-	-	-	-	-	-	-
770-35-4	Phenoxyisopropanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
872-50-4	N-methylpyrrolidone	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1119-40-0	dimethyl glutarate	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1330-20-7	mixed xylenes	-	-	-	-	-	-	-	-	-	-	.00003	.00003	.00006	.00006
1569-01-3	1-propoxy-2-propanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3033-62-3	Bis(N,N-dimethylaminoethyl)ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5131-66-8	propylene glycol n-butyl ether (alpha iso	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7439-96-5	Manganese	.00000114	.00000086	.00000086	.00000086	.00000086	.00000086	.00000086	.00000086	.00000086	.00000086	-	-	-	-
7439-97-6	Mercury	.00000078	.00000059	.00000059	.00000059	.00000059	.00000059	.00000059	.00000059	.00000059	.00000059	-	-	-	-
7439-97-6	Mercury	.00000156	.00000117	.00000117	.00000117	.00000117	.00000117	.00000117	.00000117	.00000117	.00000117	-	-	-	-
7439-98-7	Molybdenum	.0000066	.00000495	.00000495	.00000495	.00000495	.00000495	.00000495	.00000495	.00000495	.00000495	-	-	-	-
7440-02-0	nickel	.0000126	.00000945	.00000945	.00000945	.00000945	.00000945	.00000945	.00000945	.00000945	.00000945	-	-	-	-
7440-38-2	arsenic	.0000012	.0000009	.0000009	.0000009	.0000009	.0000009	.0000009	.0000009	.0000009	.0000009	-	-	-	-
7440-39-3	Barium	.0000264	.0000198	.0000198	.0000198	.0000198	.0000198	.0000198	.0000198	.0000198	.0000198	-	-	-	-
7440-41-7	berylium	.00000007	.00000005	.00000005	.00000005	.00000005	.00000005	.00000005	.00000005	.00000005	.00000005	-	-	-	-
7440-41-7	berylium	.00000004	.00000003	.00000003	.00000003	.00000003	.00000003	.00000003	.00000003	.00000003	.00000003	-	-	-	-
7440-43-9	cadmium	.0000066	.00000495	.00000495	.00000495	.00000495	.00000495	.00000495	.00000495	.00000495	.00000495	-	-	-	-
7440-48-4	Cobalt	.0000005	.00000038	.00000038	.00000038	.00000038	.00000038	.00000038	.00000038	.00000038	.00000038	-	-	-	-
7440-50-8	Copper	.0000051	.00000383	.00000383	.00000383	.00000383	.00000383	.00000383	.00000383	.00000383	.00000383	-	-	-	-
7782-49-2	Selenium	.00000014	.00000011	.00000011	.00000011	.00000011	.00000011	.00000011	.00000011	.00000011	.00000011	-	-	-	-
8006-61-9	Gasoline		-									-	-	-	-
15821-83-7	propylene glycol n-butyl ether (beta ison	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25322-69-4	Propane-1,2-diol, propoxylated	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34590-94-8	dipropylene glycol methyl ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64741-65-7	heavy alkylate naphtha	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64741-66-8	Petroleum Distillates	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64742-47-8	Hydrotreated Light Distillate	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64742-48-9	hydrotreated heavy napht	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64742-49-0	Naphtha, hydrotreated light	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64742-89-8	Light Solvent Naphtha	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64742-94-5	Heavy Aromatic Naphtha	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64742-95-6	light aromatic solvent naphtha (petroleu	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70657-70-4	2-Methoxy-1-propyl Acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57-97-6	7,12-Dimethylbenz(a)anthracene	.0000031	.0000023	.0000023	.0000023	.0000023	.0000023	.0000023	.0000023	.0000023	.0000023	-	-	-	-
	Sum of PAH														

Notes:
1 - For TACs with annual thresholds, the annual average lb/hr emission rate is used. For all other averaging periods, the max hourly emission rate is used.
2 - Emissions vented into the general in-plant environment (e.g., space heaters, solvent wipe) were modeled as area sources on the roof of each building, simulating release from general roof top ventilation.

Table C-15. TAC Emissions Summary and Ambient Air Impact Concentrations.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Fire Pump Engine 1 (lb/hr)	Fire Pump Engine 2 (lb/hr)	Gasoline Storage 1 (lb/hr)	Gasoline Storage 2 (lb/hr)	WWF Storage 1 (lb/hr)	WWF Storage 2 (lb/hr)	Mack 1 NG Comb (lb/hr)	Mack 2 NG Comb (lb/hr)	Total Emission Rate (lb/hr)	Max Impact ($\mu g/m^3$)	ITSL ($\mu g/m^3$)	Averaging Time	ITSL 2 ($\mu g/m^3$)	Averaging Time	IRSL ($\mu g/m^3$)	Notes
50-00-0	formaldehyde	.0028963	.0028963	-	-	-	-	.0028	.0028	5.597E-01	4.433	30	24 hr	-	-		-
50-00-0	formaldehyde	.0001653	.0001653	-	-	-	-	.00092	.00092	1.330E-01	0.058		annual	-	-	.08	-
50-32-8	benzo(a)pyrene	.0000005	.0000005	-	-	-	-	.00000004	.00000004	1.488E-06	0.000	0.002	24 hr	-	-		5
50-32-8	benzo(a)pyrene	.0000005	.0000005	-	-	-	-	.00000004	.00000004	1.488E-06	0.000			-	-	.001	5
53-70-3	Dibenzo(a,h)anthracene	.0000001	.0000001	-	-	-	-	.00000002	.00000002	4.528E-07	0.000	0	annual	-	-	.001	5
56-23-5	Carbon tetrachloride	-	-	-	-	-	-	-	-	1.646E-05	0.000	480	annual	-	-		-
56-23-5	Carbon tetrachloride	-	-	-	-	-	-	-	-	1.646E-05	0.000		annual	-	-	.17	-
56-49-5	3-Methylchloranthrene	-	-	-	-	-	-	.000000126	.000000126	2.123E-06	0.000	0	annual	-	-	.001	5
56-55-3	Benz(a)anthracene	.	.	-	-	-	-	.000000002	.000000002	8.431E-08	0.000	0	annual	-	-	.001	5
57-55-6	propylene glycol	-	-	-	-	-	-	-	-	1.076E+00	0.398	100	annual				
64-17-5	ethyl alcohol	-	-	-	-	-	-	-	-	4.475E-01	4.628	19000	1 hr	-	-	-	-
67-56-1	methanol	-	-	-	-	.0102945	.0102945	-	-	3.647E-01	2.077	20000	24 hr			-	-
67-56-1	methanol	-	-	-	-	.0102945	.0102945	-	-	3.647E-01	14.250			28000.	1 hr	-	-
67-63-0	isopropyl alcohol	-	-	-	-	-	-	-	-	1.556E+01	4.995	220	annual	-	-	-	-
67-64-1	acetone	-	-	-	-	-	-	-	-	7.335E-01	4.536	5900	8 hr	-	-	-	-
67-66-3	Chloroform	-	-	-	-	-	-	-	-	2.232E-04	0.000	0	-	-	-	.4	-
71-23-8	n-propyl alcohol	-	-	-	-	-	-	-	-	6.481E-01	3.543	2500	8 hr	-	-	-	-
71-36-3	n-butanol	-	-	-	-	-	-	-	-	4.285E-01	0.146	350	annual	-	-	-	-
71-41-0	amyl alcohol	-	-	-	-	-	-	-	-	6.462E-01	0.282	120	annual	-	-	-	-
71-43-2	benzene	.0001307	.0001307	-	-	-	-	.00003	.00003	2.165E-03	0.005	30	annual				-
71-43-2	benzene	.00229	.00229	-	-	-	-	.00008	.00008	3.131E-02	0.605			30.	24 hr		-
71-43-2	benzene	.0001307	.0001307	-	-	-	-	.00003	.00003	2.165E-03	0.005		annual			.1	-
75-01-4	Vinyl chloride	-	-	-	-	-	-	-	-	6.676E-06	0.000	100	annual	-	-		-
75-01-4	Vinyl chloride	-	-	-	-	-	-	-	-	6.676E-06	0.000		annual	-	-	.11	-
75-07-0	Acetaldehyde	.0001075	.0001075	-	-	-	-	-	-	2.809E-03	0.006	9	annual	-	-		-
75-07-0	Acetaldehyde	.0001075	.0001075	-	-	-	-	-	-	2.809E-03	0.006		annual	-	-	.5	-
75-34-3	1,1-Dichloroethane	-	-	-	-	-	-	-	-	1.051E-05	0.000	500	annual	-	-	-	-
78-83-1	isobutyl alcohol	-	-	-	-	-	-	-	-	2.234E+00	13.050	1500	8 hr	-	-	-	-
78-84-2	isobutyraldehyde	-	-	-	-	-	-	-	-	4.519E-05	0.000	160	annual	-	-	-	-
78-87-5	1,2 dichloropropane	-	-	-	-	-	-	-	-	1.209E-05	0.000	4	annual	-	-		-
78-87-5	1,2 dichloropropane	-	-	-	-	-	-	-	-	1.209E-05	0.000		annual	-	-	.2	-
78-93-3	methyl ethyl ketone	-	-	-	-	-	-	-	-	1.565E-02	0.052	5000	24 hr	-	-	-	-
79-00-5	1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	2.493E-04	0.000	0	-	-	-	.06	-
79-34-5	1,1,2,2 tetrachloroethane	-	-	-	-	-	-	-	-	4.122E-04	0.001	0	-	-	-	.02	-
83-32-9	Acenaphthene	.0000002	.0000002	-	-	-	-	.000000022	.000000022	7.703E-07	0.000	210	annual	-	-	-	-
85-01-8	Phenanathrene	.0000041	.0000041	-	-	-	-	.00000021	.00000021	1.175E-05	0.000	0.1	annual	-	-	-	-
86-73-7	Fluorene	.0000041	.0000041	-	-	-	-	.000000035	.000000035	8.761E-06	0.000	140	annual	-	-	-	-
91-20-3	naphthalene	.0000119	.0000119	-	-	-	-	.00001	.00001	6.827E-03	0.002	3	annual				-
91-20-3	naphthalene	.0002081	.0002081	-	-	-	-	.00002	.00002	1.595E-02	0.153			520.	8 hr		-
91-20-3	naphthalene	.0000119	.0000119	-	-	-	-	.00001	.00001	6.827E-03	0.002		annual			.08	-
91-57-6	2-Methylnaphthalene	-	-	-	-	-	-	.	.0000003	4.965E-06	0.000	10	annual	-	-	-	-
95-50-1	1,2 Dichlorobenzene 1	-	-	-	-	-	-	.00001	.00001	2.483E-04	0.000	300	annual	-	-	-	-
95-63-6	1,2,4-trimethylbenzene	-	-	-	-	-	-	-	-	9.043E-01	0.318	185	annual			-	14
95-63-6	1,2,4-trimethylbenzene	-	-	-	-	-	-	-	-	1.882E+00	9.054			1200.	8 hr	-	14
97-85-8	Isobutyl isobutyrate	-	-	-	-	-	-	-	-	3.952E-02	0.011	300	annual	-	-	-	-

Notes:
1 - For TACs with annual thresholds, the annual average lb/hr emission rate is used. For all other averaging periods, the max hourly emission rate is used.
2 - Emissions vented into the general in-plant environment (e.g., space heaters, solvent wipe) were modeled as area sources on the roof of each building, simulating release from general roof top ventilation.

Table C-15. TAC Emissions Summary and Ambient Air Impact Concentrations.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Fire Pump Engine 1 (lb/hr)	Fire Pump Engine 2 (lb/hr)	Gasoline Storage 1 (lb/hr)	Gasoline Storage 2 (lb/hr)	WWF Storage 1 (lb/hr)	WWF Storage 2 (lb/hr)	Mack 1 NG Comb (lb/hr)	Mack 2 NG Comb (lb/hr)	Total Emission Rate (lb/hr)	Max Impact ($\mu g/m^3$)	ITSL ($\mu g/m^3$)	Averaging Time	ITSL 2 ($\mu g/m^3$)	Averaging Time	IRSL ($\mu g/m^3$)	Notes
98-82-8	cumene	-	-	-	-	-	-	-	-	6.818E-02	0.023	400	annual	-	-		-
98-82-8	cumene	-	-	-	-	-	-	-	-	6.818E-02	0.023		annual	-	-	.1	-
100-42-5	Styrene	-	-	-	-	-	-	-	-	1.107E-05	0.000	1000	annual	-	-		-
100-42-5	Styrene	-	-	-	-	-	-	-	-	1.107E-05	0.000		annual	-	-	2.	-
100-41-4	ethylbenzene	-	-	-	-	-	-	-	-	8.712E-01	2.835	1000	24 hr	-	-		-
100-41-4	ethylbenzene	-	-	-	-	-	-	-	-	3.124E-01	0.100		annual	-	-	.4	-
101-68-8	MDI	-	-	-	-	-	-	-	-	5.295E-07	0.0000002	0.6	annual	-	-	-	-
102-71-6	triethanolamine	-	-	-	-	-	-	-	-	4.251E+00	17.193	50	8 hr	-	-	-	-
106-46-7	1,4 Dichlorobenzene 1	-	-	-	-	-	-	.00001	.00001	2.483E-04	0.000	800	annual	-	-		-
106-46-7	1,4 Dichlorobenzene 1	-	-	-	-	-	-	.00001	.00001	2.483E-04	0.000		annual	-	-	.25	-
106-93-4	Ethylene dibromide	-	-	-	-	-	-	-	-	1.981E-05	0.000	9	annual	-	-		-
106-93-4	Ethylene dibromide	-	-	-	-	-	-	-	-	1.981E-05	0.000		annual	-	-	.002	-
106-97-8	butane	-	-	-	-	-	-	.07844	.07844	9.885E-01	8.371	23800	8 hr	-	-	-	22
106-99-0	1,3-Butadiene	.0000055	.0000055	-	-	-	-	-	-	6.274E-04	0.001	33	annual	-	-		-
106-99-0	1,3-Butadiene	.0000055	.0000055	-	-	-	-	-	-	6.274E-04	0.001		annual	-	-	.03	-
107-02-8	Acrolein	.000013	.000013	-	-	-	-	-	-	2.471E-03	0.004	0.16	annual			-	13
107-02-8	Acrolein	.000227	.000227	-	-	-	-	-	-	4.330E-02	2.505		1 hr	5.	1 hr	-	13
107-06-2	1,2 dichloroethane	-	-	-	-	-	-	-	-	1.841E-04	0.000	0	-	-	-	.04	-
107-21-1	ethylene glycol	-	-	-	-	-	-	-	-	1.843E-02	0.149	4700	1 hr	-	-	-	-
107-98-2	propylene glycol monomethyl ether	-	-	-	-	-	-	-	-	2.710E+00	26.228	3700	1 hr	-	-	-	-
108-01-0	dimethylethanolamine	-	-	-	-	-	-	-	-	3.136E-01	0.117	5.2	annual			-	-
108-01-0	dimethylethanolamine	-	-	-	-	-	-	-	-	5.929E-01	2.875		8 hr	220.	8 hr	-	-
108-10-1	methyl isobutyl ketone	-	-	-	-	-	-	-	-	3.784E+00	18.322	820	8 hr	-	-		-
108-21-4	isopropyl acetate	-	-	-	-	-	-	-	-	3.151E+00	19.210	4200	8 hr	-	-	-	-
108-65-6	1-Methoxy-2-propyl Acetate	-	-	-	-	-	-	-	-	3.941E+00	36.847	5400	1 hr	-	-	-	-
108-87-2	Methylcyclohexane	-	-	-	-	-	-	-	-	8.946E-02	0.442	16000	8 hr	-	-	-	-
108-88-3	toluene	.0010039	.0010039	-	-	-	-	.00013	.00013	3.732E-01	1.836	5000	24 hr	-	-	-	-
108-90-7	Chlorobenzene	-	-	-	-	-	-	-	-	1.200E-05	0.000	50	annual			-	-
108-90-7	Chlorobenzene	-	-	-	-	-	-	-	-	2.102E-04	0.004		8 hr	4400.	8 hr	-	-
109-66-0	pentane	-	-	-	-	-	-	.09711	.09711	1.224E+00	10.364	17700	8 hr	-	-	-	-
110-43-0	Heptan-2-one	-	-	-	-	-	-	-	-	3.651E-02	0.155	2330	8 hr	-	-	-	-
110-54-3	hexane	-	-	-	-	-	-	.02219	.02219	3.724E-01	0.235	700	annual	-	-	-	-
111-76-2	2-butoxyethanol	-	-	-	-	-	-	-	-	2.344E+01	6.605	1600	annual	-	-	-	10
112-07-2	ethylene glycol monobutyl ether acetate	-	-	-	-	-	-	-	-	3.794E-02	0.018	2200	annual	-	-	-	10
112-25-4	ethylene glycol monohexyl ether	-	-	-	-	-	-	-	-	5.478E-02	0.020	8	annual	-	-	-	-
115-07-1	Propylene	.0063325	.0063325	-	-	-	-	-	-	1.266E-02	1.949	8600	8 hr	-	-	-	-
120-12-7	Anthracene	-	-	-	-	-	-	.00000003	.00000003	4.965E-07	0.000	1000	annual	-	-	-	-
112-34-5	butyl carbitol	-	-	-	-	-	-	-	-	8.368E-01	0.310	1	annual	-	-	-	-
123-42-2	4-Hydroxy4-Methylpentan-2-one	-	-	-	-	-	-	-	-	1.622E-01	1.203	2375	8 hr	-	-	-	-
123-86-4	n-butyl acetate	-	-	-	-	-	-	-	-	1.384E+01	71.776	2400	8 hr	-	-	-	15
129-00-0	Pyrene	.0000007	.0000007	-	-	-	-	.000000062	.000000062	2.374E-06	0.000	100	annual	-	-	-	-
137-32-6	2-Methyl-1-butanol	-	-	-	-	-	-	-	-	3.495E-01	0.152	13	annual	-	-	-	-
142-82-5	Heptane	-	-	-	-	-	-	-	-	1.789E-01	0.883	3500	8 hr	-	-	-	-
191-24-2	Benzo(g,h,i)perylene	.0000001	.0000001	-	-	-	-	.0000000148	.0000000148	3.853E-07	0.000	13	annual	-	-	-	-
193-39-5	Indeno(1,2,3-cd)pyrene	.	.	-	-	-	-	.0000000022	.0000000022	4.775E-08	0.000	0	annual	-	-	.001	5
205-82-3	Benzo(k)fluoranthene	-	-	-	-	-	-	.0000000022	.0000000022	3.724E-08	0.000	0	annual	-	-	.001	5

Notes:
1 - For TACs with annual thresholds, the annual average lb/hr emission rate is used. For all other averaging periods, the max hourly emission rate is used.
2 - Emissions vented into the general in-plant environment (e.g., space heaters, solvent wipe) were modeled as area sources on the roof of each building, simulating release from general roof top ventilation.

Table C-15. TAC Emissions Summary and Ambient Air Impact Concentrations.
FCA Detroit Assembly Complex Mack - April 2020

CAS	Chemical	Fire Pump Engine 1 (lb/hr)	Fire Pump Engine 2 (lb/hr)	Gasoline Storage 1 (lb/hr)	Gasoline Storage 2 (lb/hr)	WWF Storage 1 (lb/hr)	WWF Storage 2 (lb/hr)	Mack 1 NG Comb (lb/hr)	Mack 2 NG Comb (lb/hr)	Total Emission Rate (lb/hr)	Max Impact ($\mu g/m^3$)	ITSL ($\mu g/m^3$)	Averaging Time	ITSL 2 ($\mu g/m^3$)	Averaging Time	IRSL ($\mu g/m^3$)	Notes
205-99-2	Benzo(b)fluoranthene	.	.	-	-	-	-	.0000000022	.0000000022	4.002E-08	0.000	0	annual	-	-	.001	5
206-44-0	Fluoranthene	-	-	-	-	-	-	.000000037	.000000037	6.206E-07	0.000	140	annual	-	-	-	-
207-08-9	Benzo(k)fluoranthene	.	.	-	-	-	-	-	-	4.343E-09	0.000	0	annual	-	-	.001	5
208-96-8	Acenaphthylene	.0000007	.0000007	-	-	-	-	.0000000222	.0000000222	1.790E-06	0.000	35	annual	-	-	-	-
218-01-9	Chrysene	.	.	-	-	-	-	.0000000002	.0000000002	4.713E-09	0.000	0	annual	-	-	.001	5
541-73-1	1,3 Dichlorobenzene 1	-	-	-	-	-	-	.00001	.00001	2.483E-04	0.000	3	annual	-	-	-	-
542-75-6	1,3-Dichloropropene	-	-	-	-	-	-	-	-	1.181E-05	0.000	20	annual	-	-		-
542-75-6	1,3-Dichloropropene	-	-	-	-	-	-	-	-	1.181E-05	0.000		annual	-	-	.2	-
624-54-4	n-pentyl proprionate	-	-	-	-	-	-	-	-	8.616E+00	3.677	21	annual	-	-	-	-
763-69-9	ethyl-3-ethyloxypropionate	-	-	-	-	-	-	-	-	3.165E+00	1.332	134	annual	-	-	-	-
770-35-4	Phenoxyisopropanol	-	-	-	-	-	-	-	-	1.118E-01	0.031	8	annual	-	-	-	-
872-50-4	N-methylpyrrolidone	-	-	-	-	-	-	-	-	2.975E-01	1.199	5600	24 hr	-	-	-	-
1119-40-0	dimethyl glutarate	-	-	-	-	-	-	-	-	1.333E+00	0.582	1	annual	-	-	-	27
1330-20-7	mixed xylenes	.0003993	.0003993	-	-	-	-	-	-	1.664E+00	0.546	390	annual	-	-	-	2
1569-01-3	1-propoxy-2-propanol	-	-	-	-	-	-	-	-	3.834E-01	0.142	86	annual	-	-	-	-
3033-62-3	Bis(N,N-dimethylaminoethyl)ether	-	-	-	-	-	-	-	-	3.582E-03	0.001	0.3	annual	-	-	-	-
5131-66-8	propylene glycol n-butyl ether (alpha iso	-	-	-	-	-	-	-	-	8.852E+00	3.266	77	annual	-	-	-	23
7439-96-5	Manganese	-	-	-	-	-	-	.000005	.000005	7.861E-05	0.000	0.3	annual	-	-	-	29
7439-97-6	Mercury	-	-	-	-	-	-	.000003	.000003	5.379E-05	0.000	0.3	annual			-	7
7439-97-6	Mercury	-	-	-	-	-	-	.00001	.00001	1.224E-04	0.001			1.	24 hr	-	7
7439-98-7	Molybdenum	-	-	-	-	-	-	.000041	.000041	5.178E-04	0.004	30	8 hr	-	-	-	-
7440-02-0	nickel	-	-	-	-	-	-	.000078	.000078	9.885E-04	0.001	0	-	-	-	.006	-
7440-38-2	arsenic	-	-	-	-	-	-	.000007	.000007	9.414E-05	0.000	0	-	-	-	.	-
7440-39-3	Barium	-	-	-	-	-	-	.000164	.000164	2.071E-03	0.018	5	8 hr	-	-	-	35
7440-41-7	berylium	-	-	-	-	-	-	.00000045	.00000045	5.648E-06	0.000	0.02	24 hr	-	-		-
7440-41-7	berylium	-	-	-	-	-	-	.00000015	.00000015	2.483E-06	0.000		annual	-	-	.0004	-
7440-43-9	cadmium	-	-	-	-	-	-	.00004	.00004	5.178E-04	0.000	0	-	-	-	.0006	-
7440-48-4	Cobalt	-	-	-	-	-	-	.000003	.000003	3.954E-05	0.000	0.2	8 hr	-	-	.	42
7440-50-8	Copper	-	-	-	-	-	-	.00003	.00003	4.001E-04	0.003	2	8 hr	-	-	-	-
7782-49-2	Selenium	-	-	-	-	-	-	.0000009	.0000009	1.130E-05	0.000	2	8 hr	-	-	-	34
8006-61-9	Gasoline			.1466497	.1466497	-	-	-		2.933E-01	1.198					2.	-
15821-83-7	propylene glycol n-butyl ether (beta ison	-	-	-	-	-	-	-	-	1.875E-01	0.069	77	annual	-	-	-	23
25322-69-4	Propane-1,2-diol, propoxylated	-	-	-	-	-	-	-	-	1.745E+00	0.646	49	annual	-	-	-	-
34590-94-8	dipropylene glycol methyl ether	-	-	-	-	-	-	-	-	3.706E+00	1.509	720	annual	-	-	-	-
64741-65-7	heavy alkylate naphtha	-	-	-	-	-	-	-	-	2.330E+00	11.191	3500	8 hr	-	-	-	1
64741-66-8	Petroleum Distillates	-	-	-	-	-	-	-	-	8.627E-02	0.031	138	annual	-	-	-	-
64742-47-8	Hydrotreated Light Distillate	-	-	-	-	-	-	-	-	6.586E-02	0.018	24	annual	-	-	-	-
64742-48-9	hydrotreated heavy napht	-	-	-	-	-	-	-	-	9.602E+00	43.147	3500	8 hr	-	-	-	1
64742-49-0	Naphtha, hydrotreated light	-	-	-	-	-	-	-	-	2.472E-01	1.159	3500	8 hr	-	-	-	1
64742-89-8	Light Solvent Naphtha	-	-	-	-	-	-	-	-	2.049E-01	0.829	3500	8 hr	-	-	-	1
64742-94-5	Heavy Aromatic Naphtha	-	-	-	-	-	-	-	-	6.586E-02	0.018	70	annual	-	-	-	1
64742-95-6	light aromatic solvent naphtha (petroleu	-	-	-	-	-	-	-	-	2.240E+00	0.776	100	annual	-	-	-	1
70657-70-4	2-Methoxy-1-propyl Acetate	-	-	-	-	-	-	-	-	3.457E-02	0.124	500	24 hr	-	-	-	-
57-97-6	7,12-Dimethylbenz(a)anthracene	-	-	-	-	-	-	.0000128	.0000128	2.152E-04	0.000		annual			.001	5.
	Sum of PAH										0.00023					.001	

Notes:
1 - For TACs with annual thresholds, the annual average lb/hr emission rate is used. For all other averaging periods, the max hourly emission rate is used.
2 - Emissions vented into the general in-plant environment (e.g., space heaters, solvent wipe) were modeled as area sources on the roof of each building, simulating release from general roof top ventilation.

Table C-16. NO_X Emission Calculations from Natural Gas Combustion.
FCA Detroit Assembly Complex Mack - April 2020

Pollutant	RTO Natural Gas Combustion Emission Factor (lb/MMBtu)	Other Natural Gas Combustion Emission Factor (lb/MMcf)	Emission Rate: Primer Obs Max hourly (lb/hr)	BC Obs Max hourly (lb/hr)	CC Obs Max hourly (lb/hr)	Indirect Fire Oven Max hourly (lb/hr)	RTO Max hourly (lb/hr)	HWG Max hourly (lb/hr)	PH Vents Max hourly (lb/hr)	Mack 1 NG Max hourly (lb/hr)	Mack 2 NG Max hourly (lb/hr)
NO_X	50	36	0.432	0.648	0.648	0.864	6.549	1.62	3.888	1.3446	1.3446
Number of stacks			1	2	2	4	1	9	1	1	1
Emission Rate per stack (lb/hr)			0.432	0.324	0.324	0.216	6.549	0.18	3.888	1.3446	1.3446

NG Usage Rate		Max hourly		Annual Operating Basis	Max hourly - Annual Average	
New Paint Shop						
45	MMBtu/hr HWG (total)	0.045	$MMft^3/hr$	0.5	0.0225	$MMft^3/hr$
21.5	MMBtu/hr RTO	0.0215	$MMft^3/hr$	1	0.0215	$MMft^3/hr$
154	Direct Fire Oven Burners	0.154	$MMft^3/hr$	0.5	0.077	$MMft^3/hr$
24	Indirect Fire Oven Burners	0.024	$MMft^3/hr$	0.5	0.012	$MMft^3/hr$
12	MMBtu/hr Primer ASH	0.0120	$MMft^3/hr$	0.33	0.00396	$MMft^3/hr$
18	MMBtu/hr BC ASH	0.0180	$MMft^3/hr$	0.33	0.00594	$MMft^3/hr$
18	MMBtu/hr CC ASH	0.0180	$MMft^3/hr$	0.33	0.00594	$MMft^3/hr$
108.0	MMBtu/hr Misc PH vent	0.1080	$MMft^3/hr$	0.33	0.03564	$MMft^3/hr$
Additions to Existing Buildings						
74.7	MMBtu/hr Mack 1 & 2 NG Combustion	0.075	$MMft^3/hr$	0.33	0.024651	$MMft^3/hr$
475.2	MMBtu/hr TOTAL					

Table C-16. NO_X Emission Calculations from Natural Gas Combustion.
FCA Detroit Assembly Complex Mack - April 2020

	Emission Rate								
Pollutant	**Primer Obs Hrly An Avg (lb/hr)**	**BC Obs Hrly An Avg (lb/hr)**	**CC Obs Hrly An Avg (lb/hr)**	**Indirect Fire Oven Hrly An Avg (lb/hr)**	**RTO Hrly An Avg (lb/hr)**	**HWG Hrly An Avg (lb/hr)**	**PH Vents Hrly An Avg (lb/hr)**	**Mack 1 NG Hrly An Avg (lb/hr)**	**Mack 2 NG Hrly An Avg (lb/hr)**
NO_X	0.14256	0.21384	0.21384	0.432	3.777	0.81	1.28304	0.443718	0.443718
Number of stacks	1	2	2	4	1	9	1	1	1
Emission Rate per stack (lb/hr)	0.14256	0.10692	0.10692	0.108	3.777	0.09	1.28304	0.443718	0.443718

Table C-17. NO_X Emission Calculations from Natural Gas Combustion in Emergency Generators.
FCA Detroit Assembly Complex Mack - April 2020

Pollutant	Natural Gas Combustion Emission Factor (g/hp-hr)	Gen 1A Hourly Ann Avg (lb/hr)	Gen 1B Hourly Ann Avg (lb/hr)	Gen 2 Hourly Ann Avg (lb/hr)	Gen 3 Hourly Ann Avg (lb/hr)
NO_X	2	0.0881	0.0881	0.1938	0.1938

Engine Size		Annual Operating Basis
350	hp Life Safety	0.057
350	hp Life Safety	0.057
770	hp Generator	0.057
770	hp Life Safety	0.057

Table C-18. NO_X Emission Calculations from Diesel Fired Emergency Engines.
FCA Detroit Assembly Complex Mack - April 2020

Pollutant	Diesel Combustion Emission Factor (g/hp-hr)	Gen 1 Hourly Ann Avg (lb/hr)
NO_X	3	0.132

Engine Size		Annual Operating Basis
350	hp Fire Pump Engine	0.057

Table C-19. Nearby Non-FCA Sources of NO_X
FCA Detroit Assembly Complex Mack - April 2020

Source ID	Stack Release Type	Source Description	UTM E (m)	UTM N (m)	Elevation (m)	Stack Height (ft)	Temp. (°F)	Exit Velocity (fps)	Diameter (ft)	NO_X Emission Rate (lb/hr)	(tpy)
A7809	DEFAULT	U S STEEL GREAT LAKES WORKS	326,000	4,683,000	181.0	76.3	240.0	39.04	7.62	126.4	553.6
A9831	DEFAULT	MARATHON PETROLEUM COMPANY LP	322,000	4,683,150	177.0	133.4	476.0	20.34	4.44	146.5	641.6
B2169	HORIZONTAL	CARMEUSE LIME Inc, RIVER ROUGE OPERATION	324,525	4,682,560	176.4	71.0	450.0	4.79	23.80	107.5	470.9
B2810	DEFAULT	DTE Electric Company - River Rouge Power Plant	325,800	4,682,000	176.7	425.0	320.0	524.46	12.83	491.2	2151.5
N6631	DEFAULT	DEARBORN INDUSTRIAL GENERATION	322,600	4,685,595	178.9	60.0	1073.0	482.94	17.75	214.0	937.3
P0408	DEFAULT	EES COKE BATTERY LLC	326,126	4,683,543	178.7	186.8	783.0	85.63	17.41	314.9	1379.3
B2814	DEFAULT	DETROIT THERMAL BEACON HEATING PLANT	331,560	4,689,140	182.9	250.0	414.6	75.30	10.00	37.0	162.1
M4148	DEFAULT	DETROIT RENEWABLE POWER, LLC	331,054	4,692,742	192.3	337.5	312.0	136.80	7.58	69.1	302.7

Notes:
Nearby sources were determined by the MDEQ-AQD

Table C-20. NO_X Emission Calculations from Existing Nearby FCA Processes.

FCA Detroit Assembly Complex Mack - April 2020

	Hours of Operation	
	2017	**2018**
Production Hours	5,743	5,855
Heating Hours	6183	6006

Existing NG Combustion Emissions at DACM

Source/Stack	**Notes**	**NG Usage**					**Emissions**
		2017 ($MMft^3$/yr)	**2018 ($MMft^3$/yr)**	**2017 ($MMft^3$/hr)**	**2018 ($MMft^3$/hr)**	**2 Year Average ($MMft^3$/hr)**	**NO_X (lb/hr)**
Existing Building Heat	Modeled as area source	128.735	143.450	2.08E-02	2.39E-02	2.24E-02	2.235

Existing NG Combustion Emissions at FCA JNAP

Source/Stack	**Notes**	**NG Usage**					**Emissions**
		2017 ($MMft^3$/yr)	**2018 ($MMft^3$/yr)**	**2017 ($MMft^3$/hr)**	**2018 ($MMft^3$/hr)**	**2 Year Average ($MMft^3$/hr)**	**NO_X (lb/hr)**
Building Heat	Modeled as area source	450.348	481.137	7.28E-02	8.01E-02	7.65E-02	7.647
Ecoat Incinerator A	Ecoat Oven Burners + Ecoat Incinerator A	32.25	34.46	5.62E-03	5.89E-03	5.75E-03	0.575
Ecoat Incinerator B	Ecoat Oven Burners + Ecoat Incinerator B	47.12	50.34	8.20E-03	8.60E-03	8.40E-03	0.840
Color 1 Concentrator	Color 1 Air Supply House NG	34.31	36.66	5.97E-03	6.26E-03	6.12E-03	0.612
Color 2 Concentrator	Color 2 Air Supply House NG	102.93	109.97	1.79E-02	1.88E-02	1.84E-02	1.835
Color 3 Concentrator	Color 3 Air Supply House NG	216.61	231.42	3.77E-02	3.95E-02	3.86E-02	3.862
Color 1, 2, TT Booth RTO	Existing C1 and C2 emissions	41.17	43.99	7.17E-03	7.51E-03	7.34E-03	0.734
Color 3 Booth RTO		36.14	38.61	6.29E-03	6.59E-03	6.44E-03	0.644
Color 1 Oven RTO	Oven and RTO Burners	38.89	41.54	6.77E-03	7.10E-03	6.93E-03	0.693
Color 2 Oven RTO	Oven and RTO Burners	38.89	41.54	6.77E-03	7.10E-03	6.93E-03	0.693
Color 3 Oven RTO	Oven and RTO Burners	66.33	70.87	1.15E-02	1.21E-02	1.18E-02	1.183
Sealer Oven	Exhausted via Ecoat B Stack	20.59	21.99	3.58E-03	3.76E-03	3.67E-03	0.367
Powder Oven		131.52	140.52	2.29E-02	2.40E-02	2.34E-02	2.345

Table C-21. Daily Boiler NG Use - JNAP
FCA Detroit Assembly Complex Mack - April 2020

Daily Boiler NG Usage 2017 (1000 ft^3)				
	Boiler #1	Boiler #2	Boiler #3	Boiler #4
1-Jan			207	
2-Jan			342	
3-Jan			444	
4-Jan		235	484	
5-Jan		434	432	
6-Jan		430	430	
7-Jan		410	413	
8-Jan		397	396	
9-Jan		338	338	
10-Jan		378	107	
11-Jan		453		
12-Jan		466		
13-Jan		548	120	
14-Jan		307	306	
15-Jan		119	340	
16-Jan			407	
17-Jan			462	
18-Jan			428	
19-Jan			504	
20-Jan			464	
21-Jan			344	
22-Jan			344	
23-Jan			373	
24-Jan			443	
25-Jan			432	
26-Jan			480	
27-Jan		84	478	
28-Jan		285	285	
29-Jan		210	224	
30-Jan		344	344	
31-Jan		285	285	
1-Feb		260	260	
2-Feb		340	340	
3-Feb		382		187
4-Feb		728		347
5-Feb		320		174
6-Feb		493		
7-Feb		435		
8-Feb		471		84
9-Feb		392		394
10-Feb		354		355
11-Feb		343		128
12-Feb		432		
13-Feb		466		
14-Feb		447		102
15-Feb		316	210	105
16-Feb		336	247	87
17-Feb		277		279
18-Feb		180		81
19-Feb		114		139
20-Feb				452
21-Feb	233	99		102
22-Feb	290			

Daily Boiler NG Usage 2018 (1000 ft^3)				
	Boiler #1	Boiler #2	Boiler #3	Boiler #4
1-Jan		419	419	
2-Jan		439	439	
3-Jan		432	432	
4-Jan		484	484	
5-Jan		532	532	
6-Jan		506	506	
7-Jan		402	402	
8-Jan		280	278	
9-Jan		291	291	
10-Jan		107	447	
11-Jan			296	
12-Jan		234	419	
13-Jan		453	453	
14-Jan		391	388	
15-Jan		320	329	
16-Jan		411	411	
17-Jan		407	408	
18-Jan		346	347	
19-Jan		293	293	
20-Jan		424	55	
21-Jan		452		
22-Jan		368		
23-Jan		534		
24-Jan		389	386	
25-Jan		344	345	
26-Jan		320	168	
27-Jan		382	12	
28-Jan		61	368	
29-Jan		377	378	
30-Jan		437	438	
31-Jan		294	295	
1-Feb		303	306	
2-Feb		441	443	
3-Feb		370	372	
4-Feb		272	274	
5-Feb		393	394	
6-Feb		385	386	
7-Feb		371	373	
8-Feb		377	378	
9-Feb		362	363	
10-Feb		356	358	
11-Feb		314	315	
12-Feb		324	325	
13-Feb		352	353	
14-Feb		251	251	
15-Feb		36	337	
16-Feb		48	487	
17-Feb		291	292	
18-Feb		319	75	
19-Feb		381		
20-Feb		198		
21-Feb		392	386	
22-Feb		269	269	

Table C-21. Daily Boiler NG Use - JNAP
FCA Detroit Assembly Complex Mack - April 2020

Daily Boiler NG Usage 2017 (1000 ft^3)				
23-Feb	301			
24-Feb	364			
25-Feb	463	91		
26-Feb	250	284	2	
27-Feb	390	1	1	
28-Feb	401			
1-Mar	371			
2-Mar	612	96		
3-Mar	355	356		
4-Mar	379	381		
5-Mar	313	311		
6-Mar	246	76		
7-Mar	298			
8-Mar	411			
9-Mar	473	68		
10-Mar	361	360		
11-Mar	423	422		
12-Mar	383	382		
13-Mar	410	409		
14-Mar	435	434		
15-Mar	422	421		
16-Mar	331	331		
17-Mar	319	318		
18-Mar	277	276		
19-Mar	279	187		
20-Mar	464			
21-Mar	459			
22-Mar	443	252		
23-Mar	305	305		
24-Mar	273	56		
25-Mar	428			
26-Mar	377			
27-Mar	237			
28-Mar	409			
29-Mar	424			
30-Mar	510			
31-Mar	492			
1-Apr	420			
2-Apr	270			
3-Apr	349			
4-Apr	303			
5-Apr	390			
6-Apr	456			
7-Apr	523			
8-Apr	367			
9-Apr	243			
10-Apr	187			
11-Apr	237			
12-Apr	333			
13-Apr	374			
14-Apr	286			
15-Apr	206			
16-Apr	77			
17-Apr	254			
18-Apr	287			

Daily Boiler NG Usage 2018 (1000 ft^3)				
23-Feb		184	193	
24-Feb		233	233	
25-Feb		57	309	
26-Feb			399	
27-Feb			335	
28-Feb			328	
1-Mar		101	456	
2-Mar		100	456	
3-Mar		508		
4-Mar		537		
5-Mar		246	287	
6-Mar		270	269	
7-Mar		276	280	
8-Mar		301	302	
9-Mar		282	284	
10-Mar		291	292	
11-Mar		103	344	
12-Mar		300	300	
13-Mar		306	308	
14-Mar		277	277	
15-Mar		270	271	
16-Mar		319	320	
17-Mar		258	260	
18-Mar		131	244	
19-Mar			488	
20-Mar		231	348	
21-Mar		274	274	
22-Mar		274	274	
23-Mar		284	284	
24-Mar		301	301	
25-Mar		299	263	
26-Mar		429		
27-Mar		377		
28-Mar		415		
29-Mar		439		
30-Mar		453		
31-Mar		407		
1-Apr		303		
2-Apr		539		
3-Apr		483		
4-Apr		473	97	
5-Apr		279	280	
6-Apr		259	272	
7-Apr		310	311	
8-Apr		257	258	
9-Apr		298	298	
10-Apr		263	263	
11-Apr		260	142	
12-Apr		290		
13-Apr		368		
14-Apr		503		
15-Apr		499		
16-Apr		472		
17-Apr		582		
18-Apr		565		

Table C-21. Daily Boiler NG Use - JNAP
FCA Detroit Assembly Complex Mack - April 2020

Daily Boiler NG Usage 2017 (1000 ft^3)				
19-Apr	203			
20-Apr	167			
21-Apr	165			
22-Apr	167			
23-Apr	144			
24-Apr	136			
25-Apr	166			
26-Apr	166			
27-Apr	159			
28-Apr	121	29		
29-Apr		94		
30-Apr		106		
1-May		105		
2-May		97		
3-May		96		
4-May		96		
5-May		103		
6-May		170		
7-May		263		
8-May		241		
9-May		299		
10-May		205		
11-May		88		
12-May	30	78		
13-May	173			
14-May	130			
15-May	139			
16-May	170			
17-May	155			
18-May	157			
19-May	170			
20-May	169			
21-May	124			
22-May	161			
23-May	160			
24-May	82			75
25-May				138
26-May				142
27-May				139
28-May				114
29-May				56
30-May				137
31-May				133
1-Jun				131
2-Jun				132
3-Jun				127
4-Jun				112
5-Jun				114
6-Jun				140
7-Jun				133
8-Jun				134
9-Jun				126
10-Jun				125
11-Jun				86
12-Jun				119

Daily Boiler NG Usage 2018 (1000 ft^3)				
19-Apr		468		
20-Apr		417		
21-Apr		373		
22-Apr		289		
23-Apr		241		
24-Apr		251		
25-Apr		305		
26-Apr		310		
27-Apr		309		
28-Apr		464		
29-Apr		154		
30-Apr		254		
1-May				156
2-May				156
3-May				148
4-May				160
5-May				152
6-May				127
7-May		26		203
8-May				182
9-May				169
10-May				162
11-May				173
12-May				164
13-May				130
14-May				138
15-May				138
16-May				144
17-May				138
18-May				145
19-May				135
20-May				111
21-May				141
22-May				138
23-May				128
24-May				136
25-May				144
26-May				150
27-May				110
28-May				117
29-May				147
30-May				149
31-May				140
1-Jun				151
2-Jun				148
3-Jun				121
4-Jun				147
5-Jun				160
6-Jun				156
7-Jun				149
8-Jun				153
9-Jun				153
10-Jun				122
11-Jun				156
12-Jun				150

Table C-21. Daily Boiler NG Use - JNAP
FCA Detroit Assembly Complex Mack - April 2020

Daily Boiler NG Usage 2017 (1000 ft^3)				
13-Jun				121
14-Jun				120
15-Jun				119
16-Jun				118
17-Jun				114
18-Jun				102
19-Jun				117
20-Jun				122
21-Jun				129
22-Jun				123
23-Jun				116
24-Jun				120
25-Jun				112
26-Jun				121
27-Jun				115
28-Jun				127
29-Jun				119
30-Jun				118
1-Jul				116
2-Jul				112
3-Jul				122
4-Jul				110
5-Jul				119
6-Jul				123
7-Jul				118
8-Jul				124
9-Jul				110
10-Jul				118
11-Jul				104
12-Jul				109
13-Jul				107
14-Jul				111
15-Jul				111
16-Jul				88
17-Jul				57
18-Jul				28
19-Jul				20
20-Jul				26
21-Jul				55
22-Jul				51
23-Jul				100
24-Jul				132
25-Jul				142
26-Jul				137
27-Jul				130
28-Jul				130
29-Jul				133
30-Jul				111
31-Jul				114
1-Aug				127
2-Aug				124
3-Aug				122
4-Aug				126
5-Aug				126
6-Aug				55

Daily Boiler NG Usage 2018 (1000 ft^3)				
13-Jun				130
14-Jun				165
15-Jun				144
16-Jun				147
17-Jun				114
18-Jun				130
19-Jun				140
20-Jun				145
21-Jun				149
22-Jun				156
23-Jun				147
24-Jun				122
25-Jun				144
26-Jun				144
27-Jun				141
28-Jun				145
29-Jun				144
30-Jun				137
1-Jul				104
2-Jul				135
3-Jul				136
4-Jul				76
5-Jul				117
6-Jul				128
7-Jul				140
8-Jul				117
9-Jul				126
10-Jul				131
11-Jul				137
12-Jul				138
13-Jul				129
14-Jul				123
15-Jul				106
16-Jul				105
17-Jul				131
18-Jul				144
19-Jul				143
20-Jul				142
21-Jul				136
22-Jul				119
23-Jul				139
24-Jul				136
25-Jul				126
26-Jul				129
27-Jul				128
28-Jul				130
29-Jul				107
30-Jul				125
31-Jul				129
1-Aug				126
2-Aug				125
3-Aug				121
4-Aug				122
5-Aug				110
6-Aug				113

Table C-21. Daily Boiler NG Use - JNAP
FCA Detroit Assembly Complex Mack - April 2020

Daily Boiler NG Usage 2017 (1000 ft^3)				
7-Aug				122
8-Aug				127
9-Aug				127
10-Aug				127
11-Aug				127
12-Aug				128
13-Aug				111
14-Aug				129
15-Aug				127
16-Aug				127
17-Aug				123
18-Aug	77			55
19-Aug	141			
20-Aug				114
21-Aug	2			123
22-Aug				124
23-Aug				134
24-Aug				135
25-Aug				145
26-Aug				136
27-Aug				124
28-Aug		16		98
29-Aug				128
30-Aug				122
31-Aug				126
1-Sep				127
2-Sep				129
3-Sep				57
4-Sep				88
5-Sep				120
6-Sep				124
7-Sep				124
8-Sep				130
9-Sep				130
10-Sep				101
11-Sep				127
12-Sep				123
13-Sep				124
14-Sep				125
15-Sep				122
16-Sep				120
17-Sep				70
18-Sep				106
19-Sep				135
20-Sep				124
21-Sep				118
22-Sep				117
23-Sep				126
24-Sep				110
25-Sep			83	34
26-Sep			122	
27-Sep			124	
28-Sep			123	
29-Sep			124	
30-Sep	108		10	

Daily Boiler NG Usage 2018 (1000 ft^3)				
7-Aug				124
8-Aug				123
9-Aug				126
10-Aug				122
11-Aug				127
12-Aug				68
13-Aug				119
14-Aug				122
15-Aug				121
16-Aug				116
17-Aug				116
18-Aug				119
19-Aug				94
20-Aug				122
21-Aug				119
22-Aug				130
23-Aug				131
24-Aug				122
25-Aug				120
26-Aug				105
27-Aug				112
28-Aug				119
29-Aug				119
30-Aug				125
31-Aug				130
1-Sep				119
2-Sep				65
3-Sep				53
4-Sep				105
5-Sep				102
6-Sep				119
7-Sep				127
8-Sep				128
9-Sep				114
10-Sep				114
11-Sep				126
12-Sep				127
13-Sep				119
14-Sep				124
15-Sep				103
16-Sep				85
17-Sep				107
18-Sep	6			107
19-Sep				125
20-Sep	31			91
21-Sep				104
22-Sep				119
23-Sep	58			50
24-Sep	117			
25-Sep	116			
26-Sep	121			
27-Sep	129			
28-Sep	125			
29-Sep	126			
30-Sep	111			

Table C-21. Daily Boiler NG Use - JNAP
FCA Detroit Assembly Complex Mack - April 2020

Daily Boiler NG Usage 2017 (1000 ft^3)				
1-Oct	107			
2-Oct	113			
3-Oct	142			
4-Oct	139			
5-Oct	141			
6-Oct	144			
7-Oct	140			
8-Oct	127			
9-Oct	136			
10-Oct	140			
11-Oct	144			
12-Oct	157			
13-Oct	152			
14-Oct	149			
15-Oct	127			
16-Oct	273			
17-Oct	153			
18-Oct	155			
19-Oct	153			
20-Oct	153			
21-Oct	148			
22-Oct	107			
23-Oct	145			
24-Oct	156			
25-Oct	312			
26-Oct	480			
27-Oct	322			
28-Oct	439			
29-Oct	430			
30-Oct	413			
31-Oct	459			
1-Nov	464			
2-Nov	304			
3-Nov	377			
4-Nov	386			
5-Nov	86			125
6-Nov				418
7-Nov				461
8-Nov				509
9-Nov				548
10-Nov			383	383
11-Nov			304	302
12-Nov			264	264
13-Nov			241	242
14-Nov	244			212
15-Nov	455			
16-Nov	511			
17-Nov	539			
18-Nov	469			
19-Nov	519			
20-Nov	511			
21-Nov	45	10	600	
22-Nov		310	311	
23-Nov		237	52	
24-Nov		277		

Daily Boiler NG Usage 2018 (1000 ft^3)				
1-Oct	123			
2-Oct	133			
3-Oct	132			
4-Oct	132			
5-Oct	132			
6-Oct	93	36		
7-Oct	115	3		
8-Oct	129			
9-Oct	124			
10-Oct	122			
11-Oct	147			
12-Oct	146			
13-Oct	150			
14-Oct	110			54
15-Oct				135
16-Oct				342
17-Oct				448
18-Oct			210	258
19-Oct			244	
20-Oct			384	
21-Oct			442	
22-Oct			346	
23-Oct			371	
24-Oct			463	
25-Oct			227	
26-Oct			303	
27-Oct			445	
28-Oct		358		
29-Oct		380		
30-Oct		347		
31-Oct		250		
1-Nov		363		
2-Nov		373		
3-Nov		386		
4-Nov		287		
5-Nov		254		
6-Nov		200		
7-Nov		200		122
8-Nov	150			312
9-Nov	248	122	123	
10-Nov		270	270	
11-Nov		280	285	
12-Nov	208	179		
13-Nov	302	301		
14-Nov	312	312		
15-Nov	278	277		
16-Nov	239	238		
17-Nov	267	267		
18-Nov	351	95	13	
19-Nov	179	276	95	
20-Nov	299	298		
21-Nov	315	314		
22-Nov	308	95		
23-Nov	229			
24-Nov	388			

Table C-21. Daily Boiler NG Use - JNAP
FCA Detroit Assembly Complex Mack - April 2020

Daily Boiler NG Usage 2017 (1000 ft^3)				
25-Nov		376		
26-Nov		510		
27-Nov		461		
28-Nov		266		
29-Nov		403		
30-Nov		420		
1-Dec		472		
2-Dec		431		
3-Dec		390		
4-Dec		322		
5-Dec		365	70	
6-Dec		273	272	
7-Dec		326	325	
8-Dec		340	340	
9-Dec		340	340	
10-Dec		310	310	
11-Dec		335	334	
12-Dec		410	410	
13-Dec		392	392	
14-Dec		397	397	
15-Dec		358	357	
16-Dec		337	337	
17-Dec		231	233	
18-Dec		247	248	
19-Dec		229	230	
20-Dec		311	310	
21-Dec		311	311	
22-Dec		297	297	
23-Dec		253	60	
24-Dec		365		
25-Dec		424		
26-Dec		504	501	
27-Dec		579	279	
28-Dec		294	294	
29-Dec		295	294	
30-Dec		291	290	
31-Dec		375	375	
Total Usage	35,181	34,885	22,063	20,624

Daily Boiler NG Usage 2018 (1000 ft^3)				
25-Nov	394			
26-Nov	554	28		
27-Nov	331	330		
28-Nov	344	343		
29-Nov	345	344		
30-Nov	295	294		
1-Dec	273	273		
2-Dec	210	73		
3-Dec	432	97		
4-Dec	325	324		
5-Dec	317	316		
6-Dec	320	321		
7-Dec	239	239		
8-Dec	376	375		
9-Dec	710	332		
10-Dec	372	702		
11-Dec	329	328		
12-Dec	309	308		
13-Dec	281	281		
14-Dec	234	232		
15-Dec	261	261		
16-Dec	221	210		
17-Dec	335	227		
18-Dec	320	319		
19-Dec	274	273		
20-Dec	254	253		
21-Dec	245	244		
22-Dec	380	69		
23-Dec	518			
24-Dec	507			
25-Dec	284			
26-Dec	431			
27-Dec	495			
28-Dec	412			
29-Dec	383	23		
30-Dec		244		
31-Dec		119		
Total Usage	19,111	52,873	31,877	20,524

	75th Percentile Usage (1000 ft^3)				75th Percentile Usage (1000 ft^3)			
Daily	392.8	393.3	396.0	130.0	330.5	377.0	386.0	144.0
Hourly [1]	16.36	16.39	16.50	5.42	13.77	15.71	16.08	6.00
2 yr Av hrly	15.07	16.05	16.29	5.71				

1 - Hourly emission rate based on 24 hours of operation per day

	Emissions (lb/hr) [1]			
	Boiler #1	Boiler #2	Boiler #3	Boiler #4
NO_X	1.605	1.709	1.735	0.608
$PM_{2.5}$	0.115	0.122	0.124	0.043

1 - Emissions based on 106.5 lb $NO_X/MMft^3$, and 7.6 lb $PM_{2.5}/MMft^3$

Table C-22. Maximum Ambient Air Impact Concentrations of NO_2
FCA Detroit Assembly Complex Mack - April 2020

Pollutant	Averaging Period	Maximum Impact With Off-Site Sources ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
NO_2	1 hr	103.4	82.6	186.0	188
	annual	10.72	29.0	39.72	100

Notes:
Maximum 1-hr impact is the 5 year average of the 98th percentile of the annual distribution of maximum daily 1-hour values.
1-hr impact is based upon Tier 2 NO2 modeling (ARM2).
Maximum annual impact is the highest annual average impact over five years.
Annual impacts of NO_2 assume 100% conversion of NO_x to NO2.

Pollutant	Averaging Period	Maximum Impact With Off-Site Sources ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)
NO_2	annual	10.72	25.0

Notes:
Combined impacts of all sources conservatively evaluated, not only increment consuming sources.

APPENDIX D

DISPERSION MODELING INPUT/OUTPUT FILES

Flash Drive of Files are Included in Original Copy of Submittal

APPENDIX E

PTI #14-19 PROPOSED ADMINISTRATIVE CHANGES IN REDLINE

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
AIR QUALITY DIVISION

April 26, 2019

1

ISSUED TO
FCA US, LLC

Detroit Assembly Complex Mack

LOCATED AT
~~11570 Warren Avenue East~~4000 St. Jean Street
Detroit, Michigan

IN THE COUNTY OF
Wayne

STATE REGISTRATION NUMBER
N2155

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environment, Great Lakes, and Energy. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: **March 12, 2019**	
DATE PERMIT TO INSTALL APPROVED: **April 26, 2019**	SIGNATURE: **---,P? , ,,,,,,_.,,,,, ev lek.—_.**
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

COMMON ACRONYMS 2
POLLUTANT / MEASUREMENT ABBREVIATIONS 3
GENERAL CONDITIONS 4
EMISSION UNIT SPECIAL CONDITIONS 6
EMISSION UNIT SUMMARY TABLE 6
EUPRETREAT 10
EUECOAT 12
EUSLR/ADH/DEAD 14
EUPURFOAM 16
EUGLASSBOND 18
EUPRIMER 20
EUTOPCOAT 22
EUPURGECLEAN 25
EUBODYWIPE 27
EUFLUIDFILL 29
EUSPOTREPAIR 31
EUFINALREPAIR 33
FLEXIBLE GROUP SPECIAL CONDITIONS 35
FLEXIBLE GROUP SUMMARY TABLE 35
FGAUTOASSEMBLY 37
FGCONTROLS 43
FGAUTOMACT 46
FGBOILERMACT 50
FGNGEMENG1 57
FGNGEMENG2 57
FGFIREPUMP 62
FGFUEL 66
FGNGEQUIP 68
FGTANKS 71
FGOLD 73

COMMON ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
COMS	Continuous Opacity Monitoring System
Department/department	Michigan Department of Environmental Quality
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MDEQ	Michigan Department of Environmental Quality
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TBD	To Be Determined
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig

POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H_2S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO_x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO_2	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**

2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**

3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**

4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**

5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(R 336.1219)**

6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**

7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**

8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.

9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). **(R 336.1301)**
    a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
    b) A visible emission limit specified by an applicable federal new source performance standard.
    c) A visible emission limit specified as a condition of this Permit to Install.

12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2). **(R 336.1370)**

13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUPRETREAT	Pretreatment of vehicle surface to prepare it for E-coat, consisting of a water-based wash system.	TBD	FGAUTOASSEMBLY, FGAUTOMACT
EUECOAT	An electrodeposition (E-coat) coating process consisting of a series of dip tanks, rinses, a curing oven, a cooling tunnel, followed by a prep booth (light sanding) and spot prime coating booth. Repairs will take place in a prep booth (light sanding), followed by the manual application of a small amount of flash prime coating in a spot prime coating booth. Emissions from the E-coat tanks and~~are directed to the~~ curing oven ~~and then~~ are controlled by an RTO. Emissions from the prep booth are filtered, recirculated, and exhausted in-plant. Emissions from the spot prime booth are filtered and exhausted to	TBD	FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT
EUSLR/ADH/DEAD	Various manual and robotic sealer, adhesive, and sound deadener material application stations/booths. Deadeners are applied in the body shop or paint shop. Sealers and adhesives are applied at various decks in the paint shop, ~~(some of which are cured in the sealer oven), and in the~~ body shop and final assembly area.	TBD	FGAUTOASSEMBLY, FGAUTOMACT
EUPURFOAM	Polyurethane foam application process exhausted to the general in-plant environment.	TBD	FGAUTOASSEMBLY, FGAUTOMACT
EUGLASSBOND	Installation of glass to the coated automobile in the final assembly area. Glass bonding emissions are emitted to the general in-plant environment.	TBD	FGAUTOASSEMBLY, FGAUTOMACT
EUPRIMER	A prep tunnel, two (2) primer booths, one for main primer and one for tutone coloring primer, followed by curing in one of two primer ovens, a cooling tunnel, and two sanding booths (color prep and reprocess heavy sand) for repair of surface blemishes.	TBD	FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT
EUTOPCOAT	An automatic topcoat spray application process with two parallel lines consisting of a waterborne basecoat, a heated flash-off area, a solvent-borne clearcoat, and a curing oven. Approximately 85% of the air from the spray zones is recirculated back into the process and 15% is exhausted to the concentrator and RTO.	TBD	FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUPURGECLEAN	Various cleaning solvents and purge solvents used in the manufacturing of automobiles. VOC emissions from the solvent-borne purge materials used within clearcoat booths are controlled by the RTO except when collected in the purge collection system.	TBD	FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT,
EUBODYWIPE	Pre-moistened body wipes used throughout the plant in the manufacturing of automobiles.	TBD	FGAUTOASSEMBLY, FGAUTOMACT
EUFLUIDFILL	Each new vehicle will be filled with various fluids such as antifreeze, transmission fluid, power steering fluid, and windshield washer fluid.	TBD	FGAUTOASSEMBLY
EUFUELFILL	Gasoline filling operation vehicle fuel filling operations. Vehicles being filled with gasoline shall be equipped with onboard refueling vapor recovery (ORVR).	TBD	FGAUTOASSEMBLY, FGFUEL
EUSPOTREPAIR	Coating spot repair and/or clean shop area for fixing slightly blemished vehicles. Emissions are exhausted through a dry filter particulate system and emitted to the ambient air.	TBD	FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT
EUFINALREPAIR	Final repair operations including a coating area. Emissions are exhausted to the general in-plant environment.	TBD	FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT
EUASH/AHU/SH	All air supply housing (ASH), air handling units (AHU), and space heating for the paint shop portion of the automobile assembly operations at the Detroit Assembly Complex Mack ~~Avenue Assembly~~ Plant. All units are direct-fired and equipped with low NOx	TBD	FGAUTOASSEMBLY, FGCONTROLS, FGNGEQUIP
EUHWG1	Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.	TBD	FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP
EUHWG2	Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.	TBD	FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP
EUHWG3	Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.	TBD	FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP
EUHWG4	Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.	TBD	FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP
EUHWG5	Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.	TBD	FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP
EUHWG6	Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.	TBD	FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP
EUHWG7	Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.	TBD	FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP
EUHWG8	Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.	TBD	FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUHWG9	Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.	TBD	FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP
~~EUHWG10~~	~~Hot water generator with a maximum heat input rating of 5 MMBtu/hr. This unit is equipped with a low NOx burner.~~	~~TBD~~	~~FGAUTOASSEMBLY, FGBOILERMACT, FGNGEQUIP~~
EUNEWNGMACK~~-2~~-1&2	New Air Handling Units (AHU), Air Supply Housing (ASH) units, and space heating units installed at the Mack~~-2~~-1&2 building in conjunction with the Detroit Assembly Complex Mack ~~Avenue Assembly~~ Plant. All units are direct-fired and the total heat input is equivalent to 74.7~~38.4~~ MMBtu/hr.	TBD	FGAUTOASSEMBLY, FGNGEQUIP
EUGASTANK1	15,000~~31,000~~-gallon bulk storage tank (Tank ID#T-801A~~1A~~) for the storage of gasoline	TBD~~1996 / Date of PTI~~	FGAUTOASSEMBLY, FGFUEL
EUGASTANK2	15,000~~31,000~~-gallon bulk storage tank (TankID#T-801B) for the storage of gasoline	TBD~~1996 / Date of PTI~~	FGAUTOASSEMBLY, FGFUEL, FGTANKS
EUCOOLANTTANK	20,000~~31,000~~-gallon bulk storage tank (TankID#T-8021~~C~~) for the storage of coolant	TBD~~1996~~	FGTANKS
EUMETANK1	6,000~~12,000~~-gallon storage tank (Tank ID #T-8042~~2~~A) for the storage of windshield washer fluid	TBD~~1996 / Date of PTI~~	FGAUTOASSEMBLY, FGFUEL, FGTANKS, FGOLD
EUMETANK2	6,000-gallon storage tank (Tank ID #T-804B) for the storage of windshield washer fluid	TBD	FGAUTOASSEMBLY, FGFUEL, FGTANKS, FGOLD
EUBRKTANK	10,000-gallon storage tank (Tank ID #T-803) for the storage of brake fluid	TBD	NA
~~EUT-2B~~	~~12,000-gallon bulk storage tank (Tank ID #T-2B), currently empty~~	~~1996~~	~~NA~~
~~EUHYDOILTANK~~	~~12,000-gallon bulk storage tank (Tank ID #T-3A) used for hydraulic oil storage~~	~~1996~~	~~NA~~
~~EUWAYLUBETANK~~	~~12,000-gallon bulk storage tank (Tank ID #T-3B) used for way lubricant storage~~	~~1996~~	~~NA~~
~~EUMOTOROILTANK1~~	~~12,000-gallon bulk storage tank (Tank ID #T-4A) used for storage of motor oil~~	~~1996~~	~~NA~~
~~EUMOTOROILTANK2~~	~~12,000-gallon bulk storage tank (Tank ID #T-4B) used for storage of motor oil~~	~~1996~~	~~NA~~
~~EUGDOILTANK~~	~~12,000-gallon bulk storage tank (Tank ID #T-5A) used for storage of gun drilling oil~~	~~1996~~	~~NA~~
~~EUSPINDLEOILTANK~~	~~12,000-gallon bulk storage tank (Tank ID #T-5B) used for storage of spindle oil~~	~~1996~~	~~NA~~
~~EUE10TANK~~	~~5,000-gallon storage tank (Tank ID #UST-1S) used for storage of E10 gasoline~~	~~1997~~	~~NA~~
~~EUUNLEADEDTANK~~	~~5,000-gallon storage tank (Tank ID #UST-2S) used for storage of unleaded gasoline~~	~~1997~~	~~NA~~
EUDIESELTANK1	500-gallon horizontal tank (Tank ID #1) used for storage of diesel fuel for fire pumps	1996	NA
EUDIESELTANK2	500-gallon horizontal tank (Tank ID #2) used for storage of diesel fuel for fire pumps	1996	NA
EUDIESELTANK3	500-gallon horizontal tank (Tank ID #3) used for storage of diesel fuel for fire pumps	2000	NA

~~EUUSEDOIL1~~	~~4,000-gallon storage tank (Tank ID #707) used for storage of used oil~~	~~1996~~	~~NA~~
~~EUUSEDOIL2~~	~~10,000-gallon storage tank (Tank ID #724) used for storage of used oil~~	~~1996~~	~~NA~~
EUEMERGEN1	A 770-HP natural gas-fired emergency engine.	TBD	FGNGEQUIP, FGNGEMENG1

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUEMERGEN2	A 770-HP natural gas-fired emergency engine.	TBD	FGNGEQUIP, FGNGEMENG1
EUEMERGEN3	A ~~770~~350-HP natural gas-fired emergency engine.	TBD	FGNGEQUIP, FGNGEMENG2
EUEMERGEN4	A 350-HP natural gas-fired emergency engine.	TBD	FGNGEQUIP, FGNGEMENG2
EUFIREPUMP1	A 350-HP diesel-fired emergency fire pump engine with a model year of 2011 or later and a displacement of <30 liters/cylinder.	TBD	FGFIREPUMP
EUFIREPUMP2	A 350-HP diesel-fired emergency fire pump engine with a model year of 2011 or later and a displacement of <30 liters/cylinder.	TBD	FGFIREPUMP
~~EUFIREPUMP3~~	~~A 350-HP diesel-fired emergency fire pump engine with a model year of 2011 or later and a displacement of <30 liters/cylinder.~~	~~TBD~~	~~FGFIREPUMP~~

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

EUPRETREAT
EMISSION UNIT CONDITIONS

DESCRIPTION

Pretreatment of vehicle surface to prepare it for E-coat, consisting of a water-based wash system.

Flexible Group ID: FGAUTOASSEMBLY, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

1. No materials in EUPRETREAT shall contain any VOCs or HAPs that are emitted from the process. **(R 336.1225, R 336.1702)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT

PARAMETER(S) NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall keep a record, acceptable to the district supervisor, demonstrating that any VOC and/or HAP materials contained in the EUPRETREAT materials will not be emitted at the representative operating conditions. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVPHOSAIRSEAL	18	100	40 CFR 52.21(c) & (d)
2. SVPHOS2B	26	100	40 CFR 52.21(c) & (d)
3. SVPHOS5	30	100	40 CFR 52.21(c) & (d)
4. SVPHOS3	20	100	40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUECOAT
EMISSION UNIT CONDITIONS

DESCRIPTION

An electrodeposition (E-coat) coating process consisting of a series of dip tanks, rinses, a curing oven, a cooling tunnel, followed by a prep booth (light sanding) and spot prime coating booth. Repairs will take place in a prep booth (light sanding), followed by the manual application of a small amount of spot prime coating in a spot prime coating booth. Emissions from the E-coat tanks and~~are directed to~~ the curing oven ~~and then~~ are controlled by an RTO. Emissions from the prep booth are filtered, recirculated, and exhausted in-plant. Emissions from the spot prime booth are filtered and exhausted to atmosphere.

Flexible Group ID: FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

An RTO for control of VOC emissions from the E-coat tank and curing oven. Dry filter particulate controls on the prep booth and flash prime booth.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate the electrodeposition tank and curing oven portions of EUECOAT unless FGCONTROLS is installed, maintained and operated in a satisfactory manner. Satisfactory operation of FGCONTROLS includes collecting desorption gas inlet temperature data above the temperature from the most recent acceptable performance test minus 15 degrees Fahrenheit and can be based upon a three-hour average. Satisfactory operation of FGCONTROLS includes maintaining a minimum RTO combustion chamber temperature at the manufacturer's recommended temperature until an acceptable performance test has been performed, after which the RTO combustion chamber temperature shall be maintained at the temperature during the most recent control device performance test which demonstrated compliance with a minimum 95 percent destruction efficiency based upon a three-hour average, and a minimum retention time of 0.5 seconds. **(R 336.1225, R 336.1702, R 336.1910, R 336.2908)**

2. The permittee shall not operate the prep booth or the spot prime booth portions of EUECOAT unless the respective dry filter particulate controls are installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the dry filter particulate controls includes conducting the required monitoring and recordkeeping pursuant to FGAUTOASSEMBLY, SC VI.2. **(R 336.1205, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) & (d))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The VOC content, water content and density of the resin, pigment and additives, as added to the EUECOAT tank, shall be determined using federal Reference Test Method 24 or an alternative approved by the AQD District Supervisor. Alternatively, the VOC content may be determined from manufacturer's formulation data. If the tested and the formulation values should differ, the tested results shall be used to determine compliance. Upon request of the District Supervisor, the VOC content, water content and density of the resin, pigment and additives as added to the EUECOAT tank shall be verified by testing using federal Reference Test Method 24. **(R 336.2004, R 336.2040, R 336.2041, R 336.2908)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVRTO	76	130	R 336.1225, 40 CFR 52.21(c) & (d)
2. SVSPOTPRM	36	120	R 336.1225, 40 CFR 52.21(c) & (d)

3. The exhaust gases from the prep booth (light sanding) shall not be discharged to the ambient air at any time. **(R 336.1225, 40 CFR 52.21(c) & (d))**

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63 Subpart A and Subpart IIII, as they apply to EUECOAT. **(40 CFR Part 63, Subparts A and Subpart IIII)**

Footnotes:

[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUSLR/ADH/DEAD
EMISSION UNIT CONDITIONS

DESCRIPTION

Various manual and robotic sealer, adhesive, and sound deadener material application stations/booths. Deadeners are applied in the body shop or paint shop. Sealers and adhesives are applied at various decks in the paint shop, ~~(some of which are cured in the sealer oven), and in the~~ body shop and final assembly area.

Flexible Group ID: FGAUTOASSEMBLY, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT

PARAMETER(S) NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The VOC content, water content and density of any sealer, adhesive, or deadener material as applied in EUSLR/ADH/DEAD, shall be determined using federal Reference Test Method 24 or an alternative approved by the AQD District Supervisor. Alternatively, the VOC content may be determined from manufacturer's formulation data. If the tested and the formulation values should differ, the tested results shall be used to determine compliance. Upon request of the District Supervisor, the VOC content, water content and density of any sealer, adhesive, or deadener material shall be verified by testing using federal Reference Test Method 24. **(R 336.2004, R 336.2040, R 336.2041, R 336.2908)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

~~Stack & Vent ID~~	~~Maximum Exhaust Diameter / Dimensions (inches)~~	~~Minimum Height Above Ground (feet)~~	~~Underlying Applicable Requirements~~
~~1. SVSLROVEN~~	~~18~~	~~120~~	~~R 336.1225, 40 CFR 52.21(c) & (d)~~

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63, Subparts A and IIII, as they apply to EUSLR/ADH/DEAD. **(40 CFR Part 63 Subparts A and IIII)**

Footnotes:

[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUPURFOAM
EMISSION UNIT CONDITIONS

DESCRIPTION

Polyurethane foam application process exhausted to the general in-plant environment.

Flexible Group ID: FGAUTOASSEMBLY, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT

PARAMETER(S) NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The VOC content, water content and density of any material as applied in EUPURFOAM, shall be determined using federal Reference Test Method 24 or an alternative approved by the AQD District Supervisor. Alternatively, the VOC content may be determined from manufacturer's formulation data. If the tested and the formulation values should differ, the tested results shall be used to determine compliance. Upon request of the District Supervisor, the VOC content, water content and density of any sealer, adhesive, or deadener material shall be verified by testing using federal Reference Test Method 24. **(R 336.2004, R 336.2040, R 336.2041, R 336.2908)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUGLASSBOND
EMISSION UNIT CONDITIONS

DESCRIPTION

Installation of glass to the coated automobile in the final assembly area. Glass bonding emissions are emitted to the general in-plant environment.

Flexible Group ID: FGAUTOASSEMBLY, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT

PARAMETER(S) NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The VOC content, water content and density of any sealer or adhesive as applied in EUGLASSBOND, shall be determined using federal Reference Test Method 24 or an alternative approved by the AQD District Supervisor. Alternatively, the VOC content may be determined from manufacturer's formulation data. If the tested and the formulation values should differ, the tested results shall be used to determine compliance. Upon request of the District Supervisor, the VOC content, water content and density of any sealer, adhesive, or deadener material shall be verified by testing using federal Reference Test Method 24. **(R 336.2004, R 336.2040, R 336.2041, R 336.2908)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each glass bonding material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63, Subparts A and IIII, as they apply to EUSLR/ADH/DEAD. **(40 CFR Part 63 Subparts A and IIII)**

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUPRIMER
EMISSION UNIT CONDITIONS

DESCRIPTION

A prep tunnel, two (2) automatic primer booths, one for solventborne main primer and one for solventborne tutone coloring primer, a primer observation zone, an ambient flash-off area, two natural gas-fired primer ovens, a cooling tunnel, and two booths (color prep and reprocess heavy sand) for repair of surface blemishes.

Flexible Group ID: FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

Dry filter particulate controls on the color prep booth and reprocess heavy sand booth are recirculated and not exhausted into the ambient air. Coating booth overspray will be controlled by a waterwash particulate control system. A portion of the primer coating booth exhaust will be filtered and recirculated to the booth air make-up system. The primer coating booth and flash-off area emissions are exhausted through a bank of particulate filters, the concentrator, and the RTO. Oven emissions are exhausted directly to the RTO. Emissions from the observation zone are controlled by a particulate control system and exhausted to the ambient air.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate the coating booth, ambient flash, or curing oven portions of EUPRIMER unless FGCONTROLS is installed, maintained and operated in a satisfactory manner. Satisfactory operation of FGCONTROLS includes collecting desorption gas inlet temperature data above the temperature from the most recent acceptable performance test minus 15 degrees Fahrenheit and can be based upon a three-hour average. Satisfactory operation of FGCONTROLS includes maintaining a minimum RTO combustion chamber temperature at the manufacturer's recommended temperature until an acceptable performance test has been performed; after which the RTO combustion chamber temperature shall be maintained at the temperature during the most recent control device performance test which demonstrated compliance with a minimum 95 percent destruction efficiency based upon a three-hour average, and a minimum retention time of 0.5 seconds. **(R 336.1225, R 336.1702, R 336.2908)**

2. The permittee shall not operate the primer spray booth portion of EUPRIMER unless the waterwash systems are installed, maintained, and operated in a satisfactory manner. The permittee shall not operate the primer color prep booth and heavy sand booth portions of EUPRIMER unless the respective dry filter particulate control systems are installed, maintained and operated in a satisfactory manner. Satisfactory operation of the water wash and dry filter system particulate controls includes conducting the required monitoring and recordkeeping pursuant to FGAUTOASSEMBLY, SC VI.2. **(R 336.1205, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) & (d))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The VOC content, water content and density of any coating or material as applied and as received, shall be determined using federal Reference Test Method 24 or an alternative approved by the AQD District Supervisor. Alternatively, the VOC content may be determined from manufacturer's formulation data. If the tested and the formulation values should differ, the tested results shall be used to determine compliance. Upon request of the AQD District Supervisor, the VOC content, water content and density of any coating or material shall be verified using federal Reference Test Method 24. **(R 336.1702, R 336.2004, R 336.2040, R 336.2041, R 336.2908(3))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVPRMOBS	48	120	R 336.1225, 40 CFR 52.21(c) & (d)
2. SVBOOTHCONC	94	130	R 336.1225, 40 CFR 52.21(c) & (d)
3. SVRTO	76	130	R 336.1225, 40 CFR 52.21(c) & (d)

4. The exhaust gases from the color prep booth and the reprocess heavy sand booth portions of EUPRIMER shall not be discharged to the ambient air at any time. **(R 336.1225, 40 CFR 52.21(c) & (d))**

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63 Subpart A and Subpart IIII, as they apply to EUPRIMER. **(40 CFR Part 63, Subpart A and Subpart IIII)**

2. The permittee shall comply with all applicable provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and MM, as they apply to EUPRIMER. **(40 CFR 60.390)**

Footnotes:

[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUTOPCOAT
EMISSION UNIT CONDITIONS

DESCRIPTION

An automatic topcoat spray application process with two parallel lines, each consisting of a waterborne basecoat coating booth, a basecoat observation zone, a basecoat ambient flash-off area, a basecoat heated flash-off area, a solvent-borne clearcoat coating booth, a clearcoat observation zone, a clearcoat ambient flash-off area, and a natural gas-fired curing oven. Approximately 85% of the air from the spray zones is recirculated back into the process and 15% is exhausted to the condenser and RTO.

Flexible Group ID: FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

Booth overspray will be controlled by a waterwash particulate control system. A portion of the basecoat and clearcoat exhaust will be filtered and recirculated to the booth air make up system. All booth and flash-off exhausts will be routed through a bank of particulate filters, the concentrator, and the RTO. Oven emissions are exhausted directly to the RTO. Solvent-Based robots (clearcoat) will capture and recover coatings and cleaning solvents in a purge pot collection system. Emissions from the observation zones are controlled by a particulate control system and exhausted to atmosphere.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate the basecoat coating booth, clearcoat coating booth, basecoat flash-off, clearcoat flash-off, or any curing oven portions of EUTOPCOAT unless FGCONTROLS is installed, maintained and operated in a satisfactory manner. Satisfactory operation of FGCONTROLS includes collecting desorption gas inlet temperature data above the temperature from the most recent acceptable performance test minus 15 degrees Fahrenheit and can be based upon a three-hour average. Satisfactory operation of FGCONTROLS includes maintaining a minimum RTO combustion chamber temperature at the manufacturer's recommended temperature until an acceptable performance test has been performed; after which the RTO combustion chamber temperature shall be maintained at the temperature during the most recent control device performance test which demonstrated compliance with a minimum 95 percent destruction efficiency based upon a three-hour average, and a minimum retention time of 0.5 seconds. **(R 336.1225, R 336.2908(3))**

2. The permittee shall not operate the spray booth portions, flash-off areas, and observation zones of EUTOPCOAT unless the water wash system is installed, maintained and operated in a satisfactory manner. The permittee shall not operate the spray booth and flash-off areas of EUTOPCOAT unless the dry filter system is installed, maintained and operated in a satisfactory manner. Satisfactory operation of the water wash system includes conducting the required monitoring and recordkeeping pursuant to FGAUTOASSEMBLY, SC VI.2. **(R 336.1205, R 336.1331, R 336.1910, 40 CFR 52.21(c) & (d))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The VOC content, water content and density of any coating or material as applied and as received, shall be determined using federal Reference Test Method 24 or an alternative approved by the AQD District Supervisor. Alternatively, the VOC content may be determined from manufacturer's formulation data. If the tested and the formulation values should differ, the tested results shall be used to determine compliance. Upon request of the AQD District Supervisor, the VOC content, water content and density of any coating or material shall be verified using federal Reference Test Method 24. **(R 336.2004, R 336.2040, R 336.2041, R 336.2908)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVC1BCOBS (Color 1 BC Observation Zone)	40	120	R 336.1225, 40 CFR 52.21(c) & (d)
2. SVC1CCOBS (Color 1 CC Observation Zone)	44	120	R 336.1225, 40 CFR 52.21(c) & (d)
3. SVC2BCOBS (Color 2 BC Observation Zone)	40	120	R 336.1225, 40 CFR 52.21(c) & (d)
4. SVC2CCOBS (Color 2 CC Observation Zone)	44	120	R 336.1225, 40 CFR 52.21(c) & (d)
5. SVBOOTHCONC	94	130	R 336.1225, 40 CFR 52.21(c) & (d)
6. SVRTO	76	130	R 336.1225, 40 CFR 52.21(c) & (d)
7. SVC1OVHT (Color 1 oven heater box)	10	120	R 336.1225, 40 CFR 52.21(c) & (d)
8. SVC2OVHT (Color 2 oven heater box)	10	120	R 336.1225, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63 Subpart A and Subpart IIII, as they apply to EUPRIMER. **(40 CFR Part 63, Subparts A and Subpart IIII)**

2. The permittee shall comply with all applicable provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and MM, as they apply to EUPRIMER. **(40 CFR 60.390)**

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUPURGECLEAN
EMISSION UNIT CONDITIONS

DESCRIPTION

Various cleaning solvents and purge solvents used in the manufacturing of automobiles. VOC emissions from the solvent based purge materials used within the primer and clearcoat booths are controlled by the concentrator and RTO except when collected in the purge collection system.

Flexible Group ID: FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

Solvent-Based robots (primer and clearcoat) will capture and recover coatings and cleaning solvents in a purge pot collection system. Waterborne basecoat purge is not controlled. Primer and clearcoat purge solvents not captured in the collection system will be controlled by the concentrator and RTO.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not process solventborne purge materials in the coating booth portions of EUPRIMER and the clearcoat coating booth portions of EUTOPCOAT unless the RTO portion of FGCONTROLS is installed, maintained and operated in a satisfactory manner. Satisfactory operation of FGCONTROLS includes collecting desorption gas inlet temperature data above the temperature from the most recent acceptable performance test minus 15 degrees Fahrenheit and can be based upon a three-hour average. Satisfactory operation of FGCONTROLS includes maintaining a minimum RTO combustion chamber temperature at the manufacturer's recommended temperature until an acceptable performance test has been performed; after which the RTO combustion chamber temperature shall be maintained at the temperature during the most recent control device performance test which demonstrated compliance with a minimum 95 percent destruction efficiency based upon a three-hour average, and a minimum retention time of 0.5 seconds. **(R 336.1225, R 336.2908(3))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVBOOTHCONC	94	130	R 336.1225, 40 CFR 52.21(c) & (d)
2. SVRTO	76	130	R 336.1225, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

NA

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUBODYWIPE
EMISSION UNIT CONDITIONS

DESCRIPTION

Body wipes used throughout the plant in the manufacturing of automobiles.

Flexible Group ID: FGAUTOASSEMBLY, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT

PARAMETER(S) NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702, R 336.1908)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUFLUIDFILL
EMISSION UNIT CONDITIONS

DESCRIPTION

Each new vehicle will be filled with various fluids such as antifreeze, transmission fluid, power steering fluid, and windshield washer fluid.

Flexible Group ID: FGAUTOASSEMBLY

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT

PARAMETER(S) NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUSPOTREPAIR
EMISSION UNIT CONDITIONS

DESCRIPTION

Rapid reprocess coating spot repair and/or clean shop area for fixing slightly blemished vehicles.

Flexible Group ID: FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

Dry filter particulate controls

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate EUSPOTREPAIR unless the dry filter particulate controls are installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the particulate controls includes conducting the required monitoring and recordkeeping pursuant to FGAUTOASSEMBLY, SC VI.2. **(R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The VOC content, water content and density of any coating or material, as applied and as received, shall be determined using federal Reference Test Method 24 or an alternative approved by the AQD District Supervisor. Alternatively, the VOC content may be determined from manufacturer's formulation data. If the tested and the formulation values should differ, the tested results shall be used to determine compliance. Upon request of the AQD District Supervisor, the VOC content, water content and density of any coating or material shall be verified using federal Reference Test Method 24. **(R 336.2004, R 336.2040, R 336.2041, R 336.2908)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVRPRCS	78	120	R 336.1225, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

EUFINALREPAIR
EMISSION UNIT CONDITIONS

DESCRIPTION

Final repair operations including a coating area. Emissions are exhausted to the general in-plant environment.

Flexible Group ID: FGAUTOASSEMBLY, FGCONTROLS, FGAUTOMACT

POLLUTION CONTROL EQUIPMENT

Dry filter particulate controls

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate EUFINALREPAIR unless the respective dry filter particulate controls are installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the particulate controls includes conducting the required monitoring and recordkeeping pursuant to FGCONTROLS, SC VI.4. **(R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The VOC content, water content and density of any coating or material, as applied and as received, shall be determined using federal Reference Test Method 24 or an alternative approved by the AQD District Supervisor. Alternatively, the VOC content may be determined from manufacturer's formulation data. If the tested and the formulation values should differ, the tested results shall be used to determine compliance. Upon request of the AQD District Supervisor, the VOC content, water content and density of any coating or material shall be verified using federal Reference Test Method 24. **(R 336.1702, R 336.2004, R 336.2040, R 336.2041, R 336.2908)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

1. The exhaust gases from EUFINALREPAIR shall not be discharged to the ambient air at any time. **(R 336.1225, 40 CFR 52.21(c) & (d))**

IX. OTHER REQUIREMENT(S)

NA

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FLEXIBLE GROUP SPECIAL CONDITIONS

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGAUTOASSEMBLY	This flexible group covers equipment used for the automotive assembly and painting operations for the Detroit Assembly Complex Mack ~~Avenue Assembly~~ Plant.	EUPRETREAT, EUECOAT, EUSLR/ADH/DEAD, EUPURFOAM, EUGLASSBOND, EUPRIMER, EUTOPCOAT, EUPURGECLEAN, EUBODYWIPE, EUFLUIDFILL, EUFUELFILL, EUSPOTREPAIR, EUFINALREPAIR, EUASH/ASH/SH, EUHWG1, EUHWG2, EUHWG3, EUHWG4, EUHWG5, EUHWG6, EUHWG7, EUHWG8, EUHWG9, ~~EUHWG10,~~ EUNEWNGMACK~~-2~~-1&2, EUGASTANK1, EUGASTANK2,
FGCONTROLS	A concentrator unit and RTO used for control of VOC emissions from the paint spray booths, flash-off areas, and curing ovens. Waterwash or dry filter particulate control on paint spray booths and reprocessing/sanding/repair booths.	EUECOAT, EUSLR/ADH/DEAD, EUPRIMER, EUTOPCOAT, EUPURGECLEAN, EUFUELFILL, EUSPOTREPAIR, EUFINALREPAIR, EUASH/ASH/SH, EUNEWNGMACK~~-2~~-1&2
FGAUTOMACT	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.	EUPRETREAT, EUECOAT, EUSLD/ADH/DEAD, EUPURFOAM, EUGLASSBOND, EUPRIMER, EUTOPCOAT, EUPURGECLEAN, EUBODYWIPE, EUSPOTREPAIR, EUFINALREPAIR

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGBOILERMACT	Gas 1 Fuel Subcategory requirements for new Boilers/Process Heaters at major sources of Hazardous Air Pollutants per 40 CFR Part 63, Subpart DDDDD. These new boilers or process heaters must comply with this subpart upon startup.	EUHWG1, EUHWG2, EUHWG3, EUHWG3, EUHWG4, EUHWG5, EUHWG6, EUHWG7, EUHWG8, EUHWG9, ~~EUHWG10~~
FGEMERENG1	Two~~hree~~ (2~~3~~) nominally rated 770 HP natural gas-fired emergency engines. The engines are used to provide electrical power to the Detroit Assembly Complex Mack ~~Avenue Assembly~~ Plant and support equipment in the event power is lost.	EUEMERGEN1, EUEMERGEN2, ~~EUEMERGEN3~~
FGEMERENG2	Two (2) nominally rated 350 HP natural gas-fired emergency engines. The engines are used to provide electrical power to the Detroit Assembly Complex Mack Plant and support equipment in the event power is lost.	EUEMERGEN3 EUEMERGEN4
FGFIREPUMP	Three (3) 350 HP diesel -fired emergency fire pumps with model years of 2011 or later and a displacement of <30 liters/cylinder.	EUFIREPUMP1, EUFIREPUMP2, EUFIREPUMP3
FGFUEL	All gasoline storage tanks containing fuel and equipment used for vehicle fuel filling operations. Vehicles being filled with gasoline shall be equipped with on-board refueling vapor recovery (ORVR), Stage II oxidizer, or other equivalent vapor control system.	EUFUELFILL, EUGASTANK1, EUGASTANK2
FGNGEQUIP	All natural gas-fired equipment in the paint shop portion of the ~~Mack Avenue Assembly~~Detroit Assembly Complex Mack Plant, except the three emergency generators, including air supply houses, space heaters, heated flash, cure ovens, the carbon concentrator, and the RTO, and Air Handling Units/Air Supply Houses installed at the Mack~~-2~~-1&2 building. The natural gas equipment at the Mack~~-2~~-1&2 building has a total heat input capacity of 74.7~~38.4~~ MMBtu/hr.	EUECOAT, EUSLR/ADH/DEAD, EUPRIMER, EUTOPCOAT, EUASH/AHU/SH, EUNEWNGMACK~~-2~~-1&2, EUHWG1, EUHWG2, EUHWG3, EUHWG4, EUHWG5, EUHWG6, EUHWG7, EUHWG8, EUHWG9, ~~EUHWG10~~
FGTANKS		
FGOLD		

FGAUTOASSEMBLY
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

This flexible group covers equipment used for the automotive assembly and painting operations for the entire ~~Mack Avenue Assembly~~Detroit Assembly Complex Mack Plant.

Emission Unit: EUPRETREAT, EUECOAT, EUSLR/ADH/DEAD, EUPURFOAM, EUGLASSBOND, EUPRIMER, EUTOPCOAT, EUPURGECLEAN, EUBODYWIPE, EUFLUIDFILL, EUFUELFILL, EUSPOTREPAIR, EUFINALREPAIR, EUASH/ASH/SH, EUHWG1, EUHWG2, EUHWG3, EUHWG4, EUHWG5, EUHWG6, EUHWG7, EUHWG8, EUHWG9, ~~EUHWG10,~~ EUNEWNGMACK~~-2~~-1&2, EUGASTANK1, EUGASTANK2, EUMETANK

POLLUTION CONTROL EQUIPMENT

A concentrator and RTO used for control of VOC emissions from primer booth, basecoat booths, clearcoat booths, and all flash-off areas. RTO only used for control of VOC emissions from the E-Coat tank and curing oven, the primer curing oven, the basecoat curing ovens, and the clearcoat curing ovens. Water wash particulate controls on the prime, basecoat, and clearcoat booths. Dry filter particulate controls in the flash-off areas, spot repair booths, final repair booths, and all direct-fired natural gas equipment. Particulate controls on all observation zones.

I EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	381.8[C,D] tpy	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC VI.1	R 336.1205(1)(a) & (b), R 336.1702(a), R 336.2908(3)
2. VOC	3.0[C] pounds per job	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC VI.1	R 336.1702(a), R 336.2908
3. PM	5.53~~25~~ tpy[A]	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC V.1, SC VI.1	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) &(d)
4. PM10	5.53~~25~~ tpy[A]	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC V.1, SC VI.1	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) &(d)
5. PM2.5	5.53~~25~~ tpy[A]	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC V.1, SC VI.1	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) &(d)
6. NOx	34.1 tpy[B]	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC V.2, SC VI.1	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) &(d)
7. CO	77.2~~72.5~~	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC VI.1	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) &(d)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
8. SO2	0.55 tpy[B]	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC VI.1	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) &(d)
9. GHGs as CP2e	118,876 tpy[B]	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC VI.1	R 336.1205(1)(a) & (b),

[A] This includes PM10/PM2.5 from all natural gas combustion at the ~~Mack Avenue Assembly~~Detroit Assembly Complex Mack Plant Paint Shop, ~~with the exception of three emergency engines,~~ and ASH/AHU equipment in the Mack~~-2~~-1&2 building with a total heat input capacity equal to 74.7~~38.4~~ MMBtu/hr. It also includes all other operations including the EUECOAT prep booth, EUPRIMER spray booths, color prep, and reprocess heavy sand booths, EUTOPCOAT spray booths, EUSPOTREPAIR, and EUFINALREPAIR. It does not include the emergency engines or three diesel fire pumps.

[B] This includes the emissions of this pollutant from all natural gas combustion at the Detroit ~~2~~ Assembly Complex Mack~~Plant~~ Paint Shop and ASH/AHU equipment in the Mack~~-2~~-1&2 building with a total heat input capacity equal to 74.7~~38.4~~ MMBtu/hr. It does not include the ~~three~~ emergency engines or the three diesel fire pumps.

[C] This limit does not include the ~~three~~ emergency engines or the three diesel fire pumps.

[D] Beginning on the startup of production, and continuing for the first 12 calendar months, this limit applies to the cumulative total VOC emissions. Thereafter, the limit shall become a 12-month rolling limit.

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Natural Gas	1.837 Billion standard cubic feet per year[E]	12-month rolling time period as determined at the end of each calendar month	FGAUTOASSEMBLY	SC VI.1	R 336.1205, R 336.1225, R 336.2908, 40 CFR 52.21(c) & (d)

[E] This includes the emissions of this pollutant from all natural gas combustion at the Detroit ~~Mack Avenue~~ Assembly Complex Mack ~~Plant~~ Paint Shop and ASH/AHU equipment in the Mack~~-2~~-1&2 building with a heat input capacity equal to 74.7~~38.4~~ MMBtu/hr. It does not include the ~~three~~ natural gas emergency engines.

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall equip and maintain each spray coating booth and observation zone with waterwash particulate controls, and all sanding booth operations with dry filter particulate controls. **(R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) & (d))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Within 365 days after saleable vehicle production, the permittee shall conduct initial testing and, at least once every five years thereafter unless the permittee documents annually ~~maintains a yearly demonstration~~ that the most recent acceptable test remains valid and representative, the permittee shall verify PM, PM10, and PM2.5 emission rates from representative particulate emission units (or portions of emission units) as identified in a complete test plan by testing at owner's expense, in accordance with Department requirements. One EU (or portion of an EU) may be tested if the permittee provides a demonstration to the AQD that the tested unit(s) is identical to and/or the emission rates from the tested unit(s) are representative of the other unit(s). Testing shall be performed using an approved EPA Method listed in:

Pollutant	Test Method Reference
PM	40 CFR Part 60, Appendix A
PM10 / PM2.5	40 CFR Part 51, Appendix A

An alternate method, or a modification to the approved EPA Method, may be specified in an AQD-approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1301, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) & (d))**

2. Within 365 days after saleable vehicle production, the permittee shall conduct initial testing and, at least once every five years thereafter unless the permittee documents annually ~~maintains a yearly demonstration~~ that the most recent acceptable test remains valid and representative, the permittee shall verify NOx emission rates from representative natural gas combustion units, the concentrator, and the RTO portions of FGAUTOASSEMBLY, as agreed to by the AQD District Supervisor, by testing at owner's expense, in accordance with Department requirements. One EU (or portion of an EU) may be tested if the permittee provides a demonstration to the AQD that the tested unit(s) is identical to and/or the emission rates from the tested unit(s) are representative of the other unit(s). Alternatively, the permittee may submit vendor guarantees for NOx emission rates from representative emission units in a manner acceptable to the AQD District Supervisor. Testing shall be performed using an approved EPA Method listed in 40 CFR Part 60, Appendix A. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD-approved Test Protocol. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) & (d))**

3. Within 365 days of saleable vehicle production, the permittee shall conduct initial testing and, at least once every five years thereafter unless the permittee documents annually ~~maintains a yearly demonstration~~ that the most recent acceptable test remains valid and representative, the permittee shall verify the overall transfer efficiency and the oven exhaust control device VOC loading of the primer booths, the basecoat booths, and the clearcoat booths, by testing at owner's expense, in accordance with Department requirements and the U.S. EPA "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations," September 2008, EPA-453/R-08-002, as amended. One basecoat booth and one clearcoat booth may be tested if the permittee provides a demonstration to the AQD that the tested booth(s) is identical to and/or the transfer efficiencies and VOC loading from the tested booth(s) are representative of the other booth(s).No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1702(a), R 336.2001, R 336.2003, R 336.2004, R 336.2908)**

4. Within 365 days of saleable vehicle production, and at least once every five years from the last testing date thereafter unless the permittee documents annually ~~has submitted an annual demonstration~~ that the most recent acceptable test remains valid and representative, the permittee shall verify the capture efficiency of a representative spray booth, flash-off area, observation zone, and oven portion of FGAUTOASSEMBLY to the respective VOC control device(s), by testing at owner's expense, in accordance with Department requirements, and the U.S. EPA "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations," September 2008, EPA 453/R-08-002, as amended. Testing shall be performed using an approved EPA Method listed in 40 CFR 60 Appendix A and 40 CFR 63 Appendix A. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee

must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1702, R 336.2001, R 336.2003, R 336.2004, R 336.2908)**

5. Within 365 days of saleable vehicle production, the permittee shall conduct initial testing and, at least once every five years thereafter unless the permittee documents annually that the most recent acceptable test remains valid and representative, the permittee shall verify the removal efficiency of the concentrator and destruction efficiency of the RTO in FGAUTOASSEMBLY by testing at the owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in 40 CFR 60 Appendix A. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1702, R 336.2001, R 336.2003, R 336.2004, R 336.2908)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall keep the following records/calculations in a format acceptable to the AQD District Supervisor. The permittee shall compile all required records and complete all required calculations and make them available within 30 days following the end of each calendar month for which records are required to be kept. These records shall also contain data, test documentation, and annual reviews which are necessary to perform calculations in the publication entitled "Protocol for Determining the Daily Volatile Compound Emission Rate of Automobile and Light-duty Truck Topcoat Operations", EPA-453/R-08-002, or as amended. (The Auto Protocol)
   a. For each material used in FGAUTOASSEMBLY:
      i. Material identification;
      ii. Material VOC content; and,
      iii. Material usage.
   b. The amount of natural gas burned during each calendar month and 12-month rolling time period, in cubic feet.
   c. Number of jobs each calendar month, where a job is defined as a painted vehicle leaving the assembly line.
   d. Calculations showing the FGAUTOASSEMBLY monthly emission rates, in tons per month, and annual mass VOC emission rates, as a cumulative emission rate for the first 12 months of operation and in tons per 12-month rolling time period thereafter, as determined at the end of each calendar month. Calculations must show the capture and control efficiency of each control device used. Calculations must also include a sample calculation based on the production of a single job and that specifies all measured or assumed process parameters (e.g., transfer, capture and control efficiencies, booth splits, etc.) and VOC emissions due to natural gas combustion. Prior to the initial testing, for each controlled section, the design combined capture and control efficiency may be used. Thereafter, values no greater than the most recently tested values may be used.
   e. Calculations showing the VOC emission rate (lb/job) on a 12-month rolling basis, as determined at the end of each calendar month for the equipment covered by FGAUTOASSEMBLY.
   f. Calculations showing the PM, PM10, PM2.5, SO_2, NOx, and CO mass emission rates in tons on a monthly and 12-month rolling time period, as determined at the end of each calendar month for the equipment in FGAUTOASSEMBLY. These calculations shall be done according to a method acceptable to the AQD District Supervisor and shall use AP-42 (or other agreed upon emission factors) or emission factors developed from the testing required in SC V.2 or SC V.3.
   g. Calculations showing the GHGs as CO_2e mass emission rate in tons on a monthly and 12-month rolling time period, as determined at the end of each calendar month for the equipment in FGAUTOASSEMBLY.
   h. Hours of operation for each calendar month and 12-month rolling time period.

   All records/calculations shall be kept on file and made available to the Department upon request. **(R 336.1225, R 336.1301, R 336.1331, R 336.1702, R 336.2908(3), 40 CFR 52.21(c) & (d))**

2. The permittee shall monitor the condition of each particulate control system through weekly visual inspections. The permittee shall keep records of visual inspections of each exhaust filter system, or water wash particulate control system which include the dates and results of the inspections, and the dates and reasons for repairs. All records shall be kept on file and made available to the Department upon request. **(R 336.1301, R 336.1331, 40 CFR 52.21(c) & (d))**

3. The permittee shall maintain a record of modifications to any add-on control equipment including any testing and monitoring to demonstrate satisfactory operation upon which compliance with any of the emission limits in FGAUTOASSEMBLY, SC I.1, 2, 3, 4, and 5 depends. **(R 336.1225, R 336.1301, R 336.1331, R 336.1910, R 336.2908(3), 40 CFR 52.21(c) & (d))**

VII. REPORTING

1. For each emission unit (EU) and flexible group (FG) included in this permit, the permittee shall submit to the AQD District Supervisor, in an acceptable format, within 30 days following the end of the quarter in which the data was collected, the actual VOC, PM10, PM2.5, NOx, CO, SO_2, and GHGs as CO_2e emission rates for each limit included in the permit. **(R 336.1205, R 336.1702, R 336.2908(3), 40 CFR 52.21(c) & (d))**

2. The permittee shall notify the AQD District Supervisor, in writing, of projects authorized by SC IX.3 and 4 at least 30 days prior to initialization of the activity. The notification shall include, at a minimum, a description of the type of project and any changes in testing, monitoring, recordkeeping or other compliance evaluation activities. **(R 336.1201)**

3. Within 30 days of the start of producing saleable vehicles under this permit to install, the permittee shall provide the AQD District Supervisor written notification of the date that the first saleable vehicle was produced. **(R 336.1201)**

4. The permittee shall send written notification to the AQD District Supervisor within 30 days of startup of any emission unit in FGAUTOASSEMBLY. **(R 336.2908)**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

NA

IX. OTHER REQUIREMENT(S)

1. This permit covers automotive body, paint, and assembly operations for the ~~Mack Avenue Assembly~~Detroit Assembly Complex Mack Plant. Changes to these operations or replacement with a different process type are subject to the requirements of R 336.1201, except as disallowed by R 336.1278 or as allowed by R 336.1279 through R 336.1291 or SC IX.3 or 4. **(R 336.1201)**

2. The Department has determined that compliance with the limits listed in SC I.1 through SC I.2~~1.9~~ provides a level of control that is at least equivalent to and not less stringent than the standards in 40 CFR 60.392, *et seq.* and R 336.1610. Accordingly, compliance with the limitations in this permit meets all applicable requirements of 40 CFR Part 60, Subpart MM and R 336.1610. **(R 336.1610, 40 CFR 60, Subpart MM)**

3. This permit authorizes any activities including projects involving physical changes or changes in the method of operation to existing emission units that do not require an increase in the emissions limits or performance levels specified in SC I.1 through SC 1.9. As a state only enforceable requirement[1], the changes to the emission unit(s) shall not result in a meaningful change in the nature or quantity of toxic air contaminants emitted from the stationary source. The permittee shall keep on file a demonstration, consistent with AQD Policy and Procedure number AQD-025, or according to the method outlined in SC IX.4. Such activities do not require the facility to obtain any federal or state air permits. **(R 336.1201)**

4. This permit authorizes projects involving the installation of new emission units that do not require an increase in the emissions limits or performance levels specified in SC I.1 through SC 1.9 under the following conditions: **(R 336.1201)**
   a. As a state-only enforceable requirement, the new emission unit will not result in an exceedance of any air toxics standards found in Rule 336.1226 or Rule 336.1227. The permittee shall keep on file, a copy of all demonstrations that the air toxics impact from the new emission unit(s) will comply with the levels specified in Rule 336.1226 or Rule 336.1227. The permittee may devise its own method to perform this demonstration subject to approval by the department.[1]
   b. The new emissions unit will not be a newly constructed or reconstructed major source of hazardous air pollutants as defined in and subject to 40 C.F.R. §63.2 and §63.5(b)(3), National Emission Standard for Hazardous Air Pollutants; and,
   c. The installation of the new emissions unit will not cause the violation of any applicable air requirement.
   d. A demonstration that the new installation meets these criteria shall be kept on site for the life of the new emission unit and made available to the department upon request. The permittee must notify the department of the installation of the new emission unit. This notification must contain the information specified in R 336.1215(3)(c)(i) through (v). Construction of the new emission unit may commence upon submittal of the notice.

5. The emission limits and performance levels specified in SC I.1 through SC I.9 may be reviewed and/or adjusted when newly applicable federal requirements or any other requirement that is enforceable as a practical matter and that the Department, under its State Implementation Plan, may impose on the facility become applicable during the term of the permit that would lower allowable emissions. Adjustments to SC I.1 through SC I.9 will be made through a permit revision as of the effective date of the new applicable requirements and will reflect the impact the new applicable requirements will have on the affected emission units. Initial compliance with the adjusted emission limits and performance levels will be demonstrated over the initial compliance period granted by the newly applicable federal requirement. **(R 336.1225, R 336.2908(3), 40 CFR 52.21(c) & (d))**

6. The permittee may, at any time, request that the Department terminate the flexible emission limit provisions of this permit and issue a traditional permit. In the event of such termination, the requirements of this permit shall remain in effect until a new permit is issued. At that time, the permit conditions for any existing emission unit that has not been modified and to which new requirements have not become applicable will revert to those found in the previous permits. For any new or modified emission unit, or any emission unit for which new requirements have become applicable the permit conditions will reflect requirements contemporaneous with the date of installation, modification or new requirement applicability. **(R 336.1225, R 336.2908(3), 40 CFR 52.21(c) & (d))**

7. The permittee shall implement an ambient air monitoring program at the facility. No less than 180 days after beginning construction pursuant to Permit to Install No. 14-19, the permittee shall submit a monitoring plan for the ambient air monitoring program to the AQD Air Monitoring Unit for review and approval. The plan shall include specific information regarding the number of locations, pollutants to be monitored, instrumentation and methodologies proposed for operation of the monitoring sites. Following approval of a plan, the permittee shall begin monitoring all specified pollutants, according to the approved plan, no later than the date of startup of the ~~Mack Avenue Assembly~~Detroit Assembly Complex Mack Plant. Monitoring shall continue for at least ten years.[3] **(R 336.1201(3))**

8. The permittee shall keep records of all air monitoring data collected in the air monitoring program. The permittee shall submit all records to the AQD Air Monitoring Unit in an acceptable format within 45 days following the end of the quarter in which the data were collected.[3] **(R 336.1201(3))**

9. The permittee shall work with the City of Detroit, through the Community Benefits Ordinance to identify additional projects for the community surrounding the facility. No less than 180 days after beginning construction pursuant to Permit to Install No. 14-19, the permittee shall submit to the AQD District Supervisor and AQD Permit Section Manager a plan for the additional projects for review and approval.[3] **(R 336.1201(3))**

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b). [3]This condition is included at the request of the permittee.

FGCONTROLS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

A concentrator and RTO used for control of VOC emissions from the paint spray booths, flash-off areas, and curing ovens. Waterwash or dry filter particulate control on paint spray booths and reprocessing/sanding/repair booths.

Emission Unit: EUECOAT, EUSLR/ADH/DEAD, EUPRIMER, EUTOPCOAT, EUPURGECLEAN, EUFUELFILL, EUSPOTREPAIR, EUFINALREPAIR, EUASH/AHU/SH, EUNEWNGMACK~~-2~~-1&2

POLLUTION CONTROL EQUIPMENT

A concentrator and RTO used for control of VOC emissions from EUPRIMER spray booth and flash-off areas, EUTOPCOAT spray booth and flash-off areas, and solventborne purge materials primer and clearcoat booths not captured in the purge collection system. An RTO only used for control of VOC emissions from the E-coat tank and curing oven, EUPRIMER curing ovens, and EUTOPCOAT curing ovens. Waterwash particulate control systems on all paint spray booths and observation zones. Dry filter particulate control systems on all sanding and repair booths and all flash-off areas. Dry filter particulate control systems on all air supply housing (ASH), air handling units (AHU), ~~space heating units~~, and all curing ovens in the E-coat, primer, and topcoat operations.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate FGCONTROLS unless a malfunction abatement plan (MAP) is implemented and maintained as described in Rule 911(2), for the RTO, water wash, and dry filter particulate system add on control devices. The MAP shall be submitted to the AQD District Supervisor for review and approval. The MAP shall, at a minimum, specify the following:
   a. A complete preventative maintenance program including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.
   b. An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.
   c. A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

   If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1205, R 336.1225, R 336.1702, R 336.1910, R 336.1911, R 336.2908, 40 CFR 52.21(c) & (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

N A

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall install, maintain and operate in a satisfactory manner, combustion chamber temperature monitoring devices for the thermal oxidizer in FGCONTROLS to monitor and record the temperature on a continuous basis during operation. Temperature data recording shall consist of measurements made at equally spaced intervals at least once every 15 minutes. All records shall be kept on file and made available to the Department upon request. **(R 336.1910, R 336.2908(3))**

2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, temperature monitoring devices for the concentrator in FGCONTROLS to monitor and record the desorption gas inlet temperature on a continuous basis during operation. Desorption gas inlet temperature data recording shall consist of measurements made at equally spaced intervals at least once every 15 minutes. All records shall be kept on file and made available to the Department upon request. **(R 336.1910)**

3. The permittee shall maintain records of maintenance and repair activities for FGCONTROLS. Records shall identify the equipment inspected and the date of the inspection. The permittee shall also record any maintenance activities or corrective actions taken as a result of equipment inspections or due to malfunction. All records shall be kept on file and made available to the Department upon request. **(R 336.1910)**

4. The permittee shall monitor the condition of each particulate control system through weekly visual inspections (except during weeks with no production) of each basecoat and clearcoat spray booths and monthly visual inspections of each heavy and spot repair booth and the E-coat sanding booth. The permittee shall keep records of visual inspections of each exhaust filter, wet eliminator, or water wash particulate control system which include the dates and results of the inspections, and the dates and reasons for repairs. All records shall be kept on file and made available to the Department upon request. **(R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

5. The permittee shall maintain a record of modifications to any add-on control equipment including any testing and monitoring to demonstrate satisfactory operation upon which compliance depends. All records shall be kept on file and made available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1301, R 336.1331, R 336.1702(a), R 336.1910, R 336.2908, 40 CFR 52.21(c) and (d))**

6. For the RTO, while in operation during production, the permittee shall conduct bypass monitoring for each bypass valve such that the valve or closure method cannot be opened without creating an alarm condition for which a record shall be made. Records of the bypass line that was open and the length of time the bypass was open shall be kept on file and made available to the Department upon request. **(R 336.1702, R 336.1910, R 336.2908)**

7. The permittee shall keep records of maintenance inspections which include the dates, results of the inspections and the dates and reasons for repairs if made. The following items shall be inspected for the RTO control device used to demonstrate compliance with the applicable VOC emission limits: **(R 336.1910, R 336.1911)**
   a. Validation of thermocouple accuracy or recalibration of each temperature thermocouple a minimum of once every 12 months. The thermocouple can be replaced in lieu of validation.
   b. Perform a heat exchange/heat transfer media inspection a minimum of once every 18 months.
   c. Perform an inspection of the valve seals condition and verify valve timing/synchronization a minimum of once every 18 months.
   d. Perform quarterly pressure drop readings across the concentrator.

The requirement to address these items is also satisfied if a destruction efficiency test has been performed on the control device within the prior 18-month period. All records shall be kept on file and made available to the Department upon request.

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

N A

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGAUTOMACT
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

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 Unit: EUPRETREAT, EUECOAT, EUSLD/ADH/DEAD, EUPURFOAM, EUGLASSBOND, EUPRIMER, EUTOPCOAT, EUPURGECLEAN, EUBODYWIPE, EUSPOTREPAIR, EUFINALREPAIR

POLLUTION CONTROL EQUIPMENT

A concentrator and RTO used for control of VOC emissions from portions of the painting operations and curing ovens.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Organic HAP	0.60 lb per GACS	Calendar Month	**Existing–** FGAUTOMACT with EUECOAT	SC III.3, SC V.1, SC VI.3	40 CFR 63.3090(a)
2. Organic HAP*	1.10 lb per GACS	Calendar Month	**Existing–** FGAUTOMACT	SC III.3, SC V.1, SC VI.3	40 CFR 63.3091(b)
3. Organic HAP	0.01 lb per lb of coating	Calendar Month	**Existing–** SEALERS & ADHESIVES	SC III.3, SC V.1, SC VI.3	40 CFR 63.3090(c) or 63.3091(c)
4. Organic HAP	0.01 lb per lb of coating	Calendar Month	**Existing–** Deadener Materials	SC III.3, SC V.1, SC VI.3	40 CFR 63.3090(d) or 63.3091(d)

- **FGAUTOMACT** includes Primer, 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.
- **FGAUTOMACT WITH EUECOAT** also includes Electrocoat operations in addition to all of the operations of FGAUTOMACT.
- **SEALERS & ADHESIVES** 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.

5. The permittee may choose to comply with either SC I.1 or 2. SC I.2 may be chosen only if EUECOAT meets either of the following requirements. **(40 CFR 63.3092)**
   a. Each individual material added to EUECOAT contains no more than 1.0 percent by weight of any organic HAP and no more than 0.10 percent by weight of any OSHA-defined carcinogenic organic HAP; or,
   b. The emissions from all EUECOAT bake ovens are captured and ducted to the oven thermal oxidizer which achieves a minimum destruction efficiency of at least 95 percent (by weight).

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall develop and implement a work practice plan to minimize the 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 an emission limit has been established under Special Conditions I.1 through I.4. The work practice plan must specify practices and procedures to ensure that, at a minimum, the following elements are implemented consistent with the requirements of 40 CFR 63.3094: The permittee shall comply with the applicable work practice plans at all times.
   a. All organic-HAP-containing coatings, thinners, cleaning materials, and waste materials must be stored in closed containers.
   b. Spills of organic-HAP containing coatings, thinners, cleaning materials, and waste materials must be minimized.
   c. Organic-HAP-containing coatings, thinners, cleaning materials, and waste materials must be conveyed from one location to another in closed containers or pipes.
   d. Mixing vessels, other than day tanks equipped with continuous agitation systems, which contain organic-HAP-containing coatings and other materials must be closed except when adding to, removing, or mixing the contents.
   e. Emissions of organic HAP must be minimized during cleaning of storage, mixing, and conveying equipment.
   f. Organic HAP emissions from cleaning and from purging of equipment associated with all coating operations subject to emission limits in Special Conditions I.1 through I.4 above must be minimized by addressing:
      i. Vehicle body wipe pursuant to 40 CFR 63.3094(c)(1)(i);
      ii. Coating line purging pursuant to 40 CFR 63.3094(c)(1)(ii);
      iii. Coating system flushing pursuant to 40 CFR 63.3094(c)(1)(iii);
      iv. Cleaning of spray booth grates pursuant to 40 CFR 63.3094(c)(1)(iv);
      v. Cleaning of spray booth walls pursuant to 40 CFR 63.3094(c)(1)(v);
      vi. Cleaning of spray booth equipment pursuant to 40 CFR 63.3094(c)(1)(vi);
      vii. Cleaning of external spray booth areas pursuant to 40 CFR 63.3094(c)(1)(vii);
      viii. Additional housekeeping measures pursuant to 40 CFR 63.3094(c)(1)(viii).

   The permittee may choose to comply with an alternative to the work practice standard, after receiving prior approval from the USEPA in accordance with 40 CFR 63.6(g). **(40 CFR 63.3100(c), 40 CFR 63.4493(b) and (c))**

2. The work practice plan shall not become part of the facility's Renewable Operating Permit (ROP). Revisions to the work practice plan likewise do not represent revisions to the facility's ROP. Copies of the current work practice plan and any earlier plan developed within the past 5 years are required to be made available for inspection and copying by the AQD upon request. **(40 CFR 63.3094)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall perform the applicable performance tests and compliance demonstrations in accordance with 40 CFR 63.3150-3152, 40 CFR 63.3160-3161, 40 CFR 63.3163-3168, 40 CFR 63.3170-3171, and 40 CFR 63.3173. **(40 CFR Part 63, Subpart IIII)**

2. The permittee may rely upon the results of capture, destruction or transfer efficiency tests that have been previously conducted upon written approval from the AQD District Supervisor. Any such previous tests must meet the criteria identified in 40 CFR 63.3160(c)(1) through (3). **(40 CFR 63.3160)**

3. The permittee shall determine the mass fraction of each organic HAP for each material used according to the procedures established under 40 CFR 63.3151(a)(1) through (5). The permittee may use USEPA Method ALT-017 as an alternative for any material used, after demonstrating that its use as an alternative test methodology for that material, has been approved by the USEPA pursuant to the requirements of 40 CFR 63.3151(a)(3) and 40 CFR 63.7. **(40 CFR 63.7, 40 CFR 63.3151)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall conduct an initial compliance demonstration for the initial compliance period described in 40 CFR 63.3150-3151, 40 CFR 63.3160-3161, and 40 CFR 63.3170-3171. The initial compliance period begins on the applicable compliance date specified in 40 CFR 63.3083 and ends on the last day of the month following the compliance date. If the initial date occurs on any day other than the first day of a month, then the initial compliance period extends through the end of that month plus the next month. **(40 CFR 63.3150, 40 CFR 63.3160, 40 CFR 63.3170, 40 CFR 63.3083(a) and (b))**

2. The permittee shall keep all records as required by 40 CFR 63.3130 in the format and timeframes outlined in 40 CFR 63.3131. **(40 CFR 63.3152(c), 40 CFR 63.3163(j))**

3. The permittee shall maintain, at a minimum, the following records as of the applicable compliance date, for each compliance period:
   a. A copy of each notification and report that is submitted to comply with 40 CFR Part 63, Subpart IIII and the documentation supporting each notification and report. **(40 CFR 63.3130(a))**
   b. A current copy of information provided by materials suppliers or manufacturers, such as manufacturer's formulation data, or test data used to determine the mass fraction of organic HAP for each coating, thinner and cleaning material, the density for each coating and thinner, and the volume fraction of coating solids for each coating. **(40 CFR 63.3130(b))**
   c. For each coating or thinner used in FGAUTOMACT or FGAUTOMACT-PS2 with EUECOAT, the volume used in each month, the mass fraction organic HAP content, the density, and the volume fraction of solids. **(40 CFR 63.3130(c))**
   d. For each material used in EUSLR/ADH/DEAD and EUGLASSBOND, the mass used in each month and the mass organic HAP content. **(40 CFR 63.3130(c))**
   e. Calculations of the organic HAP emission rate for FGAUTOMACT or FGAUTOMACT with EUECOAT in pounds per gallon of applied coating solids. If permittee chooses to comply with the option identified in Special Condition I.5.a., a record of the weight fraction of each organic HAP in each material added to the Electrocoat system. These calculations and records must include all raw data, algorithms, and intermediate calculations. If the "Protocol for Determining Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations," EPA–450/3–88–018 (Docket ID No. OAR–2002–0093 and Docket ID No. A–2001–22), is used, all data input to this protocol must be recorded. If these data are maintained as electronic files, the electronic files, as well as any paper copies must be maintained. **(40 CFR 63.3130(c), 40 CFR 63.3163, 40 CFR 63.3173)**
   f. Calculation of the average monthly mass organic HAP content in pounds per pound of coating, separately for EUSLR/ADH/DEAD and EUGLASSBOND. **(40 CFR 63.3130(c), 40 CFR 63.3152)**
   g. The name, volume, mass fraction organic HAP content and density of each cleaning material used. **(40 CFR 63.3130(d) - (f))**
   h. Any additional records pertaining to deviations; startup, shutdown or malfunctions; emission capture systems; performance testing; capture and control efficiency determinations; transfer efficiency determinations; work practice plans; and design and operation of control and monitoring systems for any emission capture system or add-on control device upon which compliance with any of the emission limits in Special Conditions I.1 through I.4 depends, pursuant to 40 CFR 63.3130(g) through (o). **(40 CFR 63.3130(g) – (o))**
   i. Records pertaining to the design and operation of control and monitoring systems for any emission capture system or add-on control device upon which compliance with any of the emission limits in Special Conditions I.1 through I.4 depends must be maintained on-site for the life of the equipment in a location readily available to plant operators and inspectors. **(40 CFR 63.3130(o))**

VII. REPORTING

1. The permittee shall submit all semiannual compliance reports as required by 40 CFR 63.3120(a). The first time period covered by these reports shall be shortened so as to end on either June 30 or December 31, whichever comes first. These reports shall be due March 15 for the reporting period July 1 to December 31 and September 15 for the reporting period January 1 to June 30. **(40 CFR 63.3120(a))**

2. The Permittee shall submit applicable notifications specified in 40 CFR 63.7(b) and (c), 63.8(f)(4) and 63.9(b) through (e) and (h), as specified in 40 CFR 63.3110. **(40 CFR 63, Subparts A and IIII)**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart IIII for Surface Coating of Automobiles and Light Duty Trucks by the initial compliance date as they apply to FGAUTOMACT. The permittee may choose an alternative compliance method not listed in FGAUTOMACT by providing the appropriate notifications required under 40 CFR, Part 63.9(j), maintaining a log required by 40 CFR, Part 70.6(9), and by complying with all applicable provisions required by Subpart IIII for the compliance option chosen. **(40 CFR 70.6(a)(9), 40 CFR Part 63.9(j), 40 CFR Part 63 Subparts A and IIII)**

FGBOILERMACT
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Gas 1 Fuel Subcategory requirements for new Boilers/Process Heaters at major sources of Hazardous Air Pollutants per 40 CFR Part 63, Subpart DDDDD. These new boilers or process heaters must comply the applicable provisions of this subpart upon startup.

Emission Unit:

Less than 5 MMBtu/hr	NA
Equal to or greater than 5 MMBtu/hr and less than 10 MMBtu/hr	EUHWG1, EUHWG2, EUHWG3, ~~EUHWG3,~~ EUHWG4, EUHWG5, EUHWG6, EUHWG7, EUHWG8, EUHWG9, ~~EUHWG10~~
Equal to or greater than 10 MMBtu/hr	NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

1. The permittee shall only burn fuels as allowed in the Unit designed to burn gas 1 subcategory definition in 40 CFR 63.7575. **(40 CFR 63.7499(l))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must meet the applicable requirements in paragraphs (a)(1) and (3) of 40 CFR 63.7500, as listed below, except as provided in paragraphs (b) and (e) of 40 CFR 63.7500, stated in SC III.2 and SC III.3. The permittee must meet these requirements at all times the affected unit is operating. **(40 CFR 63.7500(a))**
   a. The permittee must meet each work practice standard in Table 3 of 40 CFR Part 63, Subpart DDDDD that applies to the boiler or process heater, for each boiler or process heater at the source. **(40 CFR 63.7500(a)(1))**
   b. At all times, the permittee must operate and maintain any affected source (as defined in 40 CFR 63.7490, stated in SC IX.1), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. **(40 CFR 63.7500(a)(3))**

2. As provided in 40 CFR 63.6(g), EPA may approve use of an alternative to the work practice standards. **(40 CFR 63.7500(b))**

3. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or 11 through 13 of 40 CFR Part 63, Subpart DDDDD, or the operating limits in Table 4 of 40 CFR Part 63, Subpart DDDDD. Boilers and process heaters in the units designed to burn gas 1 fuel subcategory with a heat input capacity: **(40 CFR 63.7500(e))**
   a. Of less than or equal to 5 MMBtu per hour must complete a tune-up every 5-years as specified in 40 CFR 63.7540, stated in SC IX.8. **(40 CFR 63.7500(e))**

b. Greater than 5 MMBtu per hour and less than 10 MMBtu per hour must complete a tune-up every 2-years as specified in 40 CFR 63.7540, stated in SC IX.8. **(40 CFR 63.7500(e))**

4. The permittee must demonstrate initial compliance with the applicable work practice standards in Table 3 to 40 CFR Part 63, Subpart DDDDD within the applicable annual, biennial, or 5-year schedule as specified in 40 CFR 63.7515(d), stated in SC III.5, following the initial compliance date specified in 40 CFR 63.7495(a), stated in SC IX.4. Thereafter, you are required to complete the applicable annual, biennial, or 5-year tune-up as specified in 40 CFR 63.7515(d), stated in SC III.5. **(40 CFR 63.7510(g))**

5. If the permittee is required to meet an applicable tune-up work practice standard, the permittee must:
   a. Conduct the first annual tune-up no later than 13-months after the initial startup of the new or reconstructed boiler or process heater, the first biennial tune-up no later than 25-months after the initial startup of the new or reconstructed boiler or process heater, or the first 5-year tune-up no later than 61-months after the initial startup of the new or reconstructed boiler or process heater.
   b. Conduct an annual performance tune-up according to 40 CFR 63.7540(a)(10), stated in SC IX.8.a; biennial performance tune-up according to 40 CFR 63.7540(a)(11), stated in SC IX.8.b; or 5-year performance tune-up according to 40 CFR 63.7540(a)(12), stated in SC IX.8.c. Each annual tune-up specified in 40 CFR 63.7540(a)(10) must be no more than 13-months after the previous tune-up. Each biennial tune-up specified in 40 CFR 63.7540(a)(11) must be conducted no more than 25-months after the previous tune-up. Each 5-year tune-up specified in 40 CFR 63.7540(a)(12) must be conducted no more than 61-months after the previous tune-up. **(40 CFR 63.7515(d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The heat input capacity of each hot water generator in FGBOILERMACT shall not exceed a maximum of 10 MMBtu per hour. **(40 CFR Part 63, Subpart DDDDD)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

N A

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee must keep records according to paragraphs (a)(1) and (2) of 40 CFR 63.7555, as listed below. **(40 CFR 63.7555(a))**
   a. A copy of each notification and report that the permittee submitted to comply with 40 CFR Part 63, Subpart DDDDD, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that the permittee submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv). **(40 CFR 63.7555(a)(1))**
   b. Records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations as required in 40 CFR 63.10(b)(2)(viii). **(40 CFR 63.7555(a)(2))**

2. If the permittee operates a unit in the unit designed to burn gas 1 subcategory that is subject to 40 CFR Part 63, Subpart DDDDD, and the permittee uses an alternative fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart under 40 CFR Part 63, other gas 1 fuel, or gaseous fuel subject to another subpart of 40 CFR Part 60 or Parts 61, Part 63, or Part 65, the permittee must keep records of the total hours per calendar year that alternative fuel is burned and the total hours per calendar year that the unit operated during periods of gas curtailment or gas supply emergencies. **(40 CFR 63.7555(h))**

3. The permittee's records must be in a form suitable and readily available for expeditious review, according to 40 CFR 63.10(b)(1). **(40 CFR 63.7560(a))**

4. As specified in 40 CFR 63.10(b)(1), the permittee must keep each record for 5-years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. **(40 CFR 63.7560(b))**

5. The permittee must keep each record on site, or they must be accessible from on-site (for example, through a computer network), for at least 2-years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to 40 CFR 63.10(b)(1). The permittee can keep the records off site for the remaining 3-years. **(40 CFR 63.7560(c))**

VII. REPORTING

1. The permittee must meet the notification requirements in 40 CFR 63.7545 according to the schedule in 40 CFR 63.7545, both stated in SC VII.6 through SC VII.8, and in Subpart A of 40 CFR Part 63. **(40 CFR 63.7495(d))**

2. The permittee must report each instance in which they did not meet each emission limit and operating limit in Tables 1 through 4 to this subpart that applies. These instances are deviations from the emission limits or operating limits, respectively, in this subpart. These deviations must be reported according to the requirements in 40 CFR 63.7550, cited in SC VII.9. **(40 CFR 63.7540(b))**

3. The permittee must submit to the Administrator all of the notifications in 40 CFR 63.7(b) and (c), 40 CFR 63.8(e), (f)(4) and (6), and 40 CFR 63.9(b) through (h) that apply to the permittee by the dates specified. **(40 CFR 63.7545(a))**

4. As specified in 40 CFR 63.9(b)(2), if the permittee starts up the affected source before January 31, 2013, the permittee must submit an Initial Notification not later than 120 days after January 31, 2013. **(40 CFR 63.7545(b))**

5. As specified in 40 CFR 63.9(b)(4) and (5), if the permittee starts up the new or reconstructed affected source on or after January 31, 2013, the permittee must submit an Initial Notification not later than 15-days after the actual date of startup of the affected source. **(40 CFR 63.7545(c))**

6. If the permittee operates a unit designed to burn natural gas, refinery gas, or other gas 1 fuels that is subject to 40 CFR Part 63, Subpart DDDDD, and the permittee intends to use a fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart of 40 CFR Part 63, Part 60, Part 61, or Part 65, or other gas 1 fuel to fire the affected unit during a period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575, the permittee must submit a notification of alternative fuel use within 48 hours of the declaration of each period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575. The notification must include the information specified in paragraphs (f)(1) through (5) of 40 CFR 63.7545, as listed below. **(40 CFR 63.7545(f))**
   a. Company name and address. **(40 CFR 63.7545(f)(1))**
   b. Identification of the affected unit. **(40 CFR 63.7545(f)(2))**
   c. Reason the permittee is unable to use natural gas or equivalent fuel, including the date when the natural gas curtailment was declared, or the natural gas supply interruption began. **(40 CFR 63.7545(f)(3))**
   d. Type of alternative fuel that the permittee intends to use. **(40 CFR 63.7545(f)(4))**
   e. Dates when the alternative fuel use is expected to begin and end. **(40 CFR 63.7545(f)(5))**

7. If the permittee intends to commence or recommence combustion of solid waste, the permittee must provide 30 days prior notice of the date upon which the permittee will commence or recommence combustion of solid waste. The notification must identify: **(40 CFR 63.7545(g))**
   a. The name of the owner or operator of the affected source, as defined in 40 CFR 63.7490, stated in SC IX.1, the location of the source, the boiler(s) or process heater(s) that will commence burning solid waste, and the date of the notice. **(40 CFR 63.7545(g)(1))**
   b. The currently applicable subcategories under 40 CFR Part 63, Subpart DDDDD. **(40 CFR 63.7545(g)(2))**
   c. The date on which the permittee became subject to the currently applicable emission limits. **(40 CFR 63.7545(g)(3))**
   d. The date upon which the permittee will commence combusting solid waste. **(40 CFR 63.7545(g)(4))**

8. If the permittee has switched fuels or made a physical change to the boiler or process heater and the fuel switch or physical change resulted in the applicability of a different subcategory, the permittee must provide notice of the date upon which the permittee switched fuels or made the physical change within 30-days of the switch/change. The notification must identify: **(40 CFR 63.7545(h))**

a. The name of the owner or operator of the affected source, as defined in 40 CFR 63.7490, stated in SC IX.1, the location of the source, the boiler(s) and process heater(s) that have switched fuels, were physically changed, and the date of the notice. **(40 CFR 63.7545(h)(1))**
b. The currently applicable subcategory under 40 CFR Part 63, Subpart DDDDD. **(40 CFR 63.7545(h)(2))**
c. The date upon which the fuel switch or physical change occurred. **(40 CFR 63.7545(h)(3))**

9. The permittee must submit each report in Table 9 of 40 CFR Part 63, Subpart DDDDD that applies. **(40 CFR 63.7550(a))**

10. Unless the EPA Administrator has approved a different schedule for submission of reports under 40 CFR 63.10(a), the permittee must submit each report, according to paragraph (h) of 40 CFR 63.7550, stated in SC VII.12, by the date in Table 9 of 40 CFR Part 63, Subpart DDDDD and according to the requirements in paragraphs (b)(1) through (4) of 40 CFR 63.7550, as listed below. For units that are subject only to a requirement to conduct an annual tune-up according to 40 CFR 63.7540(a)(10), stated in SC IX.8.a, biennial tune-up according to 40 CFR 63.7540(a)(11), stated in SC IX.8.b, or 5-year tune-up according to 40 CFR 63.7540(a)(12), stated in SC IX.8.c, and not subject to emission limits or operating limits, the permittee may submit only an annual, biennial, or 5-year compliance report, as applicable, as specified in paragraphs (b)(1) through (4) of 40 CFR 63.7550, as listed below, instead of a semi-annual compliance report. **(40 CFR 63.7550(b))**
    a. The first semi-annual compliance report must cover the period beginning on the compliance date that is specified for each boiler or process heater in 40 CFR 63.7495, stated in SC IX.3, and ending on December 31 after the compliance date that is specified for the source in 40 CFR 63.7495, stated in SC IX.3. When submitting an annual, biennial, or 5-year compliance report, the first compliance report must cover the period beginning on the compliance date specified for each boiler or process heater in 40 CFR 63.7495 and ending on December 31 within 1, 2, or 5-years, as applicable, after the compliance date that is specified in 40 CFR 63.7495. **(40 CFR 63.7550(b)(1))**
    b. The first semi-annual compliance report must be postmarked or submitted no later than September 15 or March 15, whichever date is the first date following the end of the first calendar half after the compliance date that is specified for each boiler or process heater in 40 CFR 63.7495, stated in SC IX.3. The first annual, biennial, or 5-year compliance report must be postmarked or submitted no later than March 15. **(40 CFR 63.7550(b)(2), 40 CFR 63.7550(b)(5))**
    c. Each subsequent semi-annual compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31. Annual, biennial, and 5-year compliance reports must cover the applicable 1, 2, or 5-year periods from January 1 to December 31. **(40 CFR 63.7550(b)(3))**
    d. Each subsequent semi-annual compliance report must be postmarked or submitted no later than September 15 or March 15, whichever date is the first date following the end of the semiannual reporting period. Annual, biennial, and 5-year compliance reports must be postmarked or submitted no later than March 15. **(40 CFR 63.7550(b)(4), 40 CFR 63.7550(b)(5))**

11. A compliance report must contain the following information depending on how the permittee chooses to comply with the limits set in this rule. **(40 CFR 63.7550(c))**
    a. If the facility is subject to the requirements of a tune up the permittee must submit a compliance report with the information in paragraphs (c)(5)(i) through (iii), (xiv), and (xvii) of 40 CFR 63.7550. **(40 CFR 63.7550(c)(1))**
    b. 40 CFR 63.7550(c)(5) is as follows:
        i. Company and Facility name and address. **(40 CFR 63.7550(c)(5)(i))**
        ii. Process unit information, emissions limitations, and operating parameter limitations. **(40 CFR 63.7550(c)(5)(ii))**
        iii. Date of report and beginning and ending dates of the reporting period. **(40 CFR 63.7550(c)(5)(iii))**
        iv. Include the date of the most recent tune-up for each unit subject to only the requirement to conduct an annual tune-up according to 40 CFR 63.7540(a)(10), stated in SC IX.8.a, biennial tune-up according to 40 CFR 63.7540(a)(11), stated in SC IX.8.b, or 5-year tune-up according to 40 CFR 63.7540(a)(12), stated in SC IX.8.c. Include the date of the most recent burner inspection if it was not done annually, biennially, or on a 5-year period and was delayed until the next scheduled or unscheduled unit shutdown. **(40 CFR 63.7550(c)(5)(xiv))**
        v. Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report. **(40 CFR 63.7550(c)(5)(xvii))**

12. The permittee must submit the reports according to the procedures specified in paragraph (h)(3) of 40 CFR 63.7550, as listed below. **(40 CFR 63.7550(h))**
    a. The permittee must submit all reports required by Table 9 of 40 CFR Part 63, Subpart DDDDD electronically to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI). (CEDRI can be accessed through the EPA's CDX.) The permittee must use the appropriate electronic report in CEDRI for 40 CFR Part 63, Subpart DDDDD. Instead of using the electronic report in CEDRI for 40 CFR Part 63, Subpart DDDDD, the permittee may submit an alternate electronic file consistent with the XML schema listed on the CEDRI Web site (*http://www.epa.gov/ttn/chief/cedri/index.html*), once the XML schema is available. If the reporting form specific to 40 CFR Part 63, Subpart DDDDD is not available in CEDRI at the time that the report is due, the permittee must submit the report to the Administrator at the appropriate address listed in 40 CFR 63.13. The permittee must begin submitting reports via CEDRI no later than 90-days after the form becomes available in CEDRI. **(40 CFR 63.7550(h)(3))**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

N A

IX. OTHER REQUIREMENT(S)

1. 40 CFR Part 63, Subpart DDDDD applies to new or reconstructed affected sources as described in paragraph (a)(2) of 40 CFR 63.7490, as listed below. **(40 CFR 63.7490(a))**
    a. The affected source of 40 CFR Part 63, Subpart DDDDD is each new or reconstructed industrial, commercial, or institutional boiler or process heater, as defined in 40 CFR 63.7575, located at a major source. **(40 CFR 63.7490(a)(2))**

2. A boiler or process heater is:
    a. New if the permittee commences construction of the boiler or process heater after June 4, 2010, and the permittee meets the applicability criteria at the time the permittee commences construction. **(40 CFR 63.7490(b))**
    b. Reconstructed if the permittee meets the reconstruction criteria as defined in 40 CFR 63.2, the permittee commences reconstruction after June 4, 2010, and the permittee meets the applicability criteria at the time the permittee commence reconstruction. **(40 CFR 63.7490(c))**

3. If the permittee has a new or reconstructed boiler or process heater, the permittee must comply with 40 CFR Part 63, Subpart DDDDD by April 1, 2013, or upon startup of each boiler or process heater, whichever is later. **(40 CFR 63.7495(a))**

4. If the permittee has an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP, paragraph (c)(2) of 40 CFR 63.7495, as listed below, applies to the permittee. **(40 CFR 63.7495(c))**
    a. Any new or reconstructed boiler or process heater at the existing source must be in compliance with this subpart upon startup. **(40 CFR 63.7495(c)(1))**

5. The permittee must be in compliance with the work practice standards of 40 CFR Part 63, Subpart DDDDD. **(40 CFR 63.7505(a))**

6. For affected sources, as defined in 40 CFR 63.7490, that switch subcategory consistent with 40 CFR 63.7545(h), stated in SC VII.8, after the initial compliance date, the permittee must demonstrate compliance within 60 days of the effective date of the switch, unless the compliance demonstration for this subcategory has been conducted within the previous 12 months. **(40 CFR 63.7510(k))**

7. For affected sources (as defined in 40 CFR 63.7490, stated in SC IX.1) that have not operated since the previous compliance demonstration and more than one year has passed since the previous compliance demonstration, the permittee must complete a subsequent tune-up by following the procedures described in

40 CFR 63.7540(a)(10)(i) through (vi), stated in SC IX.8.a, and the schedule described in 40 CFR 63.7540(a)(13), stated in SC IX.8.d, for units that are not operating at the time of their scheduled tune-up. **(40 CFR 63.7515(g))**

8. The permittee must demonstrate continuous compliance with the work practice standards in Table 3 of 40 CFR Part 63, Subpart DDDDD that applies according to the methods specified in paragraphs (a)(10) through (13) of 40 CFR 63.7540, as listed below. **(40 CFR 63.7540(a))**
   a. If the boiler or process heater has a heat input capacity of 10 MMBtu per hour or greater, the permittee
   must conduct an annual tune-up of the boiler or process heater to demonstrate continuous compliance as specified in paragraphs (a)(10)(i) through (vi) of 40 CFR 63.7540, as listed below. The tune-up must be conducted while burning the type of fuel or fuels in case of units that routinely burn a mixture) that provided the majority of the heat input to the boiler or process heater over the 12-months prior to the tune-up. This frequency does not apply to units with continuous oxygen trim systems that maintain an optimum air to fuel ratio. **(40 CFR 63.7540(a)(10))**
      i. As applicable, inspect the burner, and clean or replace any components of the burner as necessary (the permittee may perform the burner inspection any time prior to the tune-up or delay the burner inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36-months from the previous inspection. At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment. **(40 CFR 63.7540(a)(10)(i))**
      ii. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available. **(40 CFR 63.7540(a)(10)(ii))**
      iii. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (the permittee may delay the inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36-months from the previous inspection. **(40 CFR 63.7540(a)(10)(iii))**
      iv. Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_X requirement to which the unit is subject. **(40 CFR 63.7540(a)(10)(iv))**
      v. Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. **(40 CFR 63.7540(a)(10)(v))**
      vi. Maintain on-site and submit, if requested by the Administrator, a report containing the information in paragraphs (a)(10)(vi)(A) through (C) of 40 CFR 63.7540, as listed below. **(40 CFR 63.7540(a)(10)(vi))**
         (1) The concentrations of CO in the effluent stream in ppm by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater. **(40 CFR 63.7540(a)(10)(vi)(A))**
         (2) A description of any corrective actions taken as a part of the tune-up. **40 CFR 63.7540(a)(10)(vi)(B))**
         (3) The type and amount of fuel used over the 12-months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit. **(40 CFR 63.7540(a)(10)(vi)(C))**
   b. If the boiler or process heater has a heat input capacity of less than 10 MMBtu per hour (except as specified in paragraph (a)(12) of 40 CFR 63.7540), the permittee must conduct a biennial tune-up of the boiler or process heater as specified in paragraphs (a)(10)(i) through (vi) of 40 CFR 63.7540 to demonstrate continuous compliance. **(40 CFR 63.7540(a)(11))**
   c. If the boiler or process heater has a continuous oxygen trim system that maintains an optimum air to fuel
   ratio, or a heat input capacity of less than or equal to 5 MMBtu per hour and the unit is in the units designed to burn gas 1 subcategory, the permittee must conduct a tune-up of the boiler or process heater every 5-years as specified in paragraphs (a)(10)(i) through (vi) of 40 CFR 63.7540 to demonstrate continuous compliance. The permittee may delay the burner inspection specified in paragraph (a)(10)(i) of 40 CFR 63.7540 until the next scheduled or unscheduled unit shutdown, but the permittee must inspect each burner at least once every 72-months. If an oxygen trim system is utilized on a unit without emission

standards to reduce the tune-up frequency to once every 5-years, set the oxygen level no lower than the oxygen concentration measured during the most recent tune-up. **(40 CFR 63.7540(a)(12))**

d. If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30-calendar days of startup. **(40 CFR 63.7540(a)(13))**

9. Table 10 of 40 CFR Part 63, Subpart DDDDD shows which parts of the General Provisions in 40 CFR 63.1 through 63.15 applies to the permittee. **(40 CFR 63.7565)**

Footnotes:

[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGNGEMENG1
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Emergency engines subject to 40 CFR Part 60 Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. New/Reconstructed emergency engines greater than 500 HP constructed on or after January 1, 2009.

Emission Unit: EUEMERGEN1, EUEMERGEN2, ~~EUEMERGEN3~~

POLLUTION CONTROL EQUIPMENT

N A

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	2.0 g/HP-hr Or 160 ppmvd at 15% O_2	Hourly	Each EU in FGNGEMENG1	SC V.1, SC V.2, SC VI.2, SC VI.3	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d), 40 CFR 60.4233(e)
2. CO	4.0 g/HP-hr OR 540 ppmvd at 15% O_2	Hourly	Each EU in FGNGEMENG1	SC V.1, SC V.2, SC VI.2, SC VI.3	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d), 40 CFR 60.4233(e)
3. VOC	0.50 g/HP-hr[F,G]	Hourly	Each EU in FGNGEMENG1	SC V.1, SC V.2, SC VI.4	R 336.1205(1)(a) & (b), R 336.2908, 40 CFR 60.4233(e)

[F] For compliance purposes, this limit includes formaldehyde for Nonattainment New Source Review, but does not include formaldehyde for the NSPS.
[G] This emission limit has subsumed the emission limit required in 40 CFR 60 Subpart JJJJ, Table 1.

II. MATERIAL LIMIT(S)

1. The permittee shall burn only pipeline quality natural gas in FGNGEMENG1. **(R 336.1205(1)(a), R 336.1224, R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d), R 336.2908, 40 CFR 60.4233)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate any EU in FGNGEMENG1 for more than 500 hours per year on a 12-month rolling time period basis as determined at the end of each calendar month. The 500 hours includes the 100 hours as described in SC III.2. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

2. The permittee may operate any EU in FGNGEMENG1 for no more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Department for approval of additional hours to be used for maintenance checks and readiness testing. A petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency internal combustion engines beyond 100 hours per calendar year. **(40 CFR 60.4243(d)(2))**

3. Each EU in FGNGEMENG1 may operate up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted towards the 100 hours per calendar year provided for maintenance and testing as described in SC III.2. Except as provided in 40 CFR 60.4243(d)(3)(i), the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or demand response, or to generate income for the permittee to supply non-emergency power as part of a financial arrangement with another entity. **(40 CFR 60.4243(d)(3)**

4. The permittee shall operate and maintain each EU in FGNGEMENG1 such that it meets the emission limits in SC I.1, I.2, and I.3 over the entire life of the engine. **(40 CFR 60.4234, 40 CFR 60.4243(b))**

5. If any EU in FGNGEMENG1 is operated as a certified engine, according to procedures specified in 40 CFR Part 60 Subpart JJJJ, for the same model year, the permittee shall meet the following requirements for each respective engine:
   a. Operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions,
   b. Meet the requirements as specified in 40 CFR 1068 Subparts A through D, as applicable, including labeling and maintaining certified engines according to the manufacture's recommendations,
   c. Only change those engine settings that are permitted by the manufacturer.

   If the permittee does not operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and be subject to SC III.6. **(40 CFR 60.4243(b)(1))**

6. If any EU in FGNGEMENG1 is a non-certified engine or a certified engine operating in a non-certified manner, per 40 CFR Part 60 Subpart JJJJ, the permittee shall keep a maintenance plan for each respective EU and shall, to the extent practicable, maintain and operate each respective EU in a manner consistent with good air pollution control practice for minimizing emissions. **(40 CFR 60.4243(b)(2))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall equip and maintain each EU in FGNGEMENG1 with a non-resettable hours meter to track the operating hours. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), R 336.2908, 40 CFR 52.21(c) & (d), 40 CFR 60.4237(a))**

2. The nameplate capacity of each EU in FGNGEMENG1 shall not exceed 574 kW (770 HP), as certified by the equipment manufacturer. **(R 336.1205(1)(a) & (b), R 336.2908, 40 CFR 52.21(c) & (d), ~~40 CFR 60.4230~~)**

3. The emergency engines shall be 4-stroke rich-burn engines.[1] (R 336.1225)

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. If any EU in FGNGEMENG1 is a non-certified engine or a certified engine operating in a non-certified manner, per 40 CFR Part 60 Subpart JJJJ, the permittee must demonstrate compliance as follows:
   a. Conduct an initial performance test to demonstrate compliance with the applicable emission limits in SC I.1, I.2, and I.3 within 60 days after achieving the maximum production rate at which the respective EU will be operated, but not later than 180 days after initial startup of the respective EU, or within 1 year after the respective EU is no longer operated as a certified engine.
   b. The performance tests shall consist of three separate test runs of at least 1 hour, for each performance test required in 40 CFR 60.4244 and Table 2 to Subpart JJJJ of Part 60.
   c. Subsequent performance testing shall be completed every 8,760 hours of engine operation or every 3 years, whichever comes first, to demonstrate compliance with the applicable emission limits.

   If a performance test is required, no less than 30 days prior to testing, a complete test plan shall be submitted to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.

(R 336.1205(1)(a), R 336.1702(a), R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21 (c) & (d), 40 CFR 60.8, 40 CFR 60.4243, 40 CFR 60.4244, 40 CFR 60.4245, 40 CFR Part 60 Subpart JJJJ)

2. Within 365 days after saleable vehicle production, the permittee shall conduct initial testing and, at least once every five years thereafter unless the permittee maintains a yearly demonstration that the most recent acceptable test remains valid and representative, the permittee shall verify VOC mass emissions from representative EUs in FGNGEMENG1 by testing at owner's expense, in accordance with Department requirements. Alternatively, one EU may be tested if the permittee provides a demonstration to the AQD that the tested unit(s) is identical to and/or the emission rates from the tested unit(s) are representative of the other unit(s). Testing shall be performed using approved EPA Method(s) listed in

Pollutant	Test Method Reference
VOC	40 CFR Part 60, Appendix A, 40 CFR Part 63, Appendix A

Alternate method(s), or a modification to the approved EPA Method(s), may be specified in an AQD-approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205(1)(a) & (b), R 336.1702(a), R 336.2001, R 336.2003, R 336.2004, R 336.2908)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall keep, in a satisfactory manner, the following records for each EU in FGNGEMENG1:
   a. If certified: The permittee shall keep records of the documentation from the manufacturer that the respective EU is certified to meet the emission standards and information as required in 40 CFR Parts 90, 1048, 1054, and 1060, as applicable.
   b. If non-certified: The permittee shall keep records of testing required in SC V.1.

   The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a), R 336.2908, 40 CFR 52.21(c) & (d), 40 CFR 60.4233(e), 40 CFR 60.4243, 40 CFR 60.4245(a))**

2. The permittee shall keep, in a satisfactory manner, the following records of maintenance activity for each EU in FGNGEMENG1:
   a. If certified: The permittee shall keep the manufacturer's emission-related written instructions and records demonstrating that the respective EU has been maintained according to them, as specified in SC III.5.
   b. If non-certified: The permittee shall keep records of a maintenance plan, as required by SC III.6 and records of conducted maintenance.

   The permittee shall keep all records on file and make them available to the Department upon request. **(40 CFR 60.4243, 40 CFR 60.4245(a), 40 CFR Part 60 Subpart JJJJ)**

3. The permittee shall monitor and record the total hours of operation for each EU in FGNGEMENEG1. The permittee shall document how many hours are spent for emergency operation of each EU in FGNGEMENG1 including what classified the operation as emergency. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), R 336.2908, 40 CFR 52.21(c) & (d), 40 CFR 60.4243, 40 CFR 60.4245(b))**

4. The permittee shall keep records of notifications submitted for the completion of construction and start-up of each EU in FGNGEMENG1. **(40 CFR 60.4245(a))**

VII. REPORTING

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation,

construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of each EU in FGNGEMENG1. **(R 336.1216(1)(a)(v), R 336.1201(7)(a))**

2. The permittee shall submit a notification specifying whether each EU in FGNGEMENG1 will be operated in a certified or a non-certified manner to the AQD District Supervisor, in writing, within 30 days following the initial startup of each EU in FGNGEMENG1 and within 30 days of switching the manner of operation. **(40 CFR Part 60 Subpart JJJJ)**

3. If any EU in FGNGEMENG1 has not been certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231, the permittee shall submit an initial notification as required in 40 CFR 60.7(a)(1). The notification must include the following information:
   a. The date construction of the respective EU commenced;
   b. Name and address of the owner or operator;
   c. The address of the affected source;
   d. The respective EU information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;
   e. The respective EU emission control equipment; and
   f. Fuel used in the respective EU.

   The notification must be postmarked no later than 30 days after construction commenced for the respective EU. **(40 CFR 60.7(a)(1), 40 CFR 60.4245(c))**

4. The permittee shall submit an initial notification as required in 40 CFR 63.6645(f) for each EU in FGNGEMENG1. The notification must include the information in 40 CFR 63.9(b)(2)(i)-(v):
   a. The name and address of the owner or operator;
   b. The address (i.e., physical location) of the affected source;
   c. An identification of the relevant standard, or other requirement, that is the basis of the notification and the source's compliance date;
   d. A brief description of the nature, size, design, and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of hazardous air pollutants emitted; and
   e. A statement of whether the affected source is a major source or an area source.

   The notification must also include a statement that each EU in FGNGEMENG1 has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE if it has a site rating of more than 500 brake HP located at a major source of HAP emissions). **(40 CFR 63.9(b)(2)(i)-(v), 40 CFR 63.6590(b)(1), 40 CFR 63.6645(f))**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVGEN1	7.5	10	R 336.1225, 40 CFR 52.21(c) & (d)
2. SVGEN2	7.5	10	R 336.1225, 40 CFR 52.21(c) & (d)
3. ~~SVGEN3~~	~~7.5~~	~~10~~	~~R 336.1225, 40 CFR 52.21(c) & (d)~~

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with the provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subpart A and Subpart JJJJ, as they apply to FGNGEMENG1. **(40 CFR Part 60 Subparts A & JJJJ)**

2. The permittee shall comply with the provisions of the federal National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines as specified in 40 CFR Part 63 Subpart A and Subpart ZZZZ, as they apply to FGNGEMENG1. **(40 CFR Part 63 Subparts A & ZZZZ)**

Footnotes:

[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGFIREPUMP
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Two~~Three~~ (2~~3~~) 350 HP diesel -fired emergency fire pumps with model years of 2011 or later and a displacement of <30 liters/cylinder.

Emission Unit: EUFIREPUMP1, EUFIREPUMP2~~, EUFIREPUMP3~~

POLLUTION CONTROL EQUIPMENT

N A

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NMHC[H]+NOx	3.0 g/bhp-hr[I]	Hourly	Each EU in FGFIREPUMP	SC V.1, SC V.2, SC VI.2,	40 CFR 60.4205(c), Table 4 of 40 CFR Part 60 Subpart IIII
2. CO	2.6 g/bhp-hr[I]	Hourly	Each EU in FGFIREPUMP	SC V.1, SC V.2, SC VI.2,	40 CFR 60.4205(c), Table 4 of 40 CFR Part 60 Subpart IIII
3. PM	0.15 g/bhp-hr[I]	Hourly	Each EU in FGFIREPUMP	SC V.1, SC V.2, SC VI.2, SC VI.3	R336.1205(1)(a) & (b), R 336.1331(1)(c), 40 CFR 60.4205(c), Table 4 of 40 CFR Part 60 Subpart IIII
4. VOC	0.10 g/bhp-hr	Hourly	Each EU in FGFIREPUMP	SC V.2, SC VI.4	R 336.1205(1)(a) & (b), R 336.1702(a), R 336.2908

[H] NMHC = nonmethane hydrocarbon
[I] These emission limits are for certified engines; if testing becomes required to demonstrate compliance, then the tested values must be compared to the Not to Exceed (NTE) requirements determined through 40 CFR 60.4212(c).

II. MATERIAL LIMIT(S)

1. The permittee shall burn only diesel fuel in FGFIREPUMP with a maximum sulfur content of 15 ppm (0.0015 percent) by weight, and a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent. **(R 336.1205(1)(a) & (b), 40 CFR 60.4207(b), 40 CFR 80.510(b))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate any EU in FGFIREPUMP for more than 500 hours per year on a 12-month rolling time period basis as determined at the end of each calendar month. The 500 hours includes the hours for the purpose of necessary maintenance checks and readiness testing as described in SC III.2. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a), R 336.2908, 40 CFR 52.21(c) & (d))**

2. The permittee may operate each EU in FGFIREPUMP for no more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, the regional transmission organization

or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Department for approval of additional hours to be used for maintenance checks and readiness testing. A petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency internal combustion engines beyond 100 hours per calendar year. Each EU in FGFIREPUMP may operate up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted towards the 100 hours per calendar year provided for maintenance and testing. Except as provided in 40 CFR 60.4211(f)(3)(i), the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or demand response, or to generate income for the permittee to supply non-emergency power as part of a financial arrangement with another entity. **(40 CFR 60.4211(f))**

3. If the permittee purchased a certified engine, according to procedures specified in 40 CFR Part 60 Subpart IIII, for the same model year and maximum engine power, the permittee shall meet the following requirements for each respective EU in FGFIREPUMP:
   a. Operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions;
   b. Change only those emission-related settings that are permitted by the manufacturer; and
   c. Meet the requirements as specified in 40 CFR 89, 94, and/or 1068, as they apply to each respective EU in FGFIREPUMP.

   If the permittee does not operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, the engine may be considered a non-certified engine. **(40 CFR 60.4211(a) & (c), R 336.2908)**

4. If the permittee purchased a non-certified engine or a certified engine operating in a non-certified manner, the permittee shall keep a maintenance plan for each respective EU in FGFIREPUMP and shall, to the extent practicable, maintain and operate engine in a manner consistent with good air pollution control practice for minimizing emissions. **(40 CFR 60.4211(g)(2), R 336.2908)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall equip and maintain each EU in FGFIREPUMP with a non-resettable hours meter to track the operating hours. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a), R 336.2908, 40 CFR 52.21(c) & (d), 40 CFR 60.4209(a))**

2. The maximum NFPA nameplate engine power of each EU in FGFIREPUMP shall not exceed 350 brake HP. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a), R 336.2908, Table 4 of 40 CFR Part 60 Subpart IIII)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. If any EU in FGFIREPUMP is not installed, configured, operated, and maintained according to the manufacturer's emission-related written instructions, or the permittee changes emission-related settings in a way that is not permitted by the manufacturer, the permittee must demonstrate compliance as follows:
   a. Conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer.
   b. If a performance test is required, the performance tests shall be conducted according to 40 CFR 60.4212.

   No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(40 CFR 60.4211(g)(2), 40 CFR 60.4212)**

2. Within 365 days after saleable vehicle production, the permittee shall conduct initial testing and, at least once every five years thereafter unless the permittee maintains a yearly demonstration that the most recent acceptable test remains valid and representative, the permittee shall verify VOC mass emissions from all EUs in FGFIREPUMP by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in

Pollutant	Test Method Reference
VOC	40 CFR Part 60, Appendix A, 40 CFR Part 63, Appendix A

An alternate method, or a modification to the approved EPA Method, may be specified in an AQD-approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205(1)(a) & (b), R 336.1702(a), R 336.2001, R 336.2003, R 336.2004, R 336.2908, 40 CFR 52.21(c) & (d))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the 30th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a), R 336.908, 40 CFR 60.4211, 40 CFR 60.4214)**

2. The permittee shall keep, in a satisfactory manner, the following records for each EU in FGFIREPUMP:
   a. For certified engine: The permittee shall keep records of the manufacturer certification documentation.
   b. For uncertified engine: The permittee shall keep records of testing required in SC V.1.

   The permittee shall keep all records on file and make them available to the Department upon request. **(40 CFR 60.4211)**

3. The permittee shall keep, in a satisfactory manner, the following records of maintenance activity for each EU in FGFIREPUMP:
   a. For certified engine: The permittee shall keep records of the manufacturer's emission-related written instructions, and records demonstrating that the engine has been maintained according to those instructions, as specified in SC III.3.
   b. For uncertified engine: The permittee shall keep records of a maintenance plan, as required by SC III.4, and maintenance activities.

   The permittee shall keep all records on file and make them available to the Department upon request. **(40 CFR 60.4211)**

4. The permittee shall keep, in a satisfactory manner, test reports for each EU in FGFIREPUMP required by SC V.2 and SC V.3 on file at the facility. The permittee shall make the records available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1702(a), R 336.2001, R 336.2003, R 336.2004, R 336.2908)**

5. The permittee shall monitor and record the total hours of operation and the hours of operation during non-emergencies for each EU in FGFIREPUMP, on a monthly and 12-month rolling time period basis, in a manner acceptable to the AQD District Supervisor. The permittee shall document how many hours are spent for emergency operation of each EU in FGFIREPUMP, including what classified the operation as emergency. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a), R 336.2908, 40 CFR 60.4211, 40 CFR 60.4214)**

6. The permittee shall keep, in a satisfactory manner, fuel supplier certification records or fuel sample test data, for each delivery of diesel fuel oil used in each EU in FGFIREPUMP, demonstrating that the fuel meets the requirement of 40 CFR 80.510(b), as specified in SC II.1. The certification or test data shall include the name of the oil supplier or laboratory, the sulfur content, and cetane index or aromatic content of the fuel oil. **(R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d), 40 CFR 60.4207(b), 40 CFR 80.510(b))**

VII. REPORTING

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of each EU in FGFIREPUMP. **(R 336.1201(7)(a))**

2. The permittee shall submit a notification specifying whether each EU in FGFIREPUMP will be operated in a certified or a non-certified manner to the AQD District Supervisor, in writing, within 30 days following the initial startup of the engine and within 30 days of switching the manner of operation. **(R 336.1201(3))**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVPUMP1	7.5	15	R 336.1225, 40 CFR 52.21(c) & (d)
2. SVPUMP2	7.5	15	R 336.1225, 40 CFR 52.21(c) & (d)
3. ~~SVPUMP3~~	~~7.5~~	~~15~~	~~R 336.1225, 40 CFR 52.21(c) & (d)~~

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with the provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subpart A and Subpart IIII, as they apply to each EU in FGFIREPUMP. **(40 CFR Part 60 Subparts A & IIII, ~~40 CFR 63.6590~~)**

2. The permittee shall comply with the provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart ZZZZ, as they apply to each EU in FGFIREPUMP~~, upon startup~~. In accordance with 40 CFR 63.6590(c)(6), a new or reconstructed emergency stationary RICE with a site rating of less than or equal to 500 HP located at a major source of HAP emissions meets the requirements of 40 CFR 63 Subpart ZZZZ by meeting the requirements of 40 CFR part 60 Subpart IIII. **(40 CFR Part 63 Subparts A and ZZZZ, 40 CFR 63.6590~~63.6595~~)**

Footnotes:

[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGFUEL
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

All gasoline storage tanks containing fuel for vehicle fuel filling operations. Vehicles being filled with gasoline shall be equipped with on-board refueling vapor recovery (ORVR).

Emission Unit: EUFUELFILL, EUGASTANK1, EUGASTANK2

POLLUTION CONTROL EQUIPMENT

N A

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not add gasoline to any vehicle without an Onboard Re-fueling Vapor Recovery (ORVR) system. **(R336.1225, R 336.1702(a), R336.1910, R 336.2908)**

2. The permittee shall not load or allow the loading of gasoline from a delivery vessel into any new stationary vessel of more than 2,000 gallons (7.57 cubic meters or 7,571 liters) capacity unless such stationary vessel is equipped with a permanent submerged fill pipe. **(R 336.1703(1), R 336.2908)**

3. The permittee shall not load or allow the loading of gasoline from a delivery vessel into any new stationary vessel of more than 2,000 gallons (7.57 cubic meters or 7,571 liters) capacity unless such stationary vessel is equipped with a vapor balance system or an equivalent control system approved by the Department. The vapor balance system shall capture displaced gasoline vapor and air via a vaportight collection line and shall be designed to return not less than 90% by weight of the displaced gasoline vapor from the stationary vessel to the delivery vessel. The respective stationary vessels shall be equipped, maintained, or controlled with the following: **(R 336.1703(2), R 336.2908)**
   a. An interlocking system or procedure to ensure that the vaportight collection line is connected before any gasoline can be loaded.
   b. A device to ensure that the vaportight collection line shall close upon disconnection so as to prevent release of gasoline vapor.

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material introduced to the storage tanks in FGFUEL, including the weight percent of each component. The data may consist of Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGNGEQUIP
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

All natural gas-fired equipment in the paint shop portion of the ~~Mack Avenue Assembly~~Detroit Assembly Complex Mack Plant, except the ~~three~~ emergency generators, including air supply houses, space heaters, heated flash, cure ovens, the carbon concentrator, and the RTO, and Air Handling Units/Air Supply Houses installed at the Mack ~~2~~ 1&2 building. The natural gas equipment at the Mack ~~2~~ 1&2 building has a total heat input capacity of 74.7~~38.4~~ MMBtu/hr.

Emission Unit: EUECOAT, EUSLR/ADH/DEAD, EUPRIMER, EUTOPCOAT, EUASH/ASH/SH, EUNEWNGMACK ~~2~~ 1&2, EUHWG1, EUHWG2, EUHWG3, EUHWG4, EUHWG5, EUHWG6, EUHWG7, EUHWG8, EUHWG9~~, EUHWG10~~

POLLUTION CONTROL EQUIPMENT

Low NOx burners on all equipment, RTO for VOC control of spray booths and curing ovens in EUECOAT, EUPRIMER, and EUTOPCOAT, dry filter particulate controls on direct-fired natural gas equipment

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall burn only pipeline quality natural gas in FGNGEQUIP **(R 336.1205, R 336.1224, R 336.1225, R 336.1702(a), R 336.2908, 40 CFR 52.21(c) & (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate FGNEQUIP unless Low NOx burners are installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1225, 40 CFR 52.21(c) & (d))**

2. The permittee shall not operate the sealer curing oven, any air handling units, any air supply houses, ~~any space heaters~~, and any curing ovens in EUECOAT, EUPRIMER, and EUTOPCOAT in FGNGEQUIP unless the respective dry filter particulate control systems are installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the dry filter control system includes conducting the required monitoring and recordkeeping pursuant to FGAUTOASSEMBLY, SC VI.2. **(R 336.1205(1)(a) & (3), R 336.1331, 40 CFR 52.21(c) & (d))**

3. All air supply houses, air handling units, space heaters, and E-coat, primer, topcoat, and sealer curing oven(s) in FGNGEQUIP shall be direct-fired units. **(R 336.1205, R 336.1225, 40 CFR 52.21(c) & (d))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VII. REPORTING

1. Within 60 days of start-up, the permittee shall provide information acceptable to the AQD District Supervisor demonstrating the Hot Water Generators (HWG), the air supply houses, and the space heaters are equipped with Low NOx burners. **(R 336.1205(1)(a) & (3))**

~~2. The permittee shall submit written notification of the date of construction of each Hot Water Generator in FGNGEQUIP to comply with the federal Standards of Performance for New Stationary Sources, 40 CFR 60.7. The permittee shall submit this notification to the AQD District Supervisor within 30 days after construction commences, as specified in 40 CFR 60.7. **(40 CFR 60.7)**~~

~~3. The permittee shall submit written notification of the actual date of initial startup for each Hot Water Generator in FGNGEQUIP as provided by the federal Standards of Performance for New Stationary Sources, 40 CFR 60.7. Each notification shall include:~~
~~a. The design heat input capacity and identification of fuels to be combusted.~~
~~b. The annual capacity factor at which the permittee anticipates operating based on all fuels fired and based on each individual fuel fired.~~

~~The permittee shall submit these notifications to the AQD District Supervisor within 15 days after initial startup occurs. **(40 CFR 60.7, 40 CFR 60.48c(a))**~~

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted: The HWG stacks (SVHWG1-9) are horizontal.

Stack & Vent ID	Maximum Exhaust Diameter/ Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVBOOTHCONC	94	130	R 336.1225, 40 CFR 52.21(c) & (d)
2. SVRTO	76	130	R 336.1225, 40 CFR 52.21(c) & (d)
3. ~~EUSLROVEN~~	~~18~~	~~120~~	~~R 336.1225, 40 CFR 52.21(c) & (d)~~
4. SVHWG1	~~12~~14	90	R 336.1225, 40 CFR 52.21(c) & (d)
5. SVHWG2	~~12~~14	90	R 336.1225, 40 CFR 52.21(c) & (d)
6. SVHWG3	~~12~~14	90	R 336.1225, 40 CFR 52.21(c) & (d)
7. SVHWG4	~~12~~14	90	R 336.1225, 40 CFR 52.21(c) & (d)
8. SVHWG5	~~12~~14	15	R 336.1225, 40 CFR 52.21(c) & (d)
9. SVHWG6	~~12~~14	15	R 336.1225, 40 CFR 52.21(c) & (d)
10. SVHWG7	~~12~~14	15	R 336.1225, 40 CFR 52.21(c) & (d)
11. SVHWG8	~~12~~14	15	R 336.1225, 40 CFR 52.21(c) & (d)
12. SVHWG9	~~12~~14	15	R 336.1225, 40 CFR 52.21(c) & (d)
13. ~~SVHWG10~~	~~12~~	~~15~~	~~R 336.1225, 40 CFR 52.21(c) & (d)~~
14. SVPRMHT1	12	120	R 336.1225, 40 CFR 52.21(c) & (d)
15. SVPRMHT2	12	120	R 336.1225, 40 CFR 52.21(c) & (d)
16. SVC1OVHT	10	120	R 336.1225, 40 CFR 52.21(c) & (d)
17. SVC2OVHT	10	120	R 336.1225, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

1. Within 30 days of installation, the permittee shall label all natural gas equipment with its respective EU and/or FG name in a manner acceptable to the AQD District Supervisor. **(R 336.1205)**

Footnotes:

[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGTANKS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Any existing (placed into operation before 7/1/79), new (placed into operation on or after 7/1/79) or modified storage tank, including those that are exempt from the requirements of R 336.1201 pursuant to R 336.1284.

Emission Unit: EUGASTANK1, EUGASTANK2, EUMETANK1, EUMETANK2

POLLUTION CONTROL EQUIPMENT

N A

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not load or allow the loading of gasoline from a delivery vessel into any new stationary vessel of more than 2,000 gallons (7.57 cubic meters or 7,571 liters) capacity unless such stationary vessel is equipped with a permanent submerged fill pipe. **(R 336.1703(1))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

N A

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall maintain a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component. The data may consist of Material Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1225, R 336.1702)**

2. The permittee shall keep a record of the following for each storage vessel:
   a. The identification (name, tank #, etc.).
   b. Location within the plant.
   c. The capacity of the vessel.
   d. The date of installation / modification.
   e. The type of material contained in the vessel.
   f. The true vapor pressure of the material contained in the vessel at actual storage conditions.
   g. The applicable requirements.

   The permittee shall keep the records in a format acceptable to the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1703, 40 CFR 60 Subparts K, Ka, Kb)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

NA

IX. OTHER REQUIREMENT(S)

1. Any new gasoline tank (placed into operation on or after 07/01/79) shall comply with the applicable requirements of Rule 703. **(R 336.1703)**

2. Any gasoline tank or volatile organic liquid (VOL) storage tank shall comply with New Source Performance Standards, 40 CFR Part 60 Subparts A, K, Ka, Kb based upon installation or modification date and applicability and designation of affected facility provisions in 40 CFR 60.110, 60.110a, 60.110b. Construction, reconstruction, or modification dates are as follows: **(40 CFR Part 60 Subparts A, K, Ka, Kb)**
   a. Subpart K: after June 11, 1973 and prior to May 19,1978
   b. Subpart Ka: after May 18,1978 and prior to July 23, 1984
   c. Subpart Kb: after July 23, 1984.

Footnotes:

[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGOLD
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

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 Units: EUMETANK1, EUMETANK2

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. For each existing storage tank with a capacity greater than 5,000 gallons but less than 50,000 gallons, the permittee shall comply with the requirements of 63.2343(b). **(40 CFR 63.2343(b))**

2. For each new storage tank with a capacity greater than 5,000 gallons but less than 10,000 gallons, the permittee shall comply with the requirements of 63.2343(b). **(40 CFR 63.2343(b))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

N A

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall keep documentation, including a record of the annual average true vapor pressure of the total Table 1 Organic liquid, which verifies the storage tank is not required to be controlled under this subpart. The documentation shall be kept up-to-date and must be in a form suitable and readily available for expeditious inspection and review. **(63.2343(b)(3))**

VII. REPORTING

1. The permittee shall submit the following information in either the Notification of Compliance Status, according to the schedule in Table 12 to this subpart, or in your first Compliance report according to the schedule in 63.2386(b), whichever occurs first. **(63.2343(b)(1))**
   a. Company name and address.
   b. A statement by a responsible official, including the official's name, title and signature, certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate and complete.
   c. Date of report and beginning and ending dates of the reporting period.
   d. A list of all storage tanks greater than 5,000 gallons that are part of the affected source but not subject to any of the emission limitations, operating limits, or work practice standards of this subpart.

2. The permittee shall submit subsequent compliance reports according to the schedule in 63.2386(b) or in conjunction with the reporting requirements in this permit whenever any of the following events occur as applicable: **(63.2343(b)(2))**
   a. Any storage tank became subject to control under this subpart EEEE.
   b. Any storage tank greater than 5,000 gallons became part of the affected source, but is not subject to any emission limitations, operating limits or work practice standards of this subpart.

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

N A

IX. OTHER REQUIREMENT(S)

NA

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGNGEMENG2
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Emergency engines subject to 40 CFR Part 60 Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. New/Reconstructed emergency engines less than 500 HP constructed on or after January 1, 2009.

Emission Unit: EUEMERGEN3, EUEMERGEN4

POLLUTION CONTROL EQUIPMENT

N A

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	2.0 g/HP-hr Or 160 ppmvd at 15% O_2	Hourly	Each EU in FGNGEMENG2	SC V.1, SC V.2, SC VI.2, SC VI.3	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d), 40 CFR 60.4233(e)
2. CO	4.0 g/HP-hr OR 540 ppmvd at 15% O_2	Hourly	Each EU in FGNGEMENG2	SC V.1, SC V.2, SC VI.2, SC VI.3	R 336.1205(1)(a) & (b), 40 CFR 52.21(c) & (d), 40 CFR 60.4233(e)
3. VOC	01.0 g/HP-hr[F,]	Hourly	Each EU in FGNGEMENG2	SC V.1, SC V.2, SC VI.4	R 336.1205(1)(a) & (b), R 336.2908, 40 CFR 60.4233(e)

[F] For compliance purposes, this limit includes formaldehyde for Nonattainment New Source Review, but does not include emissions of formaldehyde for NSPS.

II. MATERIAL LIMIT(S)

1. The permittee shall burn only pipeline quality natural gas in FGNGEMENG2. **(R 336.1205(1)(a), R 336.1224, R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d), R 336.2908, 40 CFR 60.4233)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate any EU in FGNGEMENG2 for more than 500 hours per year on a 12-month rolling time period basis as determined at the end of each calendar month. The 500 hours includes the 100 hours as described in SC III.2. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

2. The permittee may operate any EU in FGNGEMENG2 for no more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Department for approval of additional hours to be used for maintenance checks and readiness testing. A petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency internal combustion engines beyond 100 hours per calendar year. **(40 CFR 60.4243(d)(2))**

3. Each EU in FGNGEMENG2 may operate up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted towards the 100 hours per calendar year provided for maintenance and testing as described in SC III.2. Except as provided in 40 CFR 60.4243(d)(3)(i), the 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or demand response, or to generate income for the permittee to supply non-emergency power as part of a financial arrangement with another entity. **(40 CFR 60.4243(d)(3)**

4. The permittee shall operate and maintain each EU in FGNGEMENG2 such that it meets the emission limits in SC I.1, I.2, and I.3 over the entire life of the engine. **(40 CFR 60.4234, 40 CFR 60.4243(b))**

5. If any EU in FGNGEMENG2 is operated as a certified engine, according to procedures specified in 40 CFR Part 60 Subpart JJJJ, for the same model year, the permittee shall meet the following requirements for each respective engine:
   a. Operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions,
   b. Meet the requirements as specified in 40 CFR 1068 Subparts A through D, as applicable, including labeling and maintaining certified engines according to the manufacture's recommendations,
   c. Only change those engine settings that are permitted by the manufacturer.

   If the permittee does not operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and be subject to SC III.6. **(40 CFR 60.4243(b)(1))**

6. If any EU in FGNGEMENG2 is a non-certified engine or a certified engine operating in a non-certified manner, per 40 CFR Part 60 Subpart JJJJ, the permittee shall keep a maintenance plan for each respective EU and shall, to the extent practicable, maintain and operate each respective EU in a manner consistent with good air pollution control practice for minimizing emissions. **(40 CFR 60.4243(b)(2))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall equip and maintain each EU in FGNGEMENG2 with a non-resettable hours meter to track the operating hours. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), R 336.2908, 40 CFR 52.21(c) & (d), 40 CFR 60.4237(b))**

2. The nameplate capacity of each EU in FGNGEMENG2 shall not exceed 350 HP, as certified by the equipment manufacturer. **(R 336.1205(1)(a) & (b), R 336.2908, 40 CFR 52.21(c) & (d))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. If any EU in FGNGEMENG2 is a non-certified engine or a certified engine operating in a non-certified manner, per 40 CFR Part 60 Subpart JJJJ, the permittee must demonstrate compliance as follows:
   a. Conduct an initial performance test to demonstrate compliance with the applicable emission limits in SC I.1, I.2, and I.3 within 60 days after achieving the maximum production rate at which the respective EU will be operated, but not later than 180 days after initial startup of the respective EU, or within 1 year after the respective EU is no longer operated as a certified engine.
   b. The performance tests shall consist of three separate test runs of at least 1 hour, for each performance test required in 40 CFR 60.4244 and Table 2 to Subpart JJJJ of Part 60.
   c. Subsequent performance testing shall be completed every 8,760 hours of engine operation or every 3 years, whichever comes first, to demonstrate compliance with the applicable emission limits.

   If a performance test is required, no less than 30 days prior to testing, a complete test plan shall be submitted to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.

(R 336.1205(1)(a), R 336.1702(a), R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21 (c) & (d), 40 CFR 60.8, 40 CFR 60.4243, 40 CFR 60.4244, 40 CFR 60.4245)

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall keep, in a satisfactory manner, the following records for each EU in FGNGEMENG2:
   a. If certified: The permittee shall keep records of the documentation from the manufacturer that the respective EU is certified to meet the emission standards and information as required in 40 CFR Parts 90, 1048, 1054, and 1060, as applicable.
   b. If non-certified: The permittee shall keep records of testing required in SC V.1.

   The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a), R 336.2908, 40 CFR 52.21(c) & (d), 40 CFR 60.4233(e), 40 CFR 60.4243, 40 CFR 60.4245(a))**

2. The permittee shall keep, in a satisfactory manner, the following records of maintenance activity for each EU in FGNGEMENG2:
   a. If certified: The permittee shall keep the manufacturer's emission-related written instructions and records demonstrating that the respective EU has been maintained according to them, as specified in SC III.5.
   b. If non-certified: The permittee shall keep records of a maintenance plan, as required by SC III.6 and records of conducted maintenance.

   The permittee shall keep all records on file and make them available to the Department upon request. **(40 CFR 60.4243, 40 CFR 60.4245(a))**

3. The permittee shall monitor and record the total hours of operation for each EU in FGNGEMENEG2. The permittee shall document how many hours are spent for emergency operation of each EU in FGNGEMENG2 including what classified the operation as emergency. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), R 336.2908, 40 CFR 52.21(c) & (d), 40 CFR 60.4243, 40 CFR 60.4245(b))**

4. The permittee shall keep records of notifications submitted for the completion of construction and start-up of each EU in FGNGEMENG2. **(40 CFR 60.4245(a))**

VII. REPORTING

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of each EU in FGNGEMENG2. **(R 336.1216(1)(a)(v), R 336.1201(7)(a))**

2. The permittee shall submit a notification specifying whether each EU in FGNGEMENG2 will be operated in a certified or a non-certified manner to the AQD District Supervisor, in writing, within 30 days following the initial startup of each EU in FGNGEMENG2 and within 30 days of switching the manner of operation. **(40 CFR Part 60 Subpart JJJJ)**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVGEN3	7.5	10	R 336.1225, 40 CFR 52.21(c) & (d)
2. SVGEN4	7.5	10	R 336.1225, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with the provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subpart A and Subpart JJJJ, as they apply to FGNGEMENG2. **(40 CFR Part 60 Subparts A & JJJJ)**

2. The permittee shall comply with the provisions of the federal National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines as specified in 40 CFR Part 63 Subpart A and Subpart ZZZZ, as they apply to FGNGEMENG2. In accordance with 40 CFR 63.6590(c)(6), a new or reconstructed emergency stationary RICE with a site rating of less than or equal to 500 HP located at a major source of HAP emissions meets the requirements of 40 CFR 63 Subpart ZZZZ by meeting the requirements of 40 CFR part 60 Subpart JJJJ. **(40 CFR Part 63 Subparts A & ZZZZ)**

Footnotes:

[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

APPENDIX F

SITE LAYOUT

Figure: FCA DACM - Site Layout
April 2020

APPENDIX G

LAER DEMONSTRATION – PTI APPLICATION, 2019

5.0 LOWEST ACHIEVABLE EMISSION RATE

As noted previously, VOC emissions associated with the new assembly plant will exceed the 40 ton per year significance threshold for a major modification in a marginal ozone non-attainment area. As a result, federal non-attainment NSR regulations require that such sources demonstrate that LAER will be implemented for each emission unit. The paragraphs that follow provide FCA's demonstration that the proposed coating line and related operations will incorporate LAER in relation to sources of VOC emissions.

The definition of LAER as contained within 40 CFR 51.165(a)(1)(xiii), is, for any source, the more stringent rate of emissions based on the following [emphasis added]:

"(A) The most stringent emissions limitation which is contained in the implementation plan of any State for such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or

(B) The most stringent emissions limitation which is achieved in practice by such class or category of stationary sources. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions units within (the) stationary source. In no event shall the application of the term permit a proposed new or modified stationary source to emit any pollutant in excess of the amount allowable under an applicable new source standard of performance."

Accordingly, the LAER analysis requires a review of the various State Implementation Plans (SIPs) related to automobile and light duty truck VOC limits as well as emission limits in permits that have been achieved in practice and can establish LAER for each emission unit. Unlike a BACT review, LAER does not typically take into account economic (i.e., the costs of control technology), energy or environmental considerations. To establish LAER for a specific emission unit (i.e., coating process such as E-Coat), FCA relied upon the following sources:

- U.S. EPA's RACT/BACT/LAER Clearinghouse;
- State Permits issued for similar sources (note that very recent permits will not likely reflect an emission limitation that is "achieved in practice");
- Applicable State Implementation Plans/Regulations primarily in locations where automotive assembly plants exist ~~(see Appendix F)~~; and,
- Other sources of information such as regulatory agency inquiries.

5.1 LAER APPROACH

For purposes of the LAER analysis, FCA addressed the main coating operations similar to previous BACT analyses, with the emphasis on emission rates from the same type of coating operation and less emphasis on the specific emission reduction technologies used. Below is the LAER demonstration for the various VOC sources planned for the Project.

5.1.1 E-Coat LAER

FCA reviewed the various SIPS and state regulations with VOC emission limits for the E-coat operations. FCA did not identify a SIP limit that was more stringent than the limits contained within the various permits reviewed. Accordingly, Table 5.1 below provides a summary of information from the RBLC entries and the VOC emission limits and control technologies identified in various permits for E-coat operations.

Table 5.1 - Summary of Recent E-Coat VOC BACT/LAER Determinations

Source	Tank	Oven	Date	Lbs VOC/GACS*
GM Delta Assembly	Oxidation	Oxidation	9-26-01	0.04
GM- Lansing Craft Ctr.	Oxidation	Oxidation	4-2-02	0.04
Honda Manufacturing Alabama	NA	Oxidation	10-18-02	0.13
GM Lansing Craft	Oxidation	Oxidation	2-11-03	0.04
Ford Michigan Truck	Oxidation	Oxidation	4-3-98 (9-8-03)	0.04
Ford Wixom Assembly	Oxidation	Oxidation	2-26-04	0.25
Toledo Supplier Park	Oxidation	Oxidation	09-07-04	0.04
Toyota Texas	N/A	Oxidation	6-16-04	0.13
Nissan Canton MS	WB Coating	Oxidation	12-1-05	0.13
Kia Motors Georgia	N/A	Oxidation	6-20-07	0.19
Volkswagen, Tennessee	N/A	Oxidation	10-10-08	0.26
Hyundai, Alabama	N/A	Oxidation	06-12-12	0.13
Ford Kentucky Truck	Oxidation	Oxidation	2-19-14	0.04
Subaru of Indiana	N/A	Oxidation	5-19-14	1.15 lbs/gal
Tesla, Fremont California	Oxidation	Oxidation	7-9-15	1.42
Ford Chicago Assembly	NA	Oxidation	6-30-17	1.34
FCA SHAP	Oxidation	Oxidation	4-6-18	0.04
Ford Michigan Assembly**	NA	Oxidation	8-15-18	FPI limit

* The above are BACT or LAER determination results.
** Ford Chicago minor modification
NA – indicates no controls on tank

Based upon the information contained in Table 5.1, FCA has identified that LAER for E-coat is the use of thermal oxidation to control VOCs from the E-coat tank and oven (tank exhaust directed to the oven and then to the oxidizer) with a resultant emission rate in the range of 0.04 lbs VOC per gallon of applied coating solids (lbs VOC/GACS). FCA recognizes that not all recent E-coat operations are controlling emissions of VOCs from the E-coat tank and oven. However, FCA is electing to control the tank emissions and on this basis, FCA has developed an anticipated emission rate of 0.04 lbs VOC/GACS for the E-coat process. Estimates of annual VOC emissions from the new E-coat operation are 1.6 tpy based upon the coating technology and add-on control strategy, coating usage rate and total annual production.

FCA recognizes that there have been several assembly plant permits issued within the last several years that have relied upon a different format pursuant to Michigan's Flexible Permitting Initiative (FPI) program which included a plant-wide ton per year limit for VOCs and a pounds VOC/job limit (lbs/job). It is difficult to equate the lbs VOC/GACS value to the lbs/job values in these permits. In addition, certain automobile manufacturers have pursued the use of Plant-wide Applicability Limit (PAL) permits that have, in many cases, eliminated the need for source by source technology reviews as part of permit actions. Notwithstanding these recent permitting nuances, FCA believes that the emission

reduction technologies proposed for the E-coat operations (and subsequent surface coating sources) and the emission rate of 0.04 lbs VOC/GACS are representative of LAER. The proposed annual emission rate of 1.6 tons per year will provide a basis for a portion of the new VOC FPI level that will be representative of LAER as well.

5.1.2 Paint and Body Shop Sealers LAER

FCA reviewed the various SIPs and also the Control Techniques Guideline (CTG) for Automobile and Light Duty Trucks issued by USEPA under Section 183e of the Clean Air Act in September 2008 for existing sources. The SIPs reviewed and the CTG did not identify any more stringent limitations for sealers than those identified in the RBLC or issued permits with specific limits for sealers.

The proposed sealers and adhesives for the new assembly plant are low VOC containing materials with an average VOC content of less than 0.3 pounds per gallon on a weighted average basis. In contrast, the CTG identifies a recommended existing source limit of over 5 lbs VOC/gallon. FCA has not identified other available sealers with lower VOC contents that would substantially reduce VOC emissions from this operation (below the proposed level) and FCA believes this to be the case due to the need for sealers to be viscous enough to be pump-able or hand applied to the vehicle body.

The following is a summary of the recent RBLC, permit limits and related determinations applicable to sealers reviewed as part of this application.

Table 5.2 - Summary of Recent Sealer VOC BACT/LAER Determinations

Source	Date	Lbs VOC/Gallon Minus H2O
GM Shreveport Assembly	3-24-00	0.5
GM Lansing GR Assembly	2-27-00	0.3
Nissan North America	4-4-01	0.3
GM Delta Assembly	9-26-01	0.3
FCA Jefferson North	12-17-01	0.3
GM- Lansing Craft Ctr.	4-2-02	0.3
Honda Manufacturing Alabama	10-18-02	0.3
Ford Michigan Truck	9-8-03 (1-8-09)	FPI Limit
GM Lordstown (Ohio BAT)	2-12-04	0.3
Toledo Supplier Park	9-3-04	0.3
Toyota Texas**	6-16-04	0.3
Kia Motors Georgia	6-20-07	0.45
Volkswagen, Tennessee	10-10-08	N/A
FCA Belvidere Assembly (Body shop only)	9-16-11	0.16 automated application and 0.25 manual (monthly avg)
Hyundai Motor Alabama	6-12-12	0.3
Ford Kentucky Truck	2-19-14	0.3
Subaru of Indiana	5-19-14	0.38 lbs/gal
GM Delta Twp	5-9/2014	0.3
Tesla, Fremont California	7-9-15	Included in guidecoat limits for ovens
FCA SHAP (Bed only)	4-16-18	0.25

* All of the above are BACT determinations except GM Lordstown.
** Combined sealers, adhesives and undercoat

Based upon the above determinations, FCA has determined that LAER for the body and paint shop sealers and adhesives is a monthly average VOC content of 0.25 pounds per gallon, minus water. Further, there are no add-on VOC controls in previous reviews for this emission source primarily due to the low VOC emission levels and the fact that sealers are applied at stations on the plant floor and emissions tend to be fugitive in nature. For those sealers applied elsewhere, emissions are fugitive in nature and therefore, it is not technically feasible to control them. Note that if sealer VOCs are released in the E-coat or Topcoat ovens they will be routed to the thermal oxidizer along with the other emissions released in the ovens. FCA has developed the proposed annual allowable VOC emission rate from the new sealer operation that is equivalent to a limit of 29.0 upon BACT value of 0.25 lbs VOC/gallon for the sealer process. The proposed annual emission rate of 29.0 tpy will provide a basis for a portion of the new VOC FPI level.

5.1.3 Primer (Guidecoat) LAER

FCA reviewed the various SIPS and state regulations with VOC emission limits for the primer (guidecoat) operations. FCA did not identify a SIP limit that was more stringent that the limits contained within the various permits reviewed. Accordingly, Table 5.3 provides a summary of the RBLC for primer operations as well as VOC emission limits and control technologies identified in various permits.

Table 5.3 - Summary of Recent Primer (Guidecoat) VOC BACT/LAER Determinations

Source	Date	Materials	Booth/Oven Control Technology	Lbs/GACS
Nissan North America* (BACT) – Mississippi	4-4-01 (revised 12/1/05)	Solvent	Oven only - Oxidation	4.1
GM Delta Assembly (BACT) – Michigan	9-26-01	Powder	None	0.10
GM Grand River Michigan	4-02	Solvent	Oven only - Oxidation	4.1 (converted to 5.2 in 2004)
GM- Lansing Craft Ctr. – Michigan	4-2-02	Solvent	Oven only - Oxidation	5.29
Honda Manufacturing Alabama	10-18-02	Solvent	Oven only - Oxidation	4.1
Ford Michigan Truck	9-8-03 (1-8-09)	Solvent	Oxidation booth and oven	FPI limit
GM Lordstown	2-12-04	Powder	None	0.13
Ford Wixom Assembly – Michigan	2-26-04	Solvent	Oven only - Oxidation	7.5
Toyota – San Antonio Texas	6-21-04	Solvent	Oven only - Oxidation	4.1
FCA Supplier Park – Toledo, Ohio	9-3-04	Powder	None	0.00
GM Flint Assembly Michigan	8-29-05	Solvent	Booth Control by Carbon and Oven Controls by Oxidation	3.46
Nissan – Canton Mississippi	12-1-05	Waterborne	Oven only - Oxidation	4.1
Kia Motors Georgia	6-20-07	Waterborne	Oven only - Oxidation	2.92
Volkswagen, Tennessee	10-10-08	Solvent	Included in Basecoat as part of 3-wet process	NA
Hyundai, Alabama	6-12-12	Solvent	Oxidation on automatics and oven	4.1
Subaru of Indiana	5-19-14	Water	Waterborne Materials – no controls	4.8 lbs/gal

Source	Date	Materials	Booth/Oven Control Technology	Lbs/GACS
Ford Kentucky Truck	2-19-14	Solvent	Oxidation on Booth and Oven	4.9
Tesla Fremont California	7-9-15	Solvent	Oxidation on Booth and Oven	4.8 (combined guidecoat and topcoat)
Ford Chicago Assembly*	6-30-2017	Solvent	Booth exterior automatic and Oven Oxidation	12.0
FCA SHAP	4-6-18	Powder	No Controls	NA

*Ford Chicago minor modification

Based upon the above analysis, FCA has determined that LAER for the primer application in the proposed coating system is defined by either high solids, solventborne or waterborne coating materials, robotic electrostatic and bell application technology coupled with thermal oxidation controls on both the active spray zones of the booth and the oven all of which results in an emission rate of 2.92 lbs VOC per gallon of applied coating solids (lbs VOC/GACS) as established by the Kia facility in Georgia. FCA proposes to meet this limit as LAER for primer.

FCA recognizes that powder coatings are available as primer and have been used with substantial success in the automobile manufacturing industry resulting in essentially zero VOC emissions from this operation. However, based upon extensive experience and various compatibility/quality concerns with the proposed coating system (water and solvent based topcoats) and a lack of compatibility with the proposed coating system, FCA has evaluated powder coatings for use in this facility. The planned vehicle is considered a higher-end, luxury vehicle that requires a higher quality coating. After years of experience applying powder coatings to vehicles, FCA has concluded that the quality coating required is an impediment to the use of powder coatings for this application. Furthermore, FCA recognizes that powder coatings can sometimes result in additional repairs, additional wiping, and film build issues, all of which may result in increased VOC emissions from other sources. As noted previously, certain vehicles may receive a tutone roof which would include an additional primer coating, but one that does not change the LAER demonstration above.

Note also that the proposed use of emissions controls on both the booth and oven result in emissions that are in the range of 39.3 tons per year. This proposed level of emissions in combination with the level of VOC emissions from E-Coat and Topcoat (the three main coating operations) is at a level that is well below similar operations at facilities using powder coatings and that may not be as well controlled as the planned coating operations for the project.

The proposed annual emission rate of 41.3 tpy for primer will provide a basis for a portion of the new VOC FPI level.

5.1.4 Topcoat LAER

FCA reviewed the various SIPS and state regulations with VOC emission limits for the topcoat operations. FCA did not identify a SIP limit that was more stringent that the limits contained within the various permits reviewed. Accordingly, Table 5.4 below provides a summary of the RBLC for topcoat operations as well as VOC emission limits and control technologies identified in various permits.

Table 5.4 - Summary of Recent Topcoat VOC BACT/LAER Determinations

Source	Date	Booth Control Technology	Oven Controls	Lbs VOC per GACS
Nissan North America - Mississippi (New topcoat booth in 2015)	4-4-01 (revised 1/14/15)	Concentrator & Oxidation on CC automatic sections	Oxidation	5.2
GM Delta Assembly - Michigan	9-26-01	Oxidation on CC automatic sections	Oxidation	5.42
GM Grand River - Michigan	4-02	Concentrator & Oxidation on CC automatic sections	Oxidation	5.2
GM- Lansing Craft Ctr. - Michigan	4-2-02	Concentrator & Oxidation on CC automatic sections	Oxidation	6.6
Honda Manufacturing - Alabama	10-18-02	Oxidation on CC automatic sections	Oxidation	5.2
GM Lordstown – Ohio	2-12-04	Concentrator & Oxidation on CC automatic sections	Oxidation	6.07
Honda of America – Marysville, Ohio	2-26-04	Oxidation on CC automatics	Oxidation	8.00
Ford Wixom Assembly – Michigan (Closed)	2-26-04	Oxidation on CC automatics	Oxidation	5.29
Hyundai Motor - Alabama	3-23-04	Oxidation on CC automatic sections	Oxidation	5.2
Toyota – San Antonio Texas	6-21-04	Carbon followed by Oxidation on CC automatics	Oxidation	5.2
FCA Supplier Park - Toledo, Ohio	9-3-04	Oxidation on BC Flash Zones and CC automatics	Oxidation	5.42
GM Flint Assembly - Michigan	8-29-05	WB Basecoat/Oxidation on CC automatics	Oxidation	5.5
Nissan – Canton Mississippi	12-1-05	WB Basecoat/Oxidation on CC automatics	Oxidation	5.2
Volkswagen, Tennessee	10-10-08	WB Basecoat/Oxidation on CC automatics	Oxidation	5.2
Kia Motors Georgia	6-20-07	WB Basecoat/Oxidation on CC automatics	Oxidation	5.2
Hyundai Alabama	6-12-12	WB Basecoat/Oxidation on CC automatics	Oxidation	5.2
Ford Michigan Truck	1-8-09/revised 2018	Solvent BC and CC/Oxidation on Booths/Ovens	Oxidation	FPI Limit
Ford Kentucky Truck	2-19/14	3-Wet – Oxidation on booths and ovens	Oxidation	3.53
Subaru Indiana	5-19-14	Oven Oxidation Only	Oxidation	10.96 lbs/gallon; 10.41 lbs/gal
Tesla Fremont California	7-9-15	Solvent BC&CC/Oxidation on booths and ovens	Oxidation	4.8 (combined primer and topcoat)
Ford Chicago Assembly	6-30-2017	Exterior automatics routed to oxidizer	Oxidation	12.0
FCA SHAP*	4-6-18	WB BC/Solvent CC Oxidation on Booths/Ovens	Oxidation	2.32 lbs/GACs

*Application indicates controls on WB Booths for TACs only and lbs/GACS value applies only to coating a truck bed, not the entire vehicle.

As can be seen in the above table, the majority of topcoat emission limits for VOC are in the range of 5.2 lbs VOC/gallon of applied coating solids (GACS) which suggests that waterborne basecoat is either not used or is not controlled in these instances. FCA notes two recent permits for BACT-subject sources that were issued with emissions limits below 5.2 lbs VOC/GACS. The Ford Kentucky Truck facility was issued a permit for a new paint shop which included a limit of 3.53 lbs VOC/GACS for topcoat. The permit also included a separate primer limit of 4.9 lbs VOC/GACS (primer (guidecoat) is part of the 3-wet coating system) and includes the use of a solvent borne coatings for basecoat and clearcoat.

Note that the Tesla Fremont California facility was issued a permit for a coating system that includes guidecoat and topcoat as well. The limit is noted as 4.8 lbs VOC/GACS and is less stringent than that proposed topcoat limit for the proposed new facility.

FCA also recently received a PTI from the MDEQ-AQD for a new SHAP facility truck bed coating line with a limit of 2.32 lbs VOC/GACS. Note that this limit applies to coating the truck bed only which allows for the use of more efficient application technology in a simpler substrate configuration. While it may be indicative of the level of control that can be accomplished when coating such a configuration, it is not a direct comparison to the proposed new assembly plant. Additionally, the SHAP box paint shop is part of a two-paint shop facility, one for the cab of the truck and one for the box. Although not identified in the permit for the cab facility, the cab is a more complex configuration to paint in comparison to the box. While the cab paint shop is a well-controlled operation for VOC emissions, if the cab and box were considered as one painted unit in terms of lbs VOC/GACS, the value would be higher than the 2.32 lbs VOC/GACS that applies to the box.

Accordingly, FCA believes that the most appropriate LAER value for the new topcoat operation is the limit in the Ford Kentucky Truck permit of 3.53 lbs VOC/GACS and has proposed this level as LAER for topcoat within this application.

It should be noted that FCA reviewed the various FPIs and PALs that have been issued in recent years. None of the permits reviewed suggest that the topcoat emission levels would be substantially more controlled than those identified in the above table. Furthermore, the FPI limits were essentially developed based upon BACT and it is difficult to identify emission source specific limits (i.e., topcoat) in these permits. As a result, FCA relied on these permits for technology-based information only as opposed to information related to specific coating line performance or emission levels as part of this LAER analysis.

The proposed annual emission rate of 137.6 tpy will provide a basis for a portion of the new VOC FPI level.

As noted certain vehicles may be routed to a separate tutone operation and will receive a monocoat on the vehicle roof as opposed to a combination of base and clearcoat. This scenario does not change the above LAER demonstration.

5.1.5 Purge/Clean LAER

FCA reviewed the various SIPS and state regulations with VOC emission limits for purge and cleaning operations. FCA did not identify a SIP limit that was more stringent that the limits contained within the various permits reviewed. Accordingly, Table 5.5 below provides a summary of the RBLC for purge/clean operations as well as VOC emission limits and control technologies identified in various permits.

Table 5.5 - Summary of Recent Cleaning Solvent/Purge VOC BACT/LAER Determinations

Source	Date	Tons VOC per 1000 Vehicles*	VOC Emission Limit
GM Lansing GR Assembly	2-27-00	NA	127 tpy
GM Delta Assembly	9-26-01	0.55	161.9 tpy
Honda Manufacturing Alabama	10-18-02	NA	100 tpy
Toyota – Princeton, Indiana	6-27-03	1.85	836.3 tpy
GM Lordstown	2-12-04	0.53	266.7 tpy
Toyota San Antonio Texas	6-21-04	1.74	348.4 tpy
FCA Toledo Supplier Park	9-3-04	1.18	237.6 tpy
Nissan North America	12-1-05	0.75	372.57 tpy
Kia Motors Georgia	6-20-07	0.6	NA
VW Tennessee	10-10-08	NA	391 tpy
Hyundai Alabama	6-12-12	NA	150 tpy
Ford Kentucky Truck	2-19-14	NA	NA
FCA SHAP**	4-6-18	0.2	82.6 tpy
Ford Michigan Truck	8-15-18	NA	FPI Limit

* Tons VOC emitted per 1,000 vehicles are calculated values of expected performance. Some have been evaluated as part of a facility's BACT review but none are included as permit limits except for the SHAP facility.

** The SHAP facility was a truck bed only paint shop

Tons VOC emitted per 1,000 vehicles are calculated values of expected performance. Some have been evaluated as part of a facility's BACT review but few are included as permit limits. Based upon the information presented above, very recent permitting actions for solvent cleaning and purge operations (i.e., recent BACT analyses in Michigan) for automotive assembly operations have suggested that the review include an evaluation of emission rates that represent tons or pounds of VOC per vehicle (or per 1,000 vehicles) produced.

Due to the uniqueness of each facility and the associated cleaning operations, FCA has concluded that the most appropriate approach for solvent cleaning and purge is based upon the use of low VOC materials (where applicable), implementation of appropriate work practices (including waste management practices) and capture of solvent based purge followed by controls being operated when purging occurs.

FCA also has determined that a pound per vehicle value varies widely because the emissions from solvent cleaning operations are not directly dependent upon vehicle production. As mentioned earlier, relatively constant amounts of booth and equipment cleaning are required whether production volume is high or low. Assembly plants also use down time for deep cleaning when there is no production.

FCA recently received a PTI to address the coating of a truck bed and it was determined that 0.2 tons per 1000 vehicles could be attributed to purge and cleaning. While this value is included as a permit limit, it is clearly not appropriate to use as a direct comparison due to the use of a solvent borne primer system at the new facility which will require additional purging and cleaning and the fact that the truck bed paint shop addresses only a portion of a complete vehicle.

Accordingly, FCA believes that LAER for purge and solvent cleaning is best defined as reclaiming solvent-based purge materials, where appropriate, and implementing work practice standards to minimize VOC emissions from solvent cleaning operations. FCA proposes work practice provisions for VOCs that are identical to those found in the auto and light duty vehicle new source MACT rule (40 CFR 63 Subpart IIII). The proposed new facility will be consistent with LAER for similar operations with a projected tons VOC

per year of 129.4 tpy. The proposed annual emission rate of 129.4 tpy will provide a basis for a portion of the new VOC FPI level.

5.1.6 Other Coating or Miscellaneous VOC Sources

The following sections discuss potential RACT level requirements for miscellaneous operations within the assembly plant that are typically not regulated in the same manner as the surface coating processes identified in the previous sections of this application. Typically, these sources may have material VOC content limits or work practice type requirements as is evidenced by the State of New York's rule:

Miscellaneous Materials at Automobile and Light-Duty Truck Assembly Facilities

Coating Categories	*VOC Content Limit*	
	g/l	*lbs/gal*
Glass bonding primer (automobile and light-duty truck)	*900*	*7.51*
Adhesives (automobile and light-duty truck)	*250*	*2.09*
Cavity wax (automobile and light-duty truck)	*650*	*5.42*
Sealer (automobile and light-duty truck)	*650*	*5.42*
Deadener (automobile and light-duty truck)	*650*	*5.42*
Gasket/gasket sealing material (automobile and light-duty truck)	*200*	*1.67*
Underbody coating (automobile and light-duty truck)	*650*	*5.42*
Trunk interior coating (automobile and light-duty truck)	*650*	*5.42*
Bedliner (automobile and light-duty truck)	*200*	*1.67*
Weatherstrip adhesive (automobile and light-duty truck)	*750*	*6.26*
Lubricating wax/compounds (automobile and light-duty truck)	*700*	*5.84*

(iii) Materials supplied in containers with a net volume of 16 ounces or less, or a net weight of one pound or less are exempt from the VOC content limits of table B9-2.
(iv) Anti-corrosive wax and heat resistant anti-corrosive coatings used in the manufacture of automobile door opening seams and floor pans, respectively are exempt from the VOC content limits of table B9-2.
(v) In addition to the handling storage and disposal requirements of section 228-1.3 "General requirements", of this Subpart, each facility with a State facility or title V permit which is performing automobile and light duty truck assembly coating must develop and submit (with their permit application or renewal application) for department approval, a work practice plan to minimize VOC emissions from cleaning and from purging of equipment associated with all coating operations for which emission control requirements are specified in this

Subpart. As a minimum, the plan must specify the practices and procedures to ensure that VOC emissions are minimized from the following operations:

(a) vehicle body wiping;

(b) coating line purging;

(c) flushing of coating systems;

(d) cleaning of spray booth grates, walls and equipment; and

(e) cleaning external spray booth areas.

Accordingly, in the following sections, actual emission rates may not be directly applicable to the type of source, but other metrics may be applied.

5.1.7 Repair Operations

FCA reviewed the various SIPs and also the Control Techniques Guideline (CTG) for Automobile and Light Duty Trucks issued by USEPA under Section 183e of the Clean Air Act in September 2008 for existing sources. The SIPs reviewed and the CTG did not identify any more stringent limitations for repair than those identified in the RBLC or issued permits with specific limits for repair.

Repair operations are directly impacted by process quality assurance and quality control programs within the industry. FCA strives to minimize repairs and believes that the proposed new paint shop will allow for increased control over issues typically resulting in post-production repair. Nevertheless, VOC emissions from repair operations are dictated by the type of repair required (i.e., E-Coat repair vs topcoat) the size of repair, and the VOC content and usage rates of the repair materials. FCA did not identify any new technologies for repair operations that would lower VOC emissions beyond what is used in the current repair operations. Accordingly, the repairs to the vehicle must be identical in order to produce a quality coating on the vehicle planned for production. As repairs are a non-value added activity it is inherent that FCA will take efforts to minimize the number of repairs. LAER for repair operations is somewhat undefined, but the use of coatings containing no more than 4.8 lbs VOC/gallon has been established as BACT in many recent permits. Nothing more stringent was identified that would establish LAER beyond this level. For purposes of establishing a FPI limit, the spot repair and low bake repair operations will result in emissions of roughly 2.13 tons per year.

5.1.8 Fluid/Fuel Fill Operations

FCA reviewed the various SIPs and also the Control Techniques Guideline (CTG) for Automobile and Light Duty Trucks issued by USEPA under Section 183e of the Clean Air Act in September 2008 for existing sources. The SIPs reviewed and the CTG did not identify any more stringent limitations for fluid fill than those identified in the RBLC or issued permits with specific limits for such operations.

LAER for fuel fill operations is based upon the production levels for each facility since introduction of gasoline into fuel storage tanks followed by dispensing into vehicles are a function of stage I (storage tank filling) and stage II (vehicle dispensing) VOC emission controls. The majority of permits reviewed for gasoline fill operations did not contain specific limits since the majority of these operations are similar and emissions are dependent upon production levels. All of the most recent permits noted that Stage II emission controls have been replaced by the use of on-board recycling and vapor recovery (ORVR) systems. ORVR systems typically provide 95% or greater control of VOCs and nearly 100% of vehicles produced in the U.S. now employ. FCA utilized standard emission factors for the vehicle filling operation and has estimated roughly 0.002 lbs VOC per vehicle based upon historic fuel fill rates at the existing JNAP facility resulting in 0.5 tons per year (includes anti-freeze). This value is consistent with one of the more recent permits issued in Michigan for the GM Delta Township facility which includes an emission limit for VOCs of 0.5 tpy. The proposed annual emission rate of 0.34 tpy will provide a basis for a portion of the new VOC FPI level.

For gasoline storage tanks, BACT has been defined as the use of submerged fill and a vapor balance system. All of the permits reviewed suggested that this technology was being utilized and emission rates were not typically included (typically tank sizes were noted, but emission levels were not). FCA will incorporate these technologies at the new assembly plant for the gasoline storage tanks. Due to the unique calculations associate with tanks via the EPA TANKS program (which is dependent upon tank capacity, color and location), LAER in this case is best represented by the above described technologies.

5.1.9 Washer Fluids

FCA reviewed the various SIPs and also the Control Techniques Guideline (CTG) for Automobile and Light Duty Trucks issued by USEPA under Section 183e of the Clean Air Act in September 2008 for existing sources. The SIPs reviewed and the CTG did not identify any more stringent limitations for washer fluid than those identified in the RBLC or issued permits with specific limits for such operations.

Similar to gasoline fill, the VOC emissions from use of windshield washer fluid fill are a function of the vehicle production level. These operations are typically not controlled but will employ submerged fill for tank filling operations. A review of the various permits suggests that VOC emission limits are typically not included in permits and that BACT or LAER for fluid fill operations is essentially the same across the industry since the fluid is typically methanol and must meet certain physical parameters. FCA utilized standard emission factors and has estimated emissions of VOCs at roughly 0.002 lbs per vehicle. This value is consistent with other assembly plants that have recently demonstrated BACT (or LAER). The emission factor and projected production levels results in 0.3 tpy of VOC which will provide a basis for a portion of the new VOC FPI level.

5.1.10 TANKS

Emissions of VOCs from storage tanks for gasoline used in vehicles are dependent upon the physical characteristics of the tank, the location of the tank (i.e., which part of the country) and the proposed throughput. Accordingly, emissions from storage tanks are not typically included as part of a LAER demonstration other than for the proposed vapor balance/control systems and the RVP of the gasoline. FCA completed an emission estimate using USEPA's TANKS program. The proposed storage tanks will rely upon submerged fill and vapor balance in accordance with MDEQ-AQD's Part 7 regulations. As a result, FCA believes that for sources in a similar location, LAER has been satisfied.

Other storage tanks will be used for windshield washer fluid (methanol), brake fluid, engine coolant and refrigerants.

For the methanol storage, the same submerged fill and vapor balance system as gasoline will be used. However, for those materials with low volatility (brake fluid and engine coolant) only submerged fill will be relied upon since emissions will be minimal. Refrigerants are stored in pressurized vessels which do not result in emissions. FCA requires all delivery/shipments be completed with tankers that are equipped with Stage I vapor controls.

For purposes of the LAER analysis related to storage tanks other than for gasoline, the same concepts apply in that the materials are relatively standard across the industry and emission levels are dependent upon the location of the facility geographically and the weather conditions throughout the year. Emissions from these other tanks are in the pounds per year range and therefore, are typically not addressed in permits with specific limits.

5.1.11 Body Solvent Wipe

FCA reviewed the various SIPs and also the Control Techniques Guideline (CTG) for Automobile and Light Duty Trucks issued by USEPA under Section 183e of the Clean Air Act in September 2008 for existing

sources. The SIPs reviewed and the CTG did not identify any more stringent limitations for solvent wiping than those identified in the RBLC or issued permits with specific limits for such operations.

The body solvent wiping process involves pre-moistened wipes which are containerized and provide for a single use method that minimizes evaporative losses of VOCs. These containers can be closed when not in use. Typically, solvent wiping occurs in uncontrolled booths or areas of the facility and as a result, essentially all VOCs are assumed to evaporate. It should be noted that there may be waste materials that are ultimately disposed of, but these materials are difficult to track and estimate. LAER for these operations are essentially the same across the industry and nearly all plants use containerized, single use wipes. FCA estimated wipe emissions based upon a facility producing a similar vehicle which resulted in roughly 0.162 pounds per vehicle for solvent wipe. This factor was adjusted to account for the primer booth wiping operations and results in roughly 32.7 tons per year of VOC emissions from solvent wiping based upon projected production rates. These materials are usually included in the purge and cleaning solvent category and are part of the LAER limits identified on a ton per 1000 vehicles basis. The emission factor and projected production levels will provide a basis for a portion of the new VOC FPI level.

5.1.12 Glass Installation

FCA reviewed the various SIPs and also the Control Techniques Guideline (CTG) for Automobile and Light Duty Trucks issued by USEPA under Section 183e of the Clean Air Act in September 2008 for existing sources. The SIPs reviewed and the CTG did not identify any more stringent limitations for glass installation than those identified in the RBLC or issued permits with specific limits for such operations.

Glass installation involves the use of primer and wiping materials prior to installation with adhesives. Note that due to safety requirements, these materials are standardized across the industry. For example, Michigan's Rule 621 states the following:

> *Four and nine-tenths pounds of volatile organic compounds emitted per gallon of coating, minus water, as applied for glass adhesion body primer. For the purpose of this subdivision, "glass adhesion body primer" means the prime coating that is applied to automobile or truck bodies as part of the glass bonding system.*

Due to the safety requirements for glass in vehicles, the use of alternative materials is generally considered difficult if not impossible. As a result, FCA determined that glass installation will result in approximately 1.7 tons per year (included in sealer estimates). The emission factor and projected production levels will provide a basis for a portion of the new VOC FPI level.

5.1.13 VOCs from Combustion Sources

VOCs generated from combustion sources are limited to products of combustion of natural gas. FCA did not identify any lower emitting fuels or burner configuration technologies that would reduce VOC emissions from the proposed natural gas combustion sources. Due to the multiple locations of emissions sources and the very low level of VOC emissions from planned combustion sources are estimated to be 5.05 tons per year which includes VOC control in the form of thermal oxidation, FCA did not pursue consideration of add-on control technologies as part of this LAER analysis. FCA has determined that the use of natural gas as fuel in these units constitutes LAER at an emission rate of 5.5 pounds VOC per million cubic feet of natural gas consumed based upon USEPA's AP-42 Compilation of Air Emission Factors which is considered a widely acceptable emission rate for VOCs from natural gas combustion.

5.1.14 VOCs from Emergency Engines

FCA reviewed the USEPA's RBLC for emergency engines fired by natural gas and emergency engines used for fire pumps utilizing diesel fuel. The tables and discussions below summarize the findings from that review.

Emergency Engines - Natural Gas

Source	Type/Size	Date	VOC Limit	Control Technology
Holland Board of Public Works (MI-0424 and MI-0412)	1,462 Hp	12-5-2016	0.5 gm/hp-hr	Oxidation Catalyst and GCP*
Mid Kansas Electric (KS-0030)	604 Hp	3-31-2016	1.0 gm/hp-hr	None
SEMGAS LP – Rose Valley (OK-0153)	2,889 Hp	3-1-2013	0.44 gm/hp-hr and 3-hr avg	Oxidation Catalyst
Consumers Energy (MI-0393)	1,818 Hp	10-14-2010	0.81 gm/hp-hr	None

*GCP-Good Combustion Practices

Based upon the above information, there are natural gas-fired emergency engines that rely on oxidation catalysts to control VOCs. Those units relying on oxidation catalysts all have a much larger Hp rating/capacity that those proposed for use by FCA in the MA/Det2 AP project. In addition, the oxidation catalysts mainly target CO with a collateral impact on NMHC. Based upon the above, FCA believes that, for smaller Hp natural gas emergency engines, the permit limit for Mid-Kansas Electric is a comparable unit to the proposed emergency engines. However, FCA notes that the units at Consumer Energy Ray Compressor Station and the Holland Board of Public Works permit limits are lower for larger units, but not as large as the SEMGAS unit which is nearly 3,000 Hp. As a result, FCA believes that the appropriate gm/hp-hr limit that represents LAER for the proposed engines is the 0.5 gm/hp-hr as provided in the table above.

Emergency Fire Pump Engines – Diesel

Source	Type/Size	Date	VOC Limit
Toyota motors (TX-0846)	214 KW (287 Hp)	9-23-2018	0.19 g/KW hr
DTE Belle River (MI-0435)	399 Hp	7-16-2018	0.13 lbs/hr
Marshall Energy (MI-0433)	300 Hp	6-29-2018	0.75 lbs/hr
Shintech, Louisiana (LA-0328)	375 Hp	5-2-2018	4.0 gm/hp-hr
Steel Dynamics (IN-0295)	250 Hp	2-23-2018	1.13 gm/hp-hr
Indeck Niles (MI-0423)	260 Hp	1-4-2017	0.64 lbs/hr
Cricket Valley Energy (NY-0103)	***460 Hp***	***2-3-2016***	***0.1 gm/hp-hr***
Holland Board of Public Works (MI-0424)	165 Hp	12-5-2016	0.47 lbs/hr
Forsyth Energy Plant (NC-0101)	11.40 MMBtu/hr (Op. Hours: 200 hr/year)	09/29/2005	1.04 lbs/hr

As noted above, the Cricket Valley Energy Center has accepted a permit limit of 0.1 grams VOC/hp-hr which is consistent with the proposed value for the emergency fire pumps that FCA is proposing for the MA/Detroit 2 Assembly Plant. No other limits for similar fire pump units are noted to be below that value. Accordingly, FCA believes this represents LAER for VOC emissions from the emergency fire pump engines.

5.2 LAER SUMMARY – NEW ASSEMBLY PLANT

The table below provides the results of the above VOC LAER analysis in summary format.

Table 5.6 – LAER Summary

Source	Facility	Application/Matls	Controls	LAER Performance Metric
E-Coat	Ford KTP	Dip 100%	Tank and Oven RTO	**0.04 lbs VOC/GACS**
Paint Shop Sealers	FCA SHAP	Robotic pump/manual applied	None	**0.25 lbs VOC/gallon**
Primer (Guidecoat)	KIA Motors Georgia	High efficiency applicators	Booth/Oven RTO	**2.92 lbs VOC/GACS**
Topcoat	Ford KTP	High efficiency applicators	BC/CC Booth, BC Flash, and Oven to RTO	**3.53 lbs VOC/GACS**
Purge/Clean	KIA Motors Georgia	NA	Purge Capture and work practices	**0.6 tons VOC/1000 vehicles**
Repair	FCA SHAP	Manual	None	**4.8 lbs VOC/gallon**
Fuel Fill/Tanks	GM Delta Twp.	Submerged fill/Vapor Balance and ORVR	ORVR	**95% Control on vehicle system**
Washer Fill	Various	Standard Material	None	**NA**
Solvent Wipe	Kia Motors Georgia	Included in Purge/Clean	NA	**NA**
Glass Installation	All	Safety Based Materials	None	**4.9 lbs/gallon**
Process Fuel Combustion	All	NA	None	Natural Gas

5.3 FLEXIBLE PERMIT LAER

As provided in the above table, FCA's proposed changes include the use of VOC emission reduction techniques that are equivalent to the traditional LAER parameters identified for other automotive assembly plants. In addition, FCA has evaluated the various Flexible Permit Initiatives (FPI) from the most recent FPIs issued and the applicable pounds VOC per job limits that can be expected to have been "achieved in practice". The table below presents a summary of the various FPI limits FCA used for this comparison:

Table 5.7 - Summary of FPI Limits

Source	Date	Pounds/job	VOC Emission Limit
GM Lansing GR Assembly	3/13/2006	5.73	264.3 tpy
GM Orion Assembly	2/26/2010	4.6	748.5 tpy
GM Flint Assembly	3/31/2014	4.8	649.6 tpy
FCA Sterling Heights	1/4/2011	4.5	673.2 tpy
FCA Jefferson North	4/19/2010	4.8	1085.8 tpy
Ford Dearborn Assembly	1/24/2007	4.8	897 tpy

Ford Michigan Assembly	1/8/2009	4.8	903.0
Ford Flat Rock Assembly	11/23/2010	4.8	732.0

As can be seen from the above table, the pounds per job associated with the proposed new assembly plant (in range of 3.0 lbs/job and 397.7 tons per year) is below all of the current FPI limits for similar facilities.

In addition, pound per job based limits were identified in the RBLC for the Toyota facility in Georgetown, Kentucky and include the following:

Source	Date	Pounds VOC/Job	VOC Limit
Topcoat	11//26/2013	3.54	NA
E-Coat	11/26/2013	0.116	NA
Primer (Guidecoat)	11/26/2013	1.026	NA
Sealer	11/26/2013	0.8	NA

From these limits, it can be concluded that the overall pound per job value at the Georgetown facility are great than the most recently issued FPI levels discussed above. Only four of the VOC sources are identified for the Kentucky plant and the total (5.482 lbs/job) is above the existing FPI limits which typically includes all of the main VOC operations within the paint shop (e.g., purge and cleaning solvents, etc.).

Finally, FCA also considered Plantwide Applicability Limits (PAL) Permits provided in the table below. As can be seem from the table, PAL permits are generally developed based upon historic baseline emission levels and are not necessarily driven by BACT or LAER. Hence, the limits in PAL permits when compared on a pound per job basis, are generally higher.

Table 5.8 - VOC PAL Summary

Source	Date	PAL VOC Limit	Equivalent lbs/job
Ford Kansas City Assembly	2009/renewed in 2018	2,353 tpy	NA
BMW South Carolina	9-8-2009	>324,000 jobs – 855 tpy	5.28

Accordingly, FCA believes that a proposed FPI limit of 3.0 pounds VOC per job and the proposed emission reduction techniques when compared on a traditional LAER approach, demonstrates the lowest achievable emission rate for the proposed new assembly plant.

APPENDIX H

TANKS 4.0.9d SUMMARIES

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	DACM 15k gal gasoline
City:	
State:	
Company:	
Type of Tank:	Vertical Fixed Roof Tank
Description:	

Tank Dimensions

Shell Height (ft):	24.00
Diameter (ft):	10.50
Liquid Height (ft) :	23.00
Avg. Liquid Height (ft):	12.00
Volume (gallons):	15,000.00
Turnovers:	79.43
Net Throughput(gal/yr):	1,191,508.50
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft)	0.50
Radius (ft) (Dome Roof)	10.50

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Detroit, Michigan (Avg Atmospheric Pressure = 14.38 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

DACM 15k gal gasoline - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 12)	All	50.19	45.33	55.06	48.60	5.2608	4.7775	5.7824	64.0000			92.00	Option 4: RVP=12, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

DACM 15k gal gasoline - Vertical Fixed Roof Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 12)	5,199.31	764.72	5,964.03

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	DACM 6k gal WW fluid
City:	
State:	
Company:	
Type of Tank:	Vertical Fixed Roof Tank
Description:	

Tank Dimensions

Shell Height (ft):	16.00
Diameter (ft):	8.00
Liquid Height (ft) :	16.00
Avg. Liquid Height (ft):	8.00
Volume (gallons):	6,000.00
Turnovers:	10.91
Net Throughput(gal/yr):	65,467.50
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft)	0.50
Radius (ft) (Dome Roof)	8.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Detroit, Michigan (Avg Atmospheric Pressure = 14.38 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

DACM 6k gal WW fluid - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Methyl alcohol	All	50.19	45.33	55.06	48.60	1.0515	0.8942	1.2320	32.0400			32.04	Option 2: A=7.897, B=1474.08, C=229.13

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

DACM 6k gal WW fluid - Vertical Fixed Roof Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	52.52	37.66	90.18