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

N143640858

FACILITY: FCA US Technology Center		**SRN / ID:** N1436
LOCATION: 800 Chrysler Drive, AUBURN HILLS		**DISTRICT:** Southeast Michigan
CITY: AUBURN HILLS		**COUNTY:** OAKLAND
CONTACT: Mark Werthman ,		**ACTIVITY DATE:** 07/17/2017
STAFF: Samuel Liveson	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled inspection of a Title V source.		
RESOLVED COMPLAINTS:		

On July 17, 2017, Air Quality (MDEQ-AQD) Senior Environmental Engineer Iranna Konanahalli and I conducted a scheduled, level 2 inspection of FCA US LLC Technology Center (CTC), located at 800 Chrysler Drive in Auburn Hills, Michigan. The purpose of this inspection was to determine the facility's compliance with the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); the Air Pollution Control Rules; and the conditions of Renewable Operating Permit (ROP) MI-ROP-N1436-2013.

We arrived on site around 9:30 AM. We met with Mr. David Jump, Environmental Specialist; Mr. Stuart Weiss, Air Compliance Specialist; and with Mr. Mark Werthman, EHS Manager. Mr. Weiss provided facility records. Mr. Jump and Mr. Werthman explained equipment and operations.

Opening Meeting

CTC is a design and test facility for FCA US LLC comprised of 5 million square feet, 4 million of which is offices. The first floor includes facilities such as the central energy plant (Section 1 of the ROP), and pilot vehicle assembly and powertrain testing with engine dynamometers (Section 2 of the ROP). Aspects of the facility such as the boilers are constantly operating. Laboratories operate two to three shifts Monday through Friday.

The facility is putting together a Permit to Install application to update facility requirements, which may be submitted in a month or so.

Facility Walk-Through

FG-BOILERS-S1 and EU-BOILER7-S1

Boilers are subject to 40 CFR Part 63 Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR Part 63 Subpart DDDDD). Initial notification for 40 CFR Part 63 Subpart DDDDD was submitted on May 20, 2013, and Notification of Compliance Status for 40 CFR Part 63 Subpart DDDDD was received on March 13, 2016 per §63.7495(b).

All boilers appear to qualify as units designed to burn gas 1 subcategory, per definitions in §63.7575. Boilers EU-12-HWG-1.01 through 1.04 have fuel oil backup capabilities. Boilers EU-HWG-1.05 through 1.07 do not have fuel-oil backup capabilities. Special Conditions (S.C.) I.1.3, II.2, V.1, and VI.1 do not appear to be applicable because according to provided records and the Michigan Air Emissions Reporting System, fuel oil has not been used in boilers since before 2008.

In the facilities area, 6 boilers have a heat input capacities of 40 million British thermal units per hour (MMBTU/hr) each, and one boiler (Boiler #1) has a heat input capacity of 10 MMBTU/hr. Boiler #7 (EU-12-HWG-1.07) was installed most recently, in November of 2000,

and is permitted as an emission unit outside the flexible group. Boiler #2 (identified as EU-12-HWG-1.02 in the ROP) was the only boiler operating in the facilities area during our inspection. A dedicated natural gas meter on the boiler read 21,270 standard cubic feet per hour (scfh). Its nameplate provided a heat input of 40,000,000 BTU, and the year 1989.

Also subject to 40 CFR Part 63 Subpart DDDDD are three natural-gas fired boilers with a heat input of 2.511 MMBTU/hr (EU-16-B-4.01 through EU-16-B-4.03). These boilers are in the second floor of Wings A through E. These boilers are associated with engine test cells. Boilers PTE-B1 and PTE-B2 are two natural gas fired boilers with a heat input of 8.37 MMBTU/hr each also subject to 40 CFR Part 63 Subpart DDDDD. We did not visit these boilers during the facility inspection.

The facility considers units EU-12-HWG-1.01 through 1.07 to be hot water generators rather than boilers because they do not produce steam. They appear to meet the definition of boiler per §63.7575. Water is heated to approximately 270 °F and then is used in heat exchangers and various scientific processes throughout the facility. Preventative maintenance occurs weekly and monthly, with major maintenance occurring every three years per S.C. VI.6.

FG-BOILERS-S1 Records
Mr. Weiss provided boiler records from January of 2016 through June of 2017 per S.C. VI.3, VI.4, and VI.5. Below are emissions limits and associated maximum emissions from the flexible group during this time period. The facility appears to operate within emission limits.

FG-BOILERS-S1				
Pollutant/ Material	**ROP Limit**	**Maximum Emission**	**Month 2015**	**Special Condition**
SO2	**104.7 lb/hr**	**0.051 lb/hr**	**February 2016**	**S.C. I.1.1**
	232.9 tons/yr	**0.233 tons/yr**	**March 2017**	**S.C. I.1.2**
NOx	**85.8 tons/yr**	**19.5 tons/yr**	**December 2016**	**S.C. I.2**
Natural Gas	**521.5 MMCF/yr**	**391.0 MMCF/yr**	**February 2016**	**S.C. II.1**
Fuel Oil No. 2	**6,415,000 gallons/yr**	**0 gallons/yr**	**NA**	**S.C. II.2**

Mr. Weiss also provided reports of the energy assessment and tune-up conducted on boilers per 40 CFR Part 63 Subpart DDDDD.

FG-B/UP-TURBINES-S1
Two natural gas-fired turbines with heat input ratings of 237.8 MMBTU/hour each are able to power the facility in emergencies or during curtailment, such as during a blackout that occurred in 2003. Turbines are run monthly for roughly half an hour. MDEQ-AQD visited Turbine #2. Mr. Weiss showed us a binder log of maintenance operations per S.C. VI.4. Hours of operation and natural gas usage are tracked via meters per S.C. VI.1. MDEQ observed total generator run hours up to 2016 of 371.8 hours for turbine #2, and 378.2 hours through 2017 for turbine #1.

Turbine Records
Mr. Weiss provided records of turbine emissions for January of 2016 through June of 2017 per S.C. VI.1 and VI.2. In 2015, the highest hours of operation per 12-month rolling time period for Turbine #1 and Turbine #2 are 4.23 hours in September of 2016 and 4.1 hours in January of 2017 respectively. These hours are below the limit of 400 hours for each turbine per S.C. VI.3. Maximum natural gas usage per 12-month rolling time period was 0.94 million cubic feet per year in August and September of 2016. This is well below the facility limit of 190.2 million cubic feet per 12-month rolling time period per S.C. II.1.

The following provides maximum emissions compared to ROP emission limits for Turbines #1 and #2. The facility appears to operate within ROP emission limits. I did not request hourly NOx and CO emission records per S.C. I.1.1 and S.C. I.2.1 respectively.

Combined Turbines Emission Limits				
Pollutant	**ROP Limit**	**Max Emitted**	**Month**	**Special Condition**
NOx	**35.72 tons/yr**	**0.18 tons/yr**	**August and September 2016**	**S.C. I.1.2**
CO	**6.50 tons/yr**	**0.03 tons/yr**	**January-September 2016, November 2016, and January 2017**	**S.C. I.2.2**

Usage records appear to show that the turbines are being used for emergencies only per S.C. III.1.

FG-EMERGENCY-RICE-S1
The function of emergency reciprocating internal combustion engines (RICE) on site is to power fire pumps. Two fire pump RICE engines are on site. They appear to be subject to 40 CFR Part 63 Subpart ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40 CFR Part 63 Subpart ZZZZ). We did not visit fire pumps during the inspection. Mr. Weiss shared an image of the non-resettable hours meter for EU-FIREPUMP-1 per S.C. IV.1, known on site as the CEP Fire Sprinkler, which displayed total operating hours of 726.5 hours. During the August 2015 facility inspection, the meter read 672.9 hours, so the engine has run for 53.6 hours in the past two years, below 100 hours per S.C. III.7.

Fire Pump Records
Mr. Weiss provided records of fire pump maintenance. The engine undergoes semi-annual maintenance where oil is changed, air filter is replaced, and hoses are inspected. This is more frequent than the annual timeframe specified per FG-EMERGENCY-RICE-S1 S.C. III.4. Semi-annual maintenance occurred on June 16, 2016 and January 26, 2017.

EU-KIRKSITEFURN-S2
The facility has an electric furnace on site for casting kirksite at between 800 – 850 °F. Kirksite is a zinc-based alloy. The parts are used in testing operations. Opacity readings were conducted on October 24, 2012, per S.C. V.1, which requires USEPA Method 9 opacity readings once during each 5-year period. Opacity was 0% throughout this test. The facility

plans to conduct additional opacity readings in the fall per S.C. V.1.

EU-TESTCELLSA-S2
There are 5 wings of engine test cells at CTC: Wings A through E. Wing A contains engine test cells 1-14, which are exempt from obtaining a Permit to Install per R 285(2)(g). According to the facility ROP Staff Report, because these cells were installed before 1993, the year R 278 was promulgated, dynamometers installed prior to 1993 do not need a PTI. These test cells are specialty test cells, including hot, cold, and acoustic tests. Fuel use is monitored for each test cell. Mr. Weiss provided fuel use records for January of 2016 through June of 2017 per S.C. VI.3.

FG-GASTANKS-S2
We visited the tank farm on site between wings B and C, where underground storage tanks are located from which fuel is supplied to engine dynamometers. There are also several dispensing stations on site similar to a gas station. According to Mr. Weiss, submerged fill pipes are in place per S.C. III.1, and a vapor balance system is used during tank filling per S.C. III.2.

FG-CNTRLDCELLS-S2
Test cells are generally controlled for tests requiring 24 hour engine operation each day, such as during durability and transmission tests. Controlled test cells are in wings C, D, and E of the facility. Exhaust from the controlled test cells is routed to one of eleven thermal oxidizers at the facility. Fuel use for these test cells is recorded and provided on an internal website for recordkeeping per S.C. VI.1. We visited one controlled cell. Its emissions were hard piped outside of the room. CTC staff pointed out the flow meter that each engine has.

FG-CNTRLDCELLS-S2 Records
Mr. Weiss provided fuel usage and number of days each test cell operated on a monthly basis from January of 2016 through June of 2017 per S.C. VI.1 and VI.2. Average daily fuel usage was calculated per S.C. VI.3. Also provided were monthly and 12-month rolling fuel use per S.C. VI.4. No leaded fuel has been used in this time period via records provided per S.C. VI.5 and VI.6. Monthly and 12-month rolling emissions calculations for NOx, CO, VOC, and lead are also provided per S.C. VI.7, VI.8, VI.9, and VI.10 respectively. The following table compares maximum emissions for the provided time period to ROP emission limits.

Pollutant/ Material	ROP Limit	Maximum Emission	Month	Special Condition
NOx	**218.2 tons/yr**	**143.3 tons/yr**	**April '16**	**I**
CO	**20.8 tons/yr**	**18.2 tons/yr**	**February '17**	**I**
VOC	**12.5 tons/yr**	**8.2 tons/yr**	**April '16**	**I**
Lead	**0.58 tons/yr**	**0.15 tons/yr**	**Mar-May '16**	**I**
Unleaded Fuel	**4,160,700 gallons/yr**	**2,732,905 gallons/yr**	**April '16**	**II**
	26,311 gallons/day	**9,372gallons/day**	**January '16**	**II**

FG-CNTRLDCELLS-S2 Testing/Sampling
Stack testing is required once every 5 years of operation per S.C. V.1 and V.2. Stack tests conducted from August 30, 2016 through September 2, 2016 for controlled cells demonstrated that facility emissions are below their respective emission limit except for carbon monoxide pounds per gallon emissions. The facility retested carbon monoxide and nitrogen oxide emissions on March 22nd and 23rd, 2017, with thermal oxidizer temperature increased to 1500 °F. Retesting demonstrated that facility emissions are below their respective emission limit.

Mr. Weiss provided a detailed Malfunction Abatement Plan plan per S.C. IX.2, along with documented preventative maintenance performed in 2017. The facility Fuel Usage Monitoring Plan from 2013 is provided in the manila facility file per S.C. IX.1.

FG-CAMRTO-S2
Each of eleven thermal oxidizers takes exhaust from about 6 to 8 engine test cells. C wing has 3 oxidizers, D wing has 6 oxidizers, and E wing has 2 oxidizers. Thermal oxidizer set point is 1500 °F for all thermal oxidizers, above the 1400 °F minimum per FG-CNTRLDCELLS-S2 S.C. III.1. Because stack testing of FG-CNTRLDCELLS-S2 per S.C. V.1-3 took place at 1500 °F, a set point of 1500 °F is necessary to ensure that testing was representative. AQD staff observed instantaneous temperatures for wing C thermal oxidizers of C wing oxidizer 4.03 at 1501 °F and a set point of 1500 °F (with a fan speed of 20.8 hertz (hz)), and E wing thermal oxidizer 4.01 at 1501 °F and a set point of 1500 °F (and a fan speed of 21.3 Hz). According to Mr. Weiss, the fan speed value is related to the fan utilization, and over 60 Hz would be overworking the thermal oxidizer fan. CTC staff explained that preventative maintenance occurs once per year, and that thermocouples are replaced with new calibrated thermocouples once per year per S.C. VI.2. We observed the inside of one thermal oxidizer undergoing repair in wing E.

In response to several deviations where some thermal oxidizer data has been lost, CTC installed backup data loggers on each thermal oxidizer, connected to the same thermocouple. These backup data loggers hold data for two years in case of communication loss.

FG-CAMTRO-S2 Records
CTC staff provided sample temperature charts for May of 2017 per S.C. VI.2. and FG-CNTRLDCELLS-S2 S.C. VI.11. Temperature is recorded every 5 minutes. Temperature appears to be set at 1500 °F. According to facility staff, if temperature drops below 1400 °F in a three hour timeframe, all test cells utilizing that thermal oxidizer shut off. This is also the procedure specified in the Compliance Assurance Monitoring (CAM) Plan in Appendix 3 of MI-ROP-N1436-2013 per S.C. VII.4 and VI.3.

FG-UNCNTRLDCELLS-S2
MDEQ-AQD observed uncontrolled cells located in Wing B of the facility. Uncontrolled test cells are located throughout Wings B, C, and E of the facility. These cells primarily test engine powertrain, transmission, and engine performance. Fuel comes from underground storage tanks (USTs) located between wings B and C. Exhaust from these test cells is emitted to ambient air. Fuel use volume for these test cells is recorded and provided online for facility staff for recordkeeping per S.C. VI.1. Each room has a flow meter leading to the engine. We visited one uncontrolled test cell. Engine exhaust is not hard-piped, but emits to a larger pipe connected to a large fan upstairs to collect exhaust, which generally collects engine exhaust and some room air. Generally catalytic converters are in place on uncontrolled test cells,

which was the case on the uncontrolled test cell we visited.

FG-UNCNTRLDCELLS-S2 Records
Mr. Weiss provided daily fuel use records for each cell based on monthly emissions from January of 2016 through May of 2017 per S.C. VI.3. Mr. Weiss provided fuel usage and number of days each test cell operated on a monthly basis from January of 2016 through June of 2017 per S.C. VI.1 and VI.2. Average daily fuel usage was calculated per S.C. VI.3. Also provided were monthly and 12-month rolling fuel use per S.C. VI.4. According to records, no leaded fuel has been used in this time period per S.C. VI.5 and VI.6. Monthly and 12-month rolling emissions calculations for NOx, CO, VOC, and lead are also provided per S.C. VI.7, VI.8, VI.9, and VI.10 respectively. The following table compares maximum facility emissions to ROP emission limits. Facility emissions appear to comply with ROP limits.

Pollutant/ Material	ROP Limit	Maximum Emission	Month	Special Condition
NOx	32.1 tons/yr	22.4 tons/yr	February '17	I
CO	501 tons/yr	349.9 tons/yr	February '17	I
VOC	25.7 tons/yr	17.9 tons/yr	February '17	I
Lead	0.37 tons/year	0.01 tons/yr	Jan '16- Jun '17	I
Unleaded Fuel	320,952 gallons/yr	230,882 gallons/yr	May '17	II
	2,362 gallons/day	1,013 gallons/day	August '16	II

FG-UNCNTRLDCELLS-S2 Testing/Sampling
Stack testing is required once every 5 years of operation per S.C. V.1 and V.2. Stack tests conducted from August 30, 2016 through September 2, 2016 for controlled cells demonstrated that facility emissions are below their respective emission limit.

FG-ENGPAINTSHOP-S2
CTC includes four batch paint booths that test prototype coating operations to be implemented at an assembly plant. The booths have a downdraft filter system with ceiling filters and mesh filters below the floor grid. According to maintenance staff, filters are replaced about monthly. AQD staff observed one of the paint booths. Filters were in place and appeared to be operating properly per S.C. III.1. An HVLP applicator was in place. A magnehelic gauge measures pressure differential across the ceiling and floor filters. The pressure appeared to be between 0.3-0.5 inches water for the ceiling and 0.1 inches water for the floor filters. Paint staff showed us extra filters on site used in the paint booth floor. Filters have a brown paper front and a mesh back.

AQD staff visited the mixing room. EU-PM/MIX is an additional small batch paint booth located in this area. Particulate filters appeared to be in place on EU-PM/MIX. All containers were closed and no odors were detected per S.C. III.2. Spray guns are cleaned with solvent

DTV 801, an acetone-based cleaning solution. Spray gun cold cleaners appeared to comply with FG-COLDCLEANERS with closed covers, a surface area less than 10 square feet, and instructions posted conspicuously. Mr. Weiss provided a list of cold cleaners at the facility per FG-COLDCLEANERS S.C. VI.2.

FG-ENGPAINTSHOP-S2 Records
Mr. Weiss provided daily and 12-month rolling VOC emission records from January of 2016 through May of 2017 per S.C. VI.6. The highest VOC emissions were 5.4 tons VOC per 12-month rolling time period in March, April, and May, below the emission limit of 30.3 tons per year (tpy) per S.C. I.1.2. The highest daily VOC usage is 45.0 pounds, below the daily limit of 1185.6 lbs per S.C. I.1.1.

Mr. Weiss also provided records of VOC content of raw coating as received per S.C. VI.5. Also provided was the VOC content of the three most-used coatings as applied per S.C. VI.3 and VI.4 respectively, the highest of which is 2.09 pounds VOC content minus water. Full records of VOC contents as applied were provided in August of 2015. Coatings as applied appeared to be below material limits for VOC per gallon per S.C. I.1. The facility determines its coating VOC content according to formulation data per S.C. V.1 and VI.7.

FG-WETFUELSTEST-S2
AQD staff did not visit the wet fuels laboratory area. Mr. Weiss provided monthly fuel use records from January of 2016 through June of 2017 per S.C VI.1. Monthly actual emissions do not appear to exceed significance levels in R 336.1119 per S.C. III.2.c. The VOC significance level is 40 tons per year. The wet fuels laboratory have emitted 556.0 lbs of VOCs from January through December of 2016.

FG-RULE331-S2
This flexible group covers machining equipment at the facility. No opacity was observed from any machining equipment on site per S.C. I.1. All machining equipment appeared to be exempt from the requirements of R 201 per R 285(2)(l)(vi).

FG-RULE290-S2
One parts washer claims exemption from obtaining a Permit to Install per R290. A 55 gallon tank was used each month, which is 353.9 pounds of VOC each month. This is below the Rule 290 limit of 1000 gallons per month per R 290(2)(a)(i).

FG-R287(2)(c)-S2
Three paint booths on site are subject to R287(2)(c). We visited a paint booth in the product design paint area, which is a downdraft booth. Staff lifted the metal floor grates to allow us to better see the mesh filters in place. Replacement mesh filters are available on site. A magnehelic gauge measures pressure across paint filters. An HVLP applicator is in place. We visited the paint kitchen, with what appear to be identical cold cleaners to those in FG-ENGPAINTSHOP-S2. One uses an aqueous-based solution and the other uses DTV 801. Both had closed covers and instructions posted conspicuously, with surface areas less than 10 square feet.

Usage records were provided for January of 2016 through June of 2017 per S.C. VI.1.a. All booths appear to emit less than 200 gallons of coating per month per S.C. II.1. The maintenance booth has not used more than 1 gallon in a month. The wood shop booth uses 7 gallons a month. The product design booth used a maximum of 25 gallons in April of 2016.

Compliance

Based on the AQD inspection and records review, it appears that CTC is in compliance with the federal Clean Air Act, NREPA, the Air Pollution Control Rules, and the conditions of MI-ROP-N1436-2013.

NAME _____ DATE 7/28/17 SUPERVISOR SK