

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

N632724957

FACILITY: FEDERAL- MOGUL POWERTRAIN, INC.		SRN / ID: N6327
LOCATION: 47001 PORT ST, PLYMOUTH		DISTRICT: Detroit
CITY: PLYMOUTH		COUNTY: WAYNE
CONTACT: Terry Walter , Manager, Shared Lab Services		ACTIVITY DATE: 04/09/2014
STAFF: C. Nazaret Sandoval	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Targeted Inspection for FY 2014		
RESOLVED COMPLAINTS:		

Source: SRN N6327

Location: 47001 Port Street, Plymouth, MI 48170

Date of Inspection: April 9, 2014

Date of Report: May 20, 2014

Reason for Inspection: Targeted Inspection

Inspector: Nazaret Sandoval, AQD

Personnel Present: Terry Walter, Manager - Technical Services, Federal-Mogul

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FACILITY BACKGROUND:

Federal-Mogul Corporation, headquartered in Southfield, Michigan, is an automotive supplier with facilities worldwide. Federal-Mogul Powertrain, Inc. (Federal-Mogul, the facility) in Plymouth, tests engines and engine components in dynamometer cells. In 1997, T&N Industries built the T&N Technical Center in Plymouth. In 1998, two engine testing facilities moved their operations into the T&N Technical Center: McCord Payen from Wyandotte and AE Goetze from Muskegon. In 1998, Federal-Mogul bought out T&N and took over all facility operations. Federal-Mogul changed the name of this facility from Federal-Mogul Technical Center to Federal-Mogul Powertrain, Inc. on August 13, 2003. Federal-Mogul Ignition Products, under the name Champion Spark Plugs, moved their developmental and testing operations from their Toledo facility to this site in 2010.

The facility is located in a light industrial area near M-14 and Beck Road. Currently, Federal-Mogul Powertrain does testing for the Big 3 automakers as well as some small-engine manufacturers. The facility currently operates one shift, Monday through Friday (6:30 A.M. to 3:00 P.M.) and has about 160 employees.

COMPLIANCE HISTORY:

Federal-Mogul Powertrain, Inc. entered into Consent Order No. 30-2003 on September 19, 2003 as a result of violations found during the August 13, 2003 inspection. These violations included exceeding 12-month rolling limits for VOC and CO emission limits and gasoline usage; the CO emissions were considered PSD violation. Consent Order No. 30-2003 was to remain in effect for at least three years. On February 12, 2008, Federal-Mogul requested in writing that the Consent Order be terminated at the discretion of the AQD Division Chief. Consent Order No. 30-2003 was terminated on March 13, 2008.

Federal-Mogul was issued Renewable Operating Permit No. MI-ROP-N6327-2009 on November 12, 2009. At the time of posting of this report, the facility operates under MI-ROP-N6387-2009a which is a modification of the permit issued on November 12, 2009. MI-ROP-N6387-2009a was issued on April 1, 2014 after the incorporation of Permit to Install No. 378-97E issued on January 17, 2014. The modified PTI 378-97E includes changes in the stack testing requirements. The minor modification to the ROP was requested by Federal Mogul in a conference call with the DEQ that occurred on August 29, 2013. The DEQ agreed with the proposed changes and Federal Mogul prepared a follow up letter dated October 16, 2012 summarizing the meeting discussion and ratifying their proposal for the testing protocol.

The ROP renewal process is currently in progress. The renewal application for the ROP was received by the DEQ /AQD on April 22, 2014. The AQD staff reviewed the application and determined it was administratively complete. The facility obtained the application shield and the technical review is under way.

The last inspection to this facility was conducted on March 20, 2012 and the records show that the facility was found to be in compliance with the ROP requirements and all the Air Quality applicable regulations. Also, there have been no complaints associated with the operations at this facility in the past 2 years.

INSPECTION NARRATIVE:

The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451 and Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) rules.

On April 9, 2014 I arrived at the facility at approximately 1:30 PM and met with Mr. Terry Walter, Manager – Technical Services at Federal Mogul. I discussed the purpose of my visit and I asked Mr. Walter to describe the facility operations and the type of testing they have been conducting during the last couple of years. He said that there have been no major changes since the last inspection. The facility continues conducting most of its operations utilizing diesel and small engines, and gasoline engines during developmental testing, whereas durability tests are less common. I brought some records from MAERS from years 2010 to 2013 and discussed them with Mr. Walter. The records showed that the facility has been using more diesel fuel than gasoline during the last four years. This has led to an increase in emissions overall, since diesel testing is uncontrolled. However, in the year 2013 the usage was 50/50 (diesel/gasoline).

No additional equipment or emission units have been incorporated into the facility since the last inspection.

As indicated early in this report, there have been changes in the ROP testing requirements to re-define a "representative number of test cells" indicative of worst case conditions that produce the highest emissions. A testing protocol had been submitted to the DEQ on March 27, 2014 to comply with the NOx and CO emission rates testing requirements. I took this opportunity to ask questions about the type of testing, the size of the engines, the Air Injection Control System (AICS) testing program/parameters. Per our discussion, it appears as if the developmental testing using gasoline as fuel generates the most emissions. Therefore, it was concluded that the proposed protocol represents the engines and mode of operation that will result in the worst case emission for the type of dynamometer engine testing that the facility typically performs.

After our initial meeting we conducted a walk-thru of the facility. Mr. Walter showed me the east and the west dynamometers test wings. There are a total of sixteen cells. Cells 1 to 8 are located in the west wing and Cells 9 to 16 are in the east wing. In one of the cells I asked Mr. Walter to show me the locations of the probes for exhaust gas temperature and the air injection ports, the fuel tanks, etc. In the east wing, Mr. Walter stopped at cell 2 to show me the control panel and the main parameters that are recorded during each test. They were conducting a Cycle-A Durability test using a 3.2-liter in the dyno -cell. For this test they were using the Air Injection Control System (AICS). I checked the air flow and the stack exhaust temperatures. The readings were within the ROP required values; 49 scfm and 1577 °F, respectively. In the west side I asked Mr. Walter to show me the largest engines they have in the facility and he showed me the engine in Cell 15. That was a truck-size type of engine with a 13 liters fuel tank capacity. Afterwards, we returned to Mr. Walter's office to conclude the inspection with a closing meeting where I provided my comments.

In his office, Mr. Walter handed out the facility monthly records from January 2012 through December 2013 for emissions, fuel usage, diesel fuel specs, AICS air injection rates and destruction efficiency. He also provided the layout of the building which I had requested at the beginning of the inspection. I left the facility around 4:30 PM.

I re-visited the facility on May 13, 2014 to observe the engine test cell exhaust stacks. The test was conducted to verify NOx and CO emission rates. A medium size 3.6-liter (250 hp) engine was tested on Cell 2 under two different testing conditions: Durability Cycle-D Test and Developmental Testing. The evaluation included three runs of 60 minutes per each type of testing. This activity has been recorded separately in another report.

On May 13, 2014 I asked Mr. Walter to show me two-process equipment that I have missed during my first visit: The Chassis Cold Room and the Thrust Ring Electric Driven Bearing Tester.

EQUIPMENT/PROCESS DESCRIPTION:

Developmental and durability testing are performed on gasoline and diesel engines in dynamometer cells. The facility is also approved to use E-85 (a gasoline/ethanol blend), which is tracked as gasoline for calculation of emission and material throughput, per the ROP. Engines are fueled directly from underground storage tanks through a "fuel bank", which meters various fuels into each test cell through flexible hoses. There are 17 dynamometer cells on site: Cells 1 through 12 and Cell 14 are generally used for gasoline engines; Cells 15 and 16 are for diesel engines; and Cell 13 has seven stands for testing small (2-cylinder) gasoline engines and ignition testing. However, all cells (excluding Cell 13) may be used for either gasoline or diesel engines, if necessary. As it was indicated earlier,

Cells 1 through 8 are located in the "west wing", while Cells 9 through 16 are located in the "east wing". The cold room chassis dynamometer was added in 2011 but has not been used much since its installation. This test cell is exempt from permit requirements under Rule 201 and have not included in the ROP. Federal-Mogul has submitted a demonstration showing that the cold room chassis dyno is exempt from permitting per rule R.285 (g). This demonstration can be found in the facility file. In addition, EPA made a determination last year that this type of sources is considered "Mobile Sources" and therefore they are not regulated under Title V.

There are four cycles in which engines can be tested (Durability Cycles A, B, C, and D), as well as Deep Thermal Shock (DTS) testing in which engines alternate between idle and peak power. Engines are usually tested for a period ranging from two weeks to three months during durability testing. Developmental testing is usually performed for shorter durations.

There are ten underground storage tanks: seven 2,000-gallon tanks and three 6,000-gallon tanks. The 6,000-gallon tanks are used for diesel and gasoline storage, while the 6,000-gallon tanks are used to store E-85 fuel and waste products, which including used oil, used anti-freeze, and "blow-off"; "blow-off" is unused fuel collected from engines, flushed lines or leaks and is considered a waste product. Emissions from these tanks are assumed to have been considered during the drafting of the permit; however, there are no conditions specific to the storage tanks written in the permit. AQD may opt to include conditions specific to the operation of the fuel storage tanks at the time of the ROP renewal. The applicability of the federal regulation under NESHAP area sources will be evaluated as well.

The fuel storage tanks at Federal Mogul have historically been considered exempt under rule R.336.1284 (i) as part of a gasoline service station and subject to operating and control requirements specific to dispensing facilities. Therefore, the underground fuel storage tanks are not subject to the regulations specified in 40 CFR 60 Subpart Kb.

A kerosene parts washer and two Safety Kleen parts washers are exempt from permitting via R.281 (h). The facility also performs thrust bearing testing in a "Thrust Ring Electric Driven Bearing Tester". The expected emissions from this equipment are oil mist from the use of bearing coolants. NTH Consultants submitted a R.290 exemption analysis for this process, and AQD determined that an air permit is not required. The facility keeps monthly records of the lubricant usage at this machine.

PROCESS CONTROLS:

Federal-Mogul installed an Air Injection Control System (AICS) in 2004 to control CO and VOC emissions. The AICS works by injecting a measured stream of air into the exhaust gas which is hotter than the auto ignition point of CO, causing the CO to oxidize in the exhaust pipe. The air injection rate (scfm) is dependent on the type of durability or Deep Thermal Shock test being performed. The exhaust temperature is monitored before and after air injection to assure sufficient destruction efficiency. The exhaust temperature needs to reach 1100°F to oxidize CO; exhaust temperatures using the AICS usually exceed 1400°F. The AICS does, however, cause a minor increase in NOx emissions. The AICS is used with durability testing for most gasoline engines, but is not generally used with diesel or small engines or during developmental testing. Due to the trend of more diesel and small engine testing, the facility is still considering the option of switching to using catalyst as a control at some point, rather than using the AICS.

APPLICABLE RULES/ PERMIT CONDITIONS:

As it was indicated earlier, the facility operates under MI-ROP-N6387-2009a which is a modification of the permit issued on November 12, 2009.

For the purposes of determining compliance with the ROP, fuel usage and emission records for years 2012 and 2013 were reviewed. When determining compliance with 12-month rolling time period limits, the most recent month of with the highest fuel usage/emissions are cited in parentheses. A one-page summary of emissions and fuel usage is attached to the report; the monthly records can be found in the facility file.

ROP No. MI-ROP-N6327-2009a, Special Conditions:

FG-ALLCELLS includes EU-TESTCELL1 through EU-TESTCELL16

I. Emission Limits:

Pollutant	Emission Limit	Highest 12-Month Rolling Emission Total	Compliance Status
VOC	5.6 tons per 12-month rolling time period	3.2 tons (March 2012)	In compliance
CO	223.3 tons per 12-month rolling time period	96.1 tons (August 2012)	In compliance
NOx	62.1 tons per 12-month rolling time period	25.6 tons (March 2012)	In compliance

II. Material Limits

Material	Limit	Highest Fuel Usage	Compliance Status
Gasoline/E85	2,630,750 lbs. per 12-month rolling time period	306,381 lbs. (May 2013)	In compliance
Gasoline/E85	16,713 lbs. per day	1,566.4 lb/day (May 2013)	In compliance
Gasoline/E85	2,327 lbs. per hour	84 lbs/hr (May 2013)	In compliance
Diesel	1,418,000 lbs. per 12-month rolling time period	572,941 lbs (March 2012)	In compliance
Diesel	19,143 lbs. per day	2,751.7 lb/day (March 2012)	In compliance
Diesel	0.30% sulfur content in fuel	<0.0015% sulfur*	In compliance

*Federal-Mogul uses an "ultra low sulfur premium diesel fuel" which has a specification of less than 15 ppm (0.0015%) sulfur content. Fuel specs can be found in the orange facility file.

IV. Design/Equipment Parameters:

Test	Minimum Air Injection Rate (scfm)	Compliance Status
Durability Cycle A	45	In compliance
Durability Cycle B	50	In compliance
Durability Cycle C	72	In compliance
Durability Cycle D	50	In compliance
Deep Thermal Shock	45	In compliance

AICS injection rate is monitored during testing. Monthly test records were reviewed to make sure the AICS was reaching the minimum injection rate during each test cycle.

V. Testing/Sampling:

1. Results are pending. Federal-Mogul is required to verify NO_x and CO emission rates from a representative number of cells by testing once during the term of the ROP, prior to issuance of their most recent ROP renewal. To comply with this requirement Federal-Mogul submitted a test protocol on March 27, 2014, for the review and approval of the DEQ. AQD field staff concurred with the proposed test protocol and sent a letter to the facility ratifying the test conditions, the methods and the parameters to be recorded.

NO_x and CO emission testing was performed on May 13, 2014 with the attendance of DEQ staff, NTH consultants, BTEC testing personnel and the facility representatives. Two types of tests were selected, Developmental and Cycle-D Durability Testing. Each test consisted of three 60-minute runs. Both tests run smoothly and all the operational parameters appeared to be within the expected ranges specified in the ROP. A separate record has been created in the Michigan Air Compliance and Enforcement System (MACES) for this activity. A complete report with the test results is expected to be submitted to AQD within 60 days following the date of the test.

VI. Monitoring/Recordkeeping:

In compliance. Records detailing fuel usage, emissions, hours of operation, and AICS operational parameters are recorded and maintained as required. Records from January 2012 through December 2013 were reviewed in determining compliance during this inspection. Copies of these records can be found in the orange facility file, and a one-page summary of emissions and fuel usage is attached to the hard copy of the report.

Certification and maintenance of the testing equipment is scheduled on a regular basis: air flow meters are sent to the manufacturer every 2-3 years; fuel totalizers are verified on-site; and thermocouples are calibrated every 6 months internally.

VII. Reporting:

In compliance. Annual and Semiannual ROP Certification Reports and Deviation Reports are submitted in a timely manner, as required. There has been no change in equipment for FG-ALLCELLS since the ROP was issued.

FINAL COMPLIANCE DETERMINATION

At the completion of this report the NO_x and CO stack testing results are not available.

Therefore, we cannot verify compliance with the emission rates specified in the permit until the complete report is submitted to the AQD. However, Federal-Mogul Powertrain appears to be in compliance with the rest of the ROP No. MI-ROP-N6327-2009a requirements, and all other applicable State and Federal Air Quality Control Rules.

NAME *Alandora*

DATE *5/20/14*

SUPERVISOR *W. M*

