

M4085

MANILA

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

M408547949

<b>FACILITY:</b> FCA US LLC - Mack Avenue Engine Plant		<b>SRN / ID:</b> M4085
<b>LOCATION:</b> 11570 WARREN AVENUE EAST, DETROIT		<b>DISTRICT:</b> Detroit
<b>CITY:</b> DETROIT		<b>COUNTY:</b> WAYNE
<b>CONTACT:</b> Keith Jones , Environmental Specialist		<b>ACTIVITY DATE:</b> 02/27/2019
<b>STAFF:</b> Todd Zynda	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> Scheduled Inspection		
<b>RESOLVED COMPLAINTS:</b>		

**REASON FOR INSPECTION:** Targeted Inspection

**INSPECTED BY:** Todd Zynda, AQD

**PERSONNEL PRESENT:** Keith Jones, Environmental Specialist; Chukwuemeka Ben Bosah, Corporate Air Compliance; Joe Saugerich, EHS Manager

**FACILITY PHONE NUMBER:** (313) 252-6147

**FACILITY WEBSITE:** www.fcanorthamerica.com

## **FACILITY BACKGROUND**

FCA US LLC (FCA) owns and operates the Mack Avenue Engine Plant (MAEP) located at 11570 Warren Avenue, Detroit, Wayne County, Michigan. The boundaries of the facility are as follows: to north, east, and south are industrial and commercial businesses; immediately adjacent to the facility property on the east is the Conrail Railway; to the west are residential properties. The nearest residential properties are located approximately 250 feet to the west.

The facility currently has 720 employees and operates two shifts 5:00 AM to 3:30 PM and 5:00 PM to 3:30 AM, six days a week. Additional hours are possible depending on production demand.

MAEP is subject to Title 40 of the Code of Federal Regulations (CFR), Part 70, because the potential to emit carbon monoxide (CO) exceeds 100 tons per year. No emissions units at the facility are currently subject to the Prevention of Significant Deterioration (PSD) regulations of Part 18, Prevention of Significant Deterioration of Air Quality of Act 451, because at the time of New Source Review permitting the potential to emit of CO was less than 250 tons per year.

## **PROCESS OVERVIEW**

Activities at the MAEP include engine component machining as well as assembly and testing of engines. MAEP comprises two primary buildings (Mack I and Mack II) under SRN M4085. Mack I (the southern plant) currently manufactures the Pentastar Upgrade (PSU) 3.6-liter, but has the capability to manufacture the Pentastar 3.1, 3.2 and 3.6-liter V-6 Engines. Mack II (the northern plant) discontinued operation and production on September 24, 2012.

On February 26, 2019, FCA announced that \$1.6 Billion would be invested to convert the MAEP into an auto assembly plant for the next generation Jeep Grand Cherokee and 3-row full size Jeep SUV (see attached press release).

MAEP operates three gasoline engine dynamometers, two natural gas fired engine hot test stands, three emergency fire pump engines, miscellaneous combustion equipment (heating and ventilation units, heaters, hot water generators), wet machining equipment (boring, grinding using various cutting oils and lubricants), and dry machining (boring, grinding) equipment under renewable operating permit (ROP) MI-ROP-M4085-2015a, which has an effective date of June 24, 2015 (revised November 17, 2015).

## **COMPLAINT/COMPLIANCE HISTORY**

There have been no complaints for this facility.

During the previous inspection on October 30, 2017, the facility was determined to be in noncompliance with the stack conditions of MI-ROP-M4085-2015a, FG-HOTTESTS, SC VIII. Violation notices were issued on December 18, 2017 and February 12, 2018. The violations were resolved through the issuance of PTI 47-18 (issued on June 8, 2018).

During November 3 and 5, 2014, April 11, 2013, September 30, 2009, April 24, 2007, June 24, 2004, and August 26, 2002 the facility was inspected and was determined to be in compliance with permit conditions and applicable federal and state regulations.

## **OUTSTANDING CONSENT ORDERS**

None

## **OUTSTANDING VIOLATION NOTICES**

None

## **INSPECTION NARRATIVE**

On February 27, 2019 the Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) inspector, Mr. Todd Zynda, conducted an inspection of FCA MAEP at 11570 Warren Avenue East, Detroit, Michigan. During the inspection, Mr. Keith Jones, Environmental Specialist, Mr. Joe Saugerich, EHS Manager, and Mr. Chukwuemeka Ben Bosah, Corporate Air Compliance Engineer, provided information and a tour of facility operations relating to air quality permits. The inspection was conducted to determine the facility's compliance with Federal and State air quality regulations and ROP No. MI-ROP-M4085-2015a and PTI 47-18.

At 8:35 AM, Mr. Todd Zynda (AQD) arrived onsite and performed outside observations. No visible emissions were observed at the facility. Odors were not detected. At 8:45 AM Mr. Zynda entered the facility, stated the purpose for the inspection, and was greeted by Mr. Jones.

During the opening meeting the facility operations and MI-ROP-M4085-2015a and PTI 47-18 conditions were discussed. During the opening meeting an inspection checklist outlining ROP requirements was discussed. Mr. Jones provided examples of records maintained to demonstrate compliance with conditions within MI-ROP-M4085-2015a and PTI 47-18. During review of the records, it was agreed that records would be emailed to AQD. Records were provided via email on March 7, 2019 (Attachment).

According to Mr. Jones, the Total Maintenance System (TMS) is used to track and schedule maintenance on particulate control equipment at the MAEP. TMS tracks each piece of equipment individually, and records the date and time of any action performed on the equipment. It was agreed an inventory of tracked equipment would be provided via email (provided on March 7, 2019).

Following the opening meeting, a tour of the facility was provided. During the inspection the south plant was observed. The tour began with observation of the engine machining areas and Rule 290 areas (RTV sealant, IPA, Loctite).

The tour continued with observation of the facility "penthouse" where dust collector units (DCUs) and 2-stage mist eliminator units (MCUs) were observed. Both units are equipped with 2-stage filtration. Pressure drop is monitored on each particulate control unit. The normal operating range of inches of water is indicated on each pressure gauge. During the inspection, the inches of water on control unit pressure gauges indicated that the equipment was operating within "normal" ranges.

The tour continued with observation of the dynamometer stack and hot test stand stack. The dynamometer stack appeared to meet ROP stack requirements (SV- DYNOSTACK). The hot test stands stack appeared to meet PTI 47-18 (SV-HOTTESTS stack conditions).

Following observation of the stacks, the hot test stands, and dynamometers were observed. During the inspection the hot test stands were not in operation. Natural gas usage for the two hot test stands is metered through one gauge, which was observed in the penthouse (2<sup>nd</sup> floor) above the hot test stands during the inspection.

Following observation of the hot test stands, the dynamometers were observed. During the inspection the three dynamometer test cells were in operation. According to the test operator, engine test includes a rpm testing (low, medium and high) and quality testing. Observations of the operating cells were made from the exterior dynamometer test cell windows, as doors to operating cells cannot be opened. Exhaust from the test cells are combined and discharged through one stack.

Following observation of the dynamometers, the "engine teardown washer" was observed. During the inspection it was observed that the washer vents to outside ambient air via stack at roof level. According to Mr. Jones the engine teardown washer is used following quality testing. Engines that randomly get pulled to be taken apart or are flagged at not meeting quality requirements are taken apart and washed using this washer. A SDS for the solution used in the washer and permit exemption demonstration was provided as part of the previous inspection.

During the inspection the emergency fire pump engines were not observed.

## APPLICABLE RULES/PERMIT CONDITIONS

### ROP No. MI-ROP-M4085-2015a

MI-ROP-M4085-2015a special conditions (SC) are listed as appropriate. For brevity, permit conditions and the language of federal and state rules have been paraphrased.

### FG-DYNOS

The dynamometers at the facility are not subject to 40 CFR 63 Subpart P for Engine Test Cells/Stands because the facility is not a major source of HAPs.

SC I. 1, 2, 3, 4, SC VI. 2 and SC V. 1. **COMPLIANCE.** The 12-month rolling emissions shall not exceed the following: VOC – 10.8 tpy, benzene – 0.41 tpy, 1,3-butadiene – 0.14 tpy, formaldehyde – 0.23 tpy. Verification of VOC, benzene, 1,3-butadiene, formaldehyde, CO, and NOx emission rates shall be conducted no later than December 31, 2018. Records of days of operation. Testing at EU-DYNO1 was completed on June 14, 15, and 28, 2018. The testing determined emission factors as follows: 0.45 lb of NOx/gal, 1.05 lb of CO/gal, 0.036 lb of VOC/gal, 0.0018 lb of formaldehyde/gal, 0.0022 lb of benzene/gal, and 0.000055 lb of 1,3-butadiene/gal. Emissions for FG-DYNOS are calculated using the stack test determined emission factors from the June 2018 going forward. The maximum emissions for January 2017 through February 2019 are reported as follows: VOCs – 4.34 tpy (February 2018), benzene – 0.17 tpy (January 2018 through February 2018), 1,3-butadiene – 0.05 tpy (October 2017 through February 2018), formaldehyde – 0.09 tpy (April 2017 through March 2018). The facility maintains records of the days of FG-DYNOS operation.

SC II. 1 and 2. **COMPLIANCE.** Shall only burn unleaded gasoline. Gasoline usage shall not exceed 1,152 gallons per calendar day. The SDS provided for gasoline indicates that the gasoline is unleaded. The facility provided daily gasoline fuel usage for January and February 2019. The highest daily fuel gasoline fuel usage occurred on January 10, 2019 at 144.94 gallons.

SC VI. 1, 2, and 3. **COMPLIANCE.** Shall complete required calculations in an acceptable format. Shall maintain the following records: days of operation, gallons of unleaded gasoline used per month, daily gasoline usage, and monthly/12-month rolling VOC, benzene, 1,3-butadiene, and formaldehyde emissions. The facility maintains the required records.

SC VIII. 1. **COMPLIANCE.** The exhaust stack for FG-DYNOS shall not exceed 18 inches in diameter and shall be at least 38 feet above ground surface. During the inspection it was confirmed that the three dynamometers vent to one stack at roof level. During the inspection, the exact measurements were not obtained, but the stack appeared to be in compliance with permit conditions. The stack exhausts unobstructed vertically upwards.

### FG-HOTTESTS

The hot test stands at the facility are not subject to 40 CFR 63 Subpart P for Engine Test Cells/Stands because the facility is not a major source of HAPs. The permit conditions below are evaluated through May 2018. PTI 47-18 which contains new conditions for FG-HOTTESTS is evaluated further below (after the ROP evaluation) for June 2018 through February 2019.

SC II. 1 and 2. **COMPLIANCE.** Shall only burn natural gas. Natural gas usage shall not exceed 2.0 million cubic feet (MMCF) per 12-month rolling time period. According to the records provided the facility did not operate the hot test stands from January 2017 through May 2018.

SC IV.1. **COMPLIANCE.** Shall install, calibrate, maintain, and operate device to monitor natural gas usage. The facility meets this requirement. Records are maintained on a monthly basis.

SC VI. 1. **COMPLIANCE.** Shall keep records in an acceptable format. Shall keep in a satisfactory manner, monthly and previous 12-month natural gas use records. The appropriate records are maintained.

SC VIII. 1. **COMPLIANCE.** The exhaust stack for FG-HOTTESTS shall not exceed 12 inches in diameter, shall be at least 50 feet above ground surface, and shall discharge unobstructed vertically upwards. This condition was revised in PTI 47-18 to account for the correct stack dimensions. Previously a violation notice was issued on December 18, 2017 regarding this special condition. The violation was resolved through the issuance of PTI 47-18 (issued on June 8, 2018).

#### FG-EMERG-RICE

Equipment under FG-EMERG-RICE is not subject to the NSPS 40 CFR 60 Subpart IIII- Standards of Performance for Stationary Compression Ignition Internal Combustion Engines or Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines because the date of the installation is prior to the affected date. The special conditions for FG-EMERG-RICE were obtained from MACT standards under the National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines promulgated in 40 CFR, Part 63, Subparts A and ZZZZ. The AQD is not the delegated authority for the area source provisions of this MACT. Therefore, conditions were not evaluated for compliance.

#### FG-RULE 290

The facility provided Rule 290 tracking sheets that demonstrate compliance with Rule 290 VOC emission limits. The facility tracks VOC emissions for adhesives, production inks, methanol, and isopropyl alcohol used on a monthly basis. VOC emissions for subject emission limits are less than the applicable Rule 290 monthly threshold.

#### FG-GAS-DISP

Storage tanks under FG-GAS-DISP are not subject to the NSPS 40 CFR 60 Subpart Kb as the tanks are less than 75 cubic meter (m3) or 19,812.9 gallons in size. The largest gasoline storage tank at the facility is 5,000 gallons.

The special conditions for FG-GAS-DISP were obtained from MACT standards under the National Emissions Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities promulgated in 40 CFR, Part 63, Subparts A and CCCCC.

The facility maintains gasoline throughput for EU-UST1 and EU-UST2. According to the records provided, the maximum combined throughput for EU-UST1 and EU-UST2 from October 2015 through September 2017 occurred during April 2017 at 6,502 gallons, which is less than the 10,000-gallon threshold. Therefore, it appears the requirements for a gasoline dispensing facility (GDF) with a throughput less than 10,000 gallons, are applicable. The AQD is not the delegated authority for this area source MACT. Therefore, conditions were not evaluated for compliance.

#### FG-RULE331

SC I. 1. **COMPLIANCE.** PM emission rate shall not exceed 0.1 pounds per 1,000 pounds of exhaust gases calculated on a dry basis. The company has demonstrated during the ROP application correspondence that the wet machines (mist collectors) are designed to meet the above limit (see ROP application dated October 31, 2014 for calculations). The facility provided similar calculations with the March 7, 2019 submittal. On December 1, 2017 as part of the previous inspection, the facility provided calculations for the DCUs (dry machining) demonstrating compliance with the PM emission rate. The facility demonstrates compliance with the above limit by implementing proper maintenance and operation of the equipment. During the inspection the facility demonstrated that equipment is maintained through the TMS. Within the TMS, maintenance on each piece of

equipment is recorded and scheduled. During the inspection, Mr. Jones provided a demonstration that the records that are maintained.

SC III. 1. **COMPLIANCE.** Shall not operate FG-RULE331 unless the particulate control equipment is installed and operating properly. During the inspection, particulate control equipment was observed. Equipment appeared to be operating properly. Pressure drop is monitored on each unit. The normal operating range of inches of water is indicated on each pressure gauge. During the inspection, the inches of water on pressure gauges indicated that the equipment was operating within "normal" ranges.

SC V.1 **COMPLIANCE.** Upon request shall verify PM emission rates. At this time, the AQD has not requested testing.

SC VI. 1. and 2. **COMPLIANCE.** Shall implement and maintain a semi-annual or more frequent check to ensure proper operation of the control equipment for each emission unit per manufacturer's specifications. Shall keep an updated record of all emission units subject to Rule 331. The facility maintains compliance with SC VI. 1. and 2. through the TMS.

SC VI. 3. **COMPLIANCE.** Shall maintain calculations on file that demonstrate compliance with particulate emission limit. The facility provided calculations within the ROP application dated October 31, 2014 and in the March 7, 2019 submittal. Calculations were also provided during the inspection on October 30, 2017.

#### FG-FACILITY

SC I. 1. **COMPLIANCE.** The 12-month rolling NOx emissions shall not exceed 93.7 tons per year. The maximum 12-month rolling NOx emission from January 2017 to February 2019 occurred at the end of September 2018 at 17.0 tons.

SC I. 2. **COMPLIANCE.** The 12-month rolling CO emissions shall not exceed 244 tons per year. The maximum 12-month rolling CO emission from January 2017 to February 2019 occurred at the end of February 2018 at 90.7 tons.

SC II. 1. **COMPLIANCE.** Natural gas usage shall not exceed 725.3 million cubic feet per year on a 12-month rolling time period. The maximum 12-month rolling natural gas usage from January 2017 to February 2019 occurred at the end of October 2018 at 166.90 million cubic feet.

SC II. 2. **COMPLIANCE.** Unleaded gasoline usage shall not exceed 135,000 gallons per year on a 12-month rolling time period. The maximum 12-month rolling gasoline usage from January 2017 to February 2019 occurred at the end of February 2018 at 64,151.0 gallons.

SC IV.1. **COMPLIANCE.** Shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor and record natural gas usage. The facility appears to meet this requirement.

SC VI. 1. **COMPLIANCE.** Shall keep records in an acceptable format. The records provided meet this requirement.

SC VI. 2. **COMPLIANCE.** Shall keep the following records on a monthly basis: FG-HOTTESTS days of operation, gallons of gas, MMCF natural gas usage, NOx emissions, and CO emissions (monthly and 12-month rolling). The facility maintains the required records.

#### **PTI 47-18**

#### FG-HOTTESTS

The hot test stands at the facility are not subject to 40 CFR 63 Subpart P for Engine Test Cells/Stands because the facility is not a major source of HAPs. PTI 47-18, FG-HOTTESTS conditions were evaluated from June 2018 (issuance of PTI47-18) through February 2019.

SC II.1, 2, and 3, SC VI.2 and 3. **COMPLIANCE.** Shall only burn natural gas. Natural gas usage shall not exceed 0.0026 MMscf per hour. Natural gas usage shall not exceed 2.0 million cubic feet (MMCF) per 12-month rolling time period. The facility provided daily natural gas usage for December 2018 through February 2019. The maximum hourly daily usage occurred on December 13, 2018 at 263 cf (0.000263 MMCF). The maximum 12-

month rolling natural gas usage from June 2018 to February 2019 occurred at the end of February 2019 at 0.5120 cubic feet. According to the records provided the facility did not fire natural gas from June 2018 through November 2018.

SC IV.1. **COMPLIANCE.** Shall install, calibrate, maintain, and operate device to monitor natural gas usage. The facility meets this requirement. Records are maintained on a monthly basis.

SC VI. 1. **COMPLIANCE.** Shall keep records in an acceptable format. Shall keep in a satisfactory manner, monthly and previous 12-month natural gas use records. The appropriate records are maintained.

SC VIII. 1. **COMPLIANCE.** The exhaust stack for FG-HOTTESTS shall not exceed 6.25 inches in diameter, shall be at least 35 feet above ground surface, and shall discharge unobstructed vertically upwards. During the inspection the hot test stand stack appeared to meet the requirements. Measurements were not collected.

### **Permit to Install Exempt Equipment**

#### **Engine Manufacturing Equipment**

Engine manufacturing equipment appears to be exempt from PTI requirements per R336.1285(2)(l)(vi)(B) or (C). Emissions are either released to the general in-plant environment, or if released to outside ambient air are controlled by two stage filters within both the DCUs and MCUs. The AQD accepts the two stage filters as a demonstration of the permit exemption (mechanical precleaer and appropriately designed fabric filter).

#### **Cold Cleaners**

According to the correspondence from the facility, the facility operates seven aqueous parts washers. One of the parts washers uses ArmaKleen MPC Cleaning Solution. The SDS provided indicates that the ArmaKleen MPC Cleaning Solution used in the parts washers does not contain VOCs. The remaining six parts washers use Cimcool. The SDS provided for the Cimcool indicates a 9% VOC content (ASTM D2369). According to the facility, Cimcool is mixed with water (97% water and 3% Cimcool). Therefore, the VOC content of the solution used (VOC content = 0.27%) is significantly less than 5% VOC as defined under R 336.1101(q) for aqueous based parts washers. The parts washers appear to be exempt from PTI requirements under R336.1281(2)(k).

#### **Storage Tanks**

The 500-gallon diesel storage tanks are exempt from PTI requirements under R336.1284(2)(d): "storage of no. 1 to no. 6 fuel oil...or diesel fuel oils nos. 2-D and 4-D."

The 5,000-gallon gasoline storage tanks are exempt from PTI under R336.1284(2)(g)(iii): "equipment exclusively serving dynamometer facilities for gasoline and/or gasoline/ethanol blends..."

#### **Fire Pumps**

Three fire pumps operate at 386 break horse power each. Based on calculations, 386 BHP power output rating is equivalent to 0.98 million British thermal units (MMBTU) rated input. At a 25% efficiency conversion, the maximum converted rating is approximately 3.92 MMBTU/hr. Based on the calculated rating, the fire pumps are exempt from PTI requirements under the following Rule.

R336.1285(2)(g): "Permit to install does not apply to...Internal combustion engines that have less than 10,000,000 Btu/hour maximum heat input."

#### **Engine Teardown Washer**

The engine teardown washer appears to be exempt from PTI requirement under R336.1281(2)(e). While the SDS provided indicates that solution used in the washer contains VOCs, the facility has provided documentation that vapor pressure of the VOC constituent (ethanolamine) is less than 0.1 mmHg (see the previous inspection for supporting documentation).

### **APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS:**

Not applicable. All lots are paved.

### **MAERS REPORT REVIEW:**

The 2017 MAERS report was submitted on time. The MAERS audit was passed.

**FINAL COMPLIANCE DETERMINATION:**

At this time, this facility appears to be in compliance with MI-ROP-M4085-2015a and PTI 47-18.

NAME 

DATE 4/5/19

SUPERVISOR JK