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

N143631357

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:** 08/21/2015
STAFF: Samuel Liveson	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled inspection of a major source.		
RESOLVED COMPLAINTS:		

On August 21, 2015, Air Quality (MDEQ-AQD) Senior Environmental Engineer Rem Pinga 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, and the conditions of Renewable Operating Permit MI-ROP-N1436-2013.

We arrived on site around 9:15 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. I provided Mr. Jump with my contact information and a copy of the pamphlet "DEQ Environmental Inspections: Rights and Responsibilities."

Opening Meeting

CTC is a design and test facility for FCA US LLC comprised of 5.5 million square feet. A basic test track and engine dynamometers are located on site. Prototype vehicle assembly lines are constructed on-site to evaluate employee safety and ergonomics before the assembly line is installed off-site for vehicle production. Offices are located on upper floors. The facility has approximately 14,800 employees and receives about 2,000 visitors daily. Aspects of the facility such as the boilers are constantly operating. Laboratories operate two to three shifts Monday through Friday.

Facility Walk-Through

The facility ROP has two sections. Section 1 is mainly comprised of boilers, turbines, and engines. Section 2 comprises engine test cells and associated regenerative thermal oxidizers (RTOs), the paint shop, underground storage tanks (USTs), laboratory equipment, machining equipment, cold cleaners, and equipment exempt from Permit-to-Install requirements per R 287(c) and R 290.

FG-BOILERS-S1 and EU-BOILER7-S1
The facility has 6 boilers on site with a heat input of 40 MMBTU/hr, and one boiler (Boiler #1) with a heat input of 10 MMBTU/hr. These boilers are located in the northeast section of CTC. Also subject to 40 CFR Part 63 Subpart DDDDD are boilers PTE B1 and PTE B2. These two boilers each have a heat input capacity of 8.37 MMBTU/hr and only fire natural gas. 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 #1 (EU-12-HWG-1.01) of 10 MMBTU/hr and Boiler #4 (EU-12-HWG-1.04) of 40 MMBTU/hr were operating during the inspection. Mr. Weiss provided pictures of the boiler plates confirming their heat input capacity and year of construction. All boilers are fired via natural gas. Boilers #1 - #4 have fuel oil backup capabilities. Boilers #5-7 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.

These 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. It appears that initial compliance must be demonstrated by January 31, 2016 per §63.7495(b).

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 hundreds of heat exchangers and various scientific processes throughout the facility. Water returns to the boilers at approximately 170 °F.

Meters on each boiler track water and gas usage. This information is recorded once per shift per S.C. VI.2. Similarly, a control panel shows hours of operation per S.C. VI.3.

Preventative maintenance occurs weekly and monthly, with major maintenance occurring every three years per S.C. VI.6. Mr. Weiss provided the boiler preventative maintenance program and logs of boiler maintenance per S.C. VI.6.

Also covered in FG-BOILERS-S1 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.

FG-BOILERS-S1 Records
Mr. Weiss provided boiler records from January of 2015 through July of 2015 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	0.109 lb/hr	April	S.C. I.1.1
	232.9 tons/yr	0.276 tons/yr	June & July	S.C. I.1.2
NOx	85.8 tons/yr	46.0 tons/yr	July	S.C. I.2
Natural Gas	521.5 MMCF/yr	491.8 MMCF/yr	July	S.C. II.1
Fuel Oil No. 2	6,415,000 gallons/yr	0 gallons/yr	NA	S.C. II.2

FG-B/UP-TURBINES-S1
Two turbines with capacities of 19 MW each are able to power almost all of the facility in an emergency. They are maintained by Duke & Duke. Duke & Duke performs a monthly test on the turbines lasting between 20 minutes and half an hour. MDEQ-AQD visited Turbine #1. Mr. Weiss showed us a binder log of maintenance operations on Turbine #1 per S.C. VI.4. According to the maintenance log, the turbine was last inspected August 14, 2015. Hours of operation and natural gas usage are tracked via meters per S.C. VI.1.

Turbine Records
Mr. Weiss provided records of turbine emissions for January of 2015 through July of 2015 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 3.84 hours in February and 3.78 hours in January respectively. These hours are well 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 0.46 million cubic feet per year in January and February of 2015. 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.

Individual Turbines Emission Limits						
		Turbine #1		Turbine #2		
Pollutant	ROP Limit	Max Emitted	Month 2015	Max Emitted	Month 2015	Special Condition
NOx	89.29 pph	0.94 pph	July	1.21 pph	July	S.C. I.1.1
CO	16.23 pph	1.63 pph	July	2.09 pph	July	S.C. I.2.1

Combined Turbines Emission Limits				
Pollutant	ROP Limit	Max Emitted	Month 2015	Special Condition
NOx	35.72 tons/yr	0.09 tons/yr	January, February, July	S.C. I.1.2
CO	6.50 tons/yr	0.02 tons/yr	January, February, March, May, June, July	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

visited EU-FIREPUMP-1, known on site as the CEP Fire Sprinkler. A non-resettable hours meter displayed that the engine has operated 672.9 hours total per S.C. IV.1.

Fire Pump Records
Mr. Weiss provided fire pump records per S.C. VI.1. The non-resettable hours are recorded as 671 hours in June of 2015, which corresponds with our reading from the meter. The maximum hours of maintenance per 12-month rolling time period are 33.4 hours in June of 2015. This is below the limit of 100 hours for maintenance tests and readiness testing per S.C. III.7. Detailed records of maintenance performed in December of 2014 were provided per S.C. VI. 5.

EU-KIRKSITEFURN-S2
The facility has an electric furnace on site for casting kirksite. Kirksite is a zinc-based alloy. The parts are used in testing operations. The facility provided results of opacity readings 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.

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. These test cells are specialty test cells, including hot, cold, and acoustic tests. Some test cells are transient (include transmission) and quasient (include four wheels). An acoustic room is located at the end of Wing A for noise and vibration tests. Fuel use is monitored for each test cell. Fuel comes from underground storage tanks (USTs) located between Wings B and C.

Mr. Weiss provided monthly fuel use records from January of 2015 through June of 2015 per S.C. VI.3. According to records, only unleaded gasoline has been used in these test cells. S.C. VI.1 does not appear to be applicable because the facility does not use fuel oil in these test cells.

FG-CNTRLDCELLS-S2
Test cells are generally controlled for tests requiring 24 hour engine operation each day, such as during durability and transmission tests. These 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.

FG-CNTRLDCELLS-S2 Records
Mr. Weiss provided fuel usage and number of days each test cell operated on a monthly basis from January of 2015 through June of 2015 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 2015	Special Condition
NOx	218.2 tons/yr	102.5 tons/yr	January	I

CO	20.8 tons/yr	13.8 tons/yr	January	I
VOC	12.5 tons/yr	1.3 tons/yr	January	I
Lead	0.58 tons/yr	0.15 tons/yr	January & February	I
Unleaded Fuel	4,160,700 gallons/yr	2,816,549 gallons/yr	May	II
	26,311 gallons/day	9,809 gallons/day	June	II

FG-CNTRLDCELLS-S2 Testing/Sampling
Stack testing is required once every 5 years of operation. CTC last conducted stack tests on a representative number of controlled test cells on October 18, 2011 per S.C. V.1 and V.2. Stack test results for controlled cells show that facility emissions are below their respective emission limit, as shown below. Mr. Werthman discussed that the next facility stack test must take place by October 18, 2016.

FG-CNTRLDCELLS-S2		
Pollutant	Stack Test Result	ROP Limit
NOx	0.0728 lbs/gal	0.1049 lbs/gal
CO	0.0098 lbs/gal	0.01 lbs/gal
VOC	0.0009 lbs/gal	0.006 lbs/gal

Mr. Weiss provided a detailed preventative maintenance plan per S.C. IX.2, along with documented scheduled maintenance performed in 2015. 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. MDEQ-AQD observed the three thermal oxidizers associated with wing C. Thermal oxidizer set point is 1425 °F, above the 1400 °F minimum per FG-CNTRLDCELLS-S2 S.C. III.1. AQD staff observed instantaneous temperatures for wing C thermal oxidizers of 1429 °F, 1450 °F, and 1422 °F. 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.

FG-CAMTRO-S2 Records
CTC staff provided sample temperature charts for June of 2015 per S.C. VI.2. and FG-CNTRLDCELLS-S2 S.C. VI.11. Temperature is recorded every 5 minutes. 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. Mr. Weiss provided a detailed preventative maintenance plan per S.C. VI.4, along with documentation of scheduled maintenance performed in 2015.

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.

FG-UNCNTRLDCELLS-S2 Records
Mr. Weiss provided fuel usage and number of days each test cell operated on a monthly basis from January of 2015 through June of 2015 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 2015	Special Condition
NOx	32.1 tons/yr	1.03 tons/yr	January	I
CO	501 tons/yr	11.3 tons/yr	January	I
VOC	25.7 tons/yr	7.2 tons/yr	January	I
Lead	0.37 tons/year	0.011 tons/yr	January	I
Unleaded Fuel	320,952 gallons/yr	205,193 gallons/yr	January	II
	2,362 gallons/day	913 gallons/day	April	II

FG-UNCNTRLDCELLS-S2 Testing/Sampling
Stack testing is required once every 5 years of operation. CTC last conducted stack tests on a representative number of uncontrolled test cells on October 18, 2011 per S.C. V.1 and V.2. Stack test results for controlled cells show that facility emissions are below their respective emission limit, as shown below. Mr. Werthman discussed that the next facility stack test must take place by October 18, 2016.

FG-UNCNTRLDCELLS-S2		
Pollutant	Stack Test Result	ROP Limit
VOC	0.07 lbs/gal	0.16 lbs/gal
NOx	0.010 lbs/gal	0.20 lbs/gal
CO	0.11 lbs/gal	3.12 lbs/gal

FG-ENGPAINTSHOP-S2
CTC includes four batch paint booths that are also natural-gas fired ovens. According to the operator, oven temperature ranges between 160 °F – 180 °F. These paint booths 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 paint booth #1. Filters were in place and appeared to be operating properly per S.C. III.1. An HVLP applicator was in place.

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.

FG-ENGPAINTSHOP-S2 Records
Mr. Weiss provided daily and 12-month rolling VOC emission records from January of 2015 through July of 2015 per S.C. VI.6. The highest VOC emissions were 3.9 tons VOC per 12-month rolling time period, below the emission limit of 30.3 tons per year (tpy) per S.C. I.1.2. This averages to be 650 lbs/month, so that the facility appears to be well below its 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, and VOC content of coating as applied, minus water and with water, per S.C. VI.3 and VI.4 respectively. The highest VOC content for top coating as applied is 6.23 lbs VOC/gallon minus water. This is below the permit limit of 6.60 lbs VOC/gallon minus water per S.C. I.1.3. The highest VOC content for prime painting as applied is 4.49 lbs VOC/gallon minus water. This is below the permit limit of 5.44 lbs VOC/gallon minus water per S.C. I.1.4. The highest VOC content for primer/surfacer coating as applied is 4.64 lbs VOC/gallon minus water. This is below the permit limit of 5.16 lbs VOC/gallon minus water per S.C. I.1.5. It does not appear that plastic parts were coated during this time period per S.C. I.1.6.

According to S.C. V.1 and VI.7, it appears that VOC content may be determined from formulation data. I did not request Method 24 results or formulation data during this inspection.

FG-GASTANKS-S2
Most underground storage tanks on site supply fuel to dynamometers. There are also several dispensing stations on site similar to a gas station. According to CTC staff, vapor recovery systems are in place. Mr. Weiss provided an updated inventory of storage tanks on site per S.C. VI.1. All underground storage tanks hold either gasoline, diesel, or E-85. Above ground storage tanks appear to be exempt from obtaining a Permit to Install and need not be included in an ROP per R 212(3)(e) as shown below:

Tank Contents	Capacity (Gallons)	Exemption
#2 Fuel Oil	5,000	R 284(d)
Motor Oil	2,000	R 284(c)
Motor Oil	2,000	R 284(c)
Transmission Fluid	2,000	R 284(c)
Antifreeze 50/50	2,000	R 284(c)
Waste Glycol	2,000	R 284(c)
Used Oil	4,000	R 284(c)

Liquid Nitrogen	6,000	R 284(j)

FG-WETFUELSTEST-S2
AQD staff did not visit the wet fuels laboratory area. Mr. Weiss provided monthly fuel use records from January of 2015 through July of 2015 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 995.2 lbs of VOCs from January through July of 2015.

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(l)(vi).

FG-RULE290-S2
Five parts washers claim exemptions per R290 per S.C. VI.2. A roboguard solvent cleaner that used to claim exemptions via R 290 is no longer in use. Three aqueous-based parts washers are used on site. A conservative estimate of VOC emissions per unit demonstrate that they emit a maximum of 218.4 lbs of VOC per month. This is below the 1000 lbs limit per S.C. I.1. Two isopropyl-alcohol based parts washers emit 177 lbs of VOCs per month. This is below the 1000 lbs limit per S.C. I.2.a. Isopropyl alcohol has an initial threshold screening level of 220 ug/m^3. These records appear to demonstrate that emissions do not exceed limits per S.C. VI.1.

FG-R287(c)-S2
Three paint booths on site are subject to R287(c). Usage records were provided for January of 2015 through July of 2015 per S.C. VI.1.a. All booths appear to emit less than 200 gallons of coating per month. The maintenance booth has not used more than 1 gallon in a month. The wood shop booth used a maximum of 7 gallons in May, June, and July. The product design booth used a maximum of 73 gallons in April. Records of paint booth filter changes were provided in preventative maintenance work orders per S.C. VI.1.b. Because of the low amount of painting in these booths, filters are changed as needed rather than monthly.

FG-COLDCLEANERS-S2
We observed one cold cleaner on site. The cold cleaner was closed and had instructions posted. The surface area appeared to be less than 10 square feet.

Compliance

Based on the AQD inspection and records review, it appears that CTC is in 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, and the conditions of MI-ROP-N1436-2013.

NAME [signature] DATE 9/25/15 SUPERVISOR CJE