

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

N291535935

FACILITY: TOYOTA MOTOR ENGINEERING AND MANUFACTURING		SRN / ID: N2915
LOCATION: 1555 WOODRIDGE, ANN ARBOR		DISTRICT: Jackson
CITY: ANN ARBOR		COUNTY: WASHTENAW
CONTACT: Patrick Sickon , Assistant Manager, TTC Technical Strategy&Planning		ACTIVITY DATE: 08/11/2016
STAFF: Diane Kavanaugh-Vetort	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Title V Major Source. Conducted a complete scheduled compliance inspection PCE and FCE.		
RESOLVED COMPLAINTS:		

**N2915 TOYOTA MOTOR COMPANY COMPLIANCE INSPECTION PCE/FCE**

TEMA CONTACTS:

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On August 11, 2016 the MDEQ AQD conducted a complete scheduled compliance inspection at the Toyota Motor Engineering (TEMA) facility located at 1555 Woodridge, Ann Arbor, MI. The purpose of the inspection is to determine TEMA's compliance status with applicable federal and state Air Pollution Control Regulations, particularly Michigan Act 451, Part 55 Air Pollution Control, the administrative rules and the conditions of their ROP No. MI-ROP-N2915-2012a and conditions of their Air Use Permit to Install (PTI) No. 186-13A issued 12/22/2015.

TEMA is a Major Source of carbon monoxide (CO). They are a true minor source of hazardous air pollutants (HAP). TEMA's ROP was issued effective date May 31, 2012, and was revised per Minor Modification (MM) issued December 15, 2015. The ROP is currently due for renewal pending TEMA submittal of their application by November 1, 2016. The PTI 186-13A will be rolled into the ROP upon Renewal.

TEMA operates what they call two "campuses". One site location in the Ann Arbor area includes 1555 and 1558 Woodridge (the Stationary Source ROP subject facility) and a separate location has one or more buildings on N. Platt Road in York Township that is a HAP Opt Out (synthetic minor source). TEMA operates vehicle and engine research and testing for their automobile manufacturing company at the Ann Arbor location facility. This site contains two buildings, Evaluation and Powertrain. The Platt Rd site near US-23 /Willis Rd exit is solely vehicle engineering and safety testing (e.g. crash test dummies, crash wall, concrete blocks).

The last AQD inspection in the plant file was on 6/11/2014 during the New Source Permit to Install application process that resulted in the MM of 12/15/2015. Last performance testing required by then PTI 186-13 indicated compliance and was conducted on 1/20-22/2016 on the EU-EG4, EU-EG5 and EU-TM5 test cells. TEMA bases their emission calculations, primarily Carbon Monoxide from engine test cell dynamometer testing, on the emission factors both controlled and uncontrolled determined as a result of this testing.

TEMA's initial ROP contained four Engine Test Cells (called FG-TESTCELLS) that were controlled by a Thermal Oxidizer (TO) that was also subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) regulation. The permit was revised and the Thermal Oxidizer is no longer installed and operating. Three of the same four EUs, EU-EG1, EU-EG2 and EU-TM1 have been regrouped into two other FGs (FG-EG125 and FG-TM145) that now have individual catalytic oxidizers. The new permit, No. 186-13 involved reconstruction and revision of existing test cells and the addition of a couple of new test cells. All of these test cells will have individual catalytic oxidizers or production catalysts for each test cell. Further changes were made resulting in PTI 186-13A having been issued.

ROP No. MI-ROP-N2915-2012a contains the following equipment:

Emission Units: EU-ANECHOIC, EU-ENVIRON, EU-EG6, EU-COLD, EU-UPDOWN

Flexible Groups: FG-RICEMACT, FG-TANKS, FG-GDFMACT, FG-EG34, FG-CHDYNOS, FG-EG125, FG-TM145, FG-RULE 287(C), FG-COLDCLEANERS.

PTI No. 186-13A contains the following (revisions to be made to the ROP):

Emission Units: EU-EG6, EU-COLD, EU-UPDOWN (all are installed and operational)

Flexible Groups: FG-EG34 (EU-EG3, 4), FG-PTCHDYNOS (EU-CHDY1 through 6), FG-EVCHDYNOS (EU-CHDY7 through 10), FG-EG125 (EU-EG1, 2, 5), FG-EG789 (EU-EG7, 8, 9), FG-TM145 (EU-TM1, 4, 5)

FG-PTCHDYNOS are all installed and operational.

FG-EG789, FG-EVCHDYNOS are all new and under construction.

FG-EG125 and FG-EG34 are all installed and operational since @ June 2016.

FG-TM145 all are installed and operational.

NOTE: During Renewal the ROP will be updated with the changes reflected in the PTI.

#### AREA SOURCE MACTS

FG-GDFMACT contains Subpart CCCCC (C6) Gasoline Dispensing Facilities at the TEMA 1555 Woodridge location. The federal applicable requirements for this MACT were included in their ROP. AQD does not have delegated authority for the Area Source MACT standard. TEMA's initial ROP application included applicable requirements for GDF that have a maximum monthly gasoline throughput of at least 10,000 gallons and no more than 100,000 gallons.

**Compliance:** I requested and received gasoline fuel usage information. TEMA FG-TANKS reported monthly throughput is less than 100,000 gallons and is therefore meeting the requirements of FG-GDFMACT.

FG-RICEMACT contains one natural gas emergency engine EU-EMERGEN. The federal applicable requirements for this MACT were included in their ROP. AQD does not have delegated authority for the Area Source MACT standard. TEMA's initial ROP application included applicable requirements for existing emergency spark ignition (SI) RICE that have less than 500 brake horsepower (HP) located at an area source of HAPs. TEMA is operating it for monthly maintenance only thus far.

**Compliance:** I inspected the engine and records in 2012 and I did not request information for this EU / FG during today's inspection.

#### COMPLIANCE INSPECTION

Upon my arrival to the 1555 Woodridge site I provided identification at the Guard Station entrance and was directed to the building entrance. I provided identification at the reception/guard desk inside the building and they contacted Patrick Sickon, TEMA contact. Cameras are not allowed inside but any needed cell phones having cameras are allowed if covered (taped) by Toyota. Safety glasses are required.

I met with Patrick and the other contacts listed above in a conference room where we went over the pre-inspection review, required records, and the ROP and PTI which I brought with me. There have been significant changes to the facilities and operations over the past year or so. TEMA discussed the on-going construction project covered under PTI No. 186-13 and more recently 186-13A.

In addition, Patrick and the others explained that TEMA recently went through a significant reorganization. Everyone I met with today has not worked with AQD Jackson District Office in the past.

In prior years TEMA employed about 300 people and the Woodridge facility operated approximately 7 AM-3:30 PM five days per week. Typically Engine Testing is referred to as Bench, Transmission, and Durability

testing and can run 3 shifts. It is common for engine testing to either run long durations and/or to have numerous starts and stops for analysis, changes, adjustments, and review periods.

During the inspection I walked through and observed each area of the Chassis Dynamometers and Engine Test Cell Dynamometers installed and operating at the facility. Some were operational during this time but not all. Engine Test Cells are usually in enclosed rooms. Per Greg TEMA fuels the Test Cells from a day tank and there are individual fuel meters in each cell.

#### EV- Evaluation Building (1555)

(ROP) EU-ANECHOIC: "Anechoic Chamber". I observed this enclosed room where vehicles equipped with catalytic converters are tested (Chassis dynamometer). Room is completely sound proof with padding on all walls, ceiling and floor with sound deadening material.

LIMIT: Fuel 2000 gallons per 12 month rolling period as determined at the end of each calendar month. Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 Fuel use: 307 gallons

(ROP) EU-ENVIRON: "Environmental Chamber". I observed this enclosed room where vehicles equipped with catalytic converters are tested (Chassis dynamometer) was operational during the inspection. Room is used for testing all types of environmental conditions, rain, wind, cold, hot, etc...

LIMIT: Fuel 2245 gallons per 12 month rolling period as determined at the end of each calendar month. Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 Fuel use: 602 gallons.

(PTI 186-13A) EU-COLD: Test Cell for fully assembled vehicles and stand-alone engines, uncontrolled (also in ROP with different limits /new under PTI 186-13).

LIMIT: CO 6.93 pounds per hour (pph) and 0.35 tons per year (tpy) 12 month rolling time period. Emission factor uncontrolled: 6,930 lb CO/1000 gal fuel.

LIMIT: Fuel 100 gallons per 12 month rolling period as determined at the end of each calendar month. Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 Fuel use: 0 gallons.

(PTI 186-13A) EU-UPDOWN: Engine dynamometer (PTI 186-13), with installed production catalyst EPA ULEV or LEV. I observed this EU was not operational during the inspection.

LIMIT: CO 0.7 pph and 5.66 tpy 12 month rolling time period. Emission factors: ULEV 187.4 lb CO/1000 gal fuel and LEV 234.0 lb CO/1000 gal fuel. Records indicate COMPLIANT. **CO ULEV only** = 0.1 tons per 12 month rolling period Aug 2015 through July 2016.

LIMIT: Fuel 21,879 gallons per 12 month rolling period as determined at the end of each calendar month (ULEV catalyst).

LIMIT: Fuel 30,879 per 12 month rolling period as determined at the end of each calendar month (LEV catalyst).

Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 indicates only ULEV catalyst was used and Fuel use: 1,048 gallons.

(PTI 186-13A) FG-EVCHDYNOS: Four Chassis dynos with individual production catalysts meeting LEV standards minimum, allowed limited testing with dummy catalysts. UNDER CONSTRUCTION – NEW.

LIMIT: CO 580.8 pph and 12.15 tpy 12 month rolling time period. Emission factors: LEV 234.0 lb CO/1000 gal fuel and uncontrolled 6,930 lb CO/1000 gal fuel.

LIMIT: Fuel (total) 18,000 gallons per 12 month rolling period as determined at the end of each calendar month (ULEV catalyst).

LIMIT: Fuel (uncontrolled) 3000 gallons (of 18,000) per 12 month rolling period as determined at the end of each calendar month.

(PTI 186-13A) FG-EG789: Three engine test cells controlled by a shared thermal oxidizer. UNDER CONSTRUCTION – NEW.

LIMIT: CO 95.7 pph and 13.2 tpy 12 month rolling time period. LIMIT: Fuel 52,000 gallons per 12 month rolling period as determined at the end of each calendar month.

A Malfunction Abatement Plan (MAP) is required to be implemented and maintained and submitted within 45 days of first operating any of the EU in FG-EG789.

FG-TANKS: The underground gasoline storage tanks are located outside this building. (See Powertrain building for above ground tank also part of this flexible group). I observed the concrete covered area containing: Tank1 12,000 gallon, 3-compartment, underground and Tank2 5,000 gallon, 2-compartment, underground. Next to the underground tanks there is a gas pumping fuel station for fleet vehicles. No fuel was being received during the inspection.

#### Powertrain Building (1588)

(PTI 186-13A) EU-EG6: CAT Aging test cell with installed catalyst that meets or exceeds LEVII-ULEV standards.

LIMIT: CO 3.74 pph and 5.62 tpy 12 month rolling time period. Emission factors: ULEV 187.4 lb CO/1000 gal fuel. Records indicate COMPLIANT. CO = 0.1 tons per 12 month rolling period Aug 2015 through July 2016.

LIMIT: Fuel 60,000 gallons per 12 month rolling period as determined at the end of each calendar month. Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 indicates Fuel use: 1,223 gallons.

(PTI 186-13A) FG-EG34: Two engine test cells controlled with ULEV catalyst or uncontrolled during high speed tests.

LIMIT: CO 721 pph and 76.8 tpy 12 month rolling time period. Emission factors: ULEV 187.4 lb CO/1000 gal fuel and uncontrolled: 6,930 lb CO/1000 gal fuel.

Records indicate COMPLIANT. **Combined CO** = 16.7 tons per 12 month rolling period Aug 2015 through July 2016.

LIMIT: Fuel (controlled) 80,000 gallons per 12 month rolling period as determined at the end of each calendar month (ULEV catalyst). Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 indicates Fuel use: 4570.8 gallons.

LIMIT: Fuel (uncontrolled) 20,000 gallons per 12 month rolling period as determined at the end of each calendar month. Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 indicates Fuel use: 4685.6 gallons.

(PTI 186-13A) FG-PTCHDYNOS: Six Chassis Dynos mostly individual production catalysts meeting LEV standards minimum; allowed limited testing with dummy catalysts.

LIMIT: CO 144.5 pph and 3.14 tpy 12 month rolling time period. Emission factors: LEV 234.0 lb CO/1000 gal fuel and uncontrolled: 6,930 lb CO/1000 gal fuel.

Records indicate COMPLIANT. **CO LEV only** = 0.4 tons per 12 month rolling period Aug 2015 through July 2016.

LIMIT: Fuel (controlled) 15,000 gallons per 12 month rolling period as determined at the end of each calendar month (ULEV catalyst). Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 indicates Fuel use: 3646.6 gallons.

LIMIT: Fuel (uncontrolled) 400 gallons per 12 month rolling period as determined at the end of each calendar month. Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 indicates Fuel use: 0 gallons.

(PTI 186-13A) FG-EG125: Three engine test cells, equipped with individual catalytic oxidizers.

LIMIT: CO 79.4 pph and 54.0 tpy 12 month rolling time period. Emission factor 509 lb CO/1000 gal fuel which is 90% control of the tested uncontrolled emission factor.

Records indicate COMPLIANT. CO = 5.3 tons per 12 month rolling period Aug 2015 through July 2016.

LIMIT: Fuel 212,000 gallons per 12 month rolling period as determined at the end of each calendar month. Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 indicates Fuel use: 20,916.4 gallons.

(PTI 186-13A) FG-TM145: Three engine test cells, equipped with individual catalytic oxidizers.

LIMIT: CO 30.54 pph and 52.2 tpy 12 month rolling time period. Emission factor 509 lb CO/1000 gal fuel which is 90% control of the tested uncontrolled emission factor.

Records indicate COMPLIANT. CO = 3.4 tons per 12 month rolling period Aug 2015 through July 2016.

LIMIT: Fuel 205,000 gallons per 12 month rolling period as determined at the end of each calendar month. Records indicate COMPLIANT. 12 month rolling period Aug 2015 through July 2016 indicates Fuel use: 13,294.8 gallons.

FG-TANKS: Tank 5 is a 15,000 gallon, 3-compartment **above ground**. I observed the fuel loading area for the above ground tank. It appeared to be in good condition.

#### RECORDKEEPING:

During the inspection, Ranjini was able to access TEMA's developed spreadsheets for their emissions calculations and fuel usage limits, specific to the limits for 12 month rolling recordkeeping. I requested electronic summary copies for compliance purposes of the 12 months ending July 2016. Specifically, I requested compliance records for fuel usages, hours of operation, and CO emissions. The requested records were emailed to me and received on 8/11/2016. All records were reviewed for compliance with the indicated emission and fuel limits and are attached to this report and placed in the TEMA Plant file.

**Fuel usage records:** only gasoline and natural gas are used for process and facility operations. Fuel usage and emission factors are used to calculate air pollutant emissions. Gasoline, including a % Ethanol on a limited basis to date, is the only fuel used in the Test Cells. The PTI allows for ethanol fuel use with a condition requiring performance testing be conducted within 180 days after initial use. U.S. EPA approved the use of E-15 (15% ethanol in gasoline) in newer model cars. Per request of TEMA consultant, Andy Rusnik, Derenzo & Assoc. during initial ROP technical review, AQD looked into the intent of this permit condition regarding what % ethanol would necessitate the testing. It was determined by talking to the Permit engineer and reviewing the Company's application at that time that a fuel that is at least 75% ethanol and up will require testing.

**MAP/PM:** TEMA is aware that a MAP is required for the FG-EG789 as indicated in the applicable requirement condition. I advised Greg to review their general operations and maintenance for all installed catalytic oxidizer controls in order to demonstrate continued compliance with their permit limits and the administrative rule, R 336.1910 (Rule 910).

**Exempt Processes recordkeeping:** During the inspection I observed one solvent based Cold Cleaner included

in the ROP FG-COLDCLEANER and it was not operating. TEMA was reminded that lids should be closed when not in use.

In the general plant area I observed other small equipment believed to be exempt from Rule 201 permit requirements. This was discussed with TEMA during the inspection and it was agreed that additional information would be obtained and a formal determination made following the inspection.

### COMPLIANCE SUMMARY

The following additional records were requested during the inspection and were required in order for the AQD to determine Toyota's facility 1555 location compliance status with their existing MI-ROP-N2915-2012a, Permit to Install (PTI) No. 186-13A. On August 12, I sent an email to TEMA representatives requesting the following be submitted by a short deadline.

MI-ROP-N2915-2012a and PTI No. 186-13A (Woodridge facility)

1. TEMA needs to verify whether installation completion notices required by PTI 186-34A, Special Condition VII.1 in Tables FG-EG34, and FG-TM145 have been submitted for all referenced emission units. It appears TM4 and EG3 may have been missed. COMPLIANT: TEMA response included installation completion notices for TM4 and EG3.

2. TEMA needs to investigate whether an ROP modification is/was required to be submitted for the changes made in PTI No. 186-13A, pursuant to Rule 215 subrules (1), (2), or (3) of Act 451 and Rule 216. The appropriate modification forms may need to be submitted to AQD. The guidance document link was provided for TEMA's reference, and AQD indicated we will also review this item based on the timeline for TEMA's Renewal submittal and will inform TEMA of any alternative determination. COMPLIANT: The renewal application is due before November 1, 2016 and therefore these modifications will be handled at that time.

3. TEMA utilizes various types of catalytic oxidizers as control on Engine Test Cells operated at the Woodridge facility. It is noted that only FG-EG789 Thermal oxidizer has a specific applicable requirement of a formal Malfunction Abatement Plan (MAP). For compliance purposes TEMA was advised to develop and implement general operation, maintenance, and recordkeeping practices relative to the other catalytic oxidizers used in the Engine Test Cells in order to demonstrate they are installed and operating properly. Act 451, Rule 910 is referenced. Rule 910. An air-cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with these rules and existing law.

TEMA responded (and documented) that they have Control System Manuals for the Catalytic Oxidizers for the engine test cells and training has been conducted. TEMA stated they will update these to include general operation, maintenance and recordkeeping practices. COMPLIANT

4. TEMA needs to review coating process equipment (in-plant and/or external exhaust) that was observed during the inspection and appeared to qualify for exemption. The processes may not have been previously identified in their ROP application. TEMA needs to demonstrate exemption if applicable and submit supporting documentation.

TEMA responded that the EU-PAINTBOOTH is a Rule 287(c) process identified in the ROP. The other downdraft spray coat tables are used for hand held aerosol spray cans. They are exempt from permitting under Rule 287(b) and from ROP application under Rule 212(3)(h). COMPLIANT

On August 26, 2016 Greg submitted all additional information AQD had requested. All records and email correspondence were determined to be acceptable and are attached to this report for the plant files.

TEMA appears to be in substantial compliance with the applicable state regulations and conditions of their ROP No. MI-ROP-N2915-2012a at this time. Their 2015 MAERS was submitted timely and complete. Their 2015 ROP Certification & Deviation Reports were received timely and are acceptable.

NAME *Diane Kay Votaw*

DATE *9/15/16*

SUPERVISOR *[Signature]*