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TMNA
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DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

FCE Summary Report

Facility : TOYOTA MOTOR NORTH AMERICA R&D	SRN : N2915
Location : 1555 WOODRIDGE	District : Jackson
	County : WASHTENAW
City : ANN ARBOR State: MI Zip Code : 48105	Compliance Status : Compliance
Source Class : MAJOR	Staff : Diane Kavanaugh-Vetort
FCE Begin Date : 10/1/2017	FCE Completion Date : 10/2/2018
Comments : Title V ROP FCE	

List of Partial Compliance Evaluations :

Activity Date	Activity Type	Compliance Status	Comments
10/02/2018	ROP Semi 1 Cert	Compliance	1st Semi-annual Cert & Dev Report. Reporting FG CAM deviations 5 separate incidences listed under 1 Deviation. ROP MM proposed for CAM changes/plan. 1 deviation RTO/FG operated in stages due to delays in construction. Other Deviations 5 for stack discrepancies self reported/ identified during audit and in-house PTI to address/CO modeling NAAQS compliant demonstrated. Acceptable responses.
10/02/2018	ROP Other	Compliance	CAM Semi-annual Excursion Report, CAM Semi-annual Monitor Downtime Report
09/14/2018	Stack Test	Compliance	Test Protocol compliance testing of FG-GENSETS: EU-GENSET1 and EU-GENSET2. Testing will be conducted for NOx, CO, and VOC by Derenzo. Mark Dziadosz is TPU assigned. ROP/NSPS requires initial test & every 8760 hrs operation or 3 yrs, whichever occurs first. Units required to operate at or near maximum routine operating conditions for the facility. +/- 10% of 1,573 HP and 1,141 kW electricity. LEANOX AFC system & add-on oxidation catalyst. TPU ok letter 9/17
08/30/2018	Scheduled Inspection	Compliance	Complete scheduled compliance inspection at Title V Facility. PCE/

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07/02/2018	Telephone Notes	Compliance	Notification of RTO malfunction/repair FG-EG789 PTI 186-13D. All testing shut down. Repair may take 3-4 weeks. Burner failure issue. Will submit more detail in writing.
06/28/2018	Other Non ROP	Compliance	Installation completion notice FG-EVCHDYNOS. PTI 186-13D requires installation notice. Letter received states EU-CHDY9 in Evaluation Bldg. was installed on June 18, 2018. Electronic & hard copy.
06/15/2018	Other Non ROP	Compliance	Installation completion notice FG-EVCHDYNOS. PTI 186-13D installation notice required. Letter received states EU-CHDY10 in Evaluation Bldg. was installed on June 4, 2018.
06/11/2018	Stack Test	Compliance	Air Emission Test Results Report for the Verification of Carbon Monoxide Emission Factors from an Engine Dynamometer -Catalyst Aging Test Cell EU-EG6. PTI No. 186-13D and ROP MI-ROP-N2915-2017a. Test was conducted 3/20. Mark D & Regina H., TPU observed. DKV observed. Derenzo Environmental Service, Tester. 5.7 Liter, 385 HP gasoline engine. Cat aging Test Pattern. Results avg of 3 (1) hr runs: CO lb/hr 3.7 < 10.1 Limit; CO lbCO/1000 gal gas 186.49 < 502.67 Limit. Avg Cat in Temp: 920 degree; Cat out Temp: 883. Engine speed: 2802 rpm. Fuel flow: 19.6 gal/hr. DSCFM 3179, ACFM 3991. TPU Rept dated 6/29/18 compliant w/methods.
05/21/2018	Other Non ROP	Compliance	Installation completion notice FG-EVCHDYNOS. PTI 186-13D installation notice required. Letter received states EU-CHDY7 in Evaluation Bldg. was installed on May 15, 2018.

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05/14/2018	Meeting Notes	Compliance	Toyota requested meeting with District to discuss proposed Engine type & Test Pattern changes impacting CAM Plan also impacts existing ROP. Meeting held at Jackson District and Scott Miller, DKV attended. Toyota present: Robin Haugen, Rebecca Bright, Terryl Blackmore, Stephanie Jarrett. Agenda (TMNA) and proposal presented to AQD for CAM Plan changes are attached to this report to file.
04/23/2018	Other Non ROP	Compliance	Installation completion notice FG-EVCHDYNOS. PTI 186-13D installation notice required. Letter received states EU-CHDY8 in Evaluation Bldg. was installed on April 18, 2018.
04/19/2018	Malfunction Abatement Plan	Compliance	MAP for FG-EG789 Engine Test Cells Thermal Oxidizer. Required by permit/ROP. Advise add monitoring/data acquisition system = common failures loss of data = deviations possible violations. Acceptable. Filed.
04/10/2018	Telephone Notes	Compliance	Received call from Patrick regarding proposed testing of gas/electric hybrid vehicles in Transmission dynos. The current permit conditions contain CAM applicable requirement w/temp. range for catalyst used. The hybrid testing includes times in battery operation w/o fuel w/o emissions. This results in temps below minimum temperature.
03/28/2018	ROP Annual Cert	Compliance	Annual ROP Cert & Deviation report 2017. Received timely. One deviation reported during 1st Semi and 5 during 2nd Semi period. Recent deviations have to do with stack diameters and heights. During review for EG6 stack test - found installed stacks not the same as permitted stacks for 5 engine dynos & 3 chassis. Detailed audit, CO modeling determined compliant w/NAAQs. Will submit permit revision application. Future prevention = construction review w/permit.

Activity Date	Activity Type	Compliance Status	Comments
03/28/2018	ROP SEMI 2 CERT	Compliance	2nd Semi-annual ROP Cert & Deviation report. Received timely. 5 deviations reported. Recent deviations have to do with stack diameters and heights. During review for EG6 stack test -found installed stacks not the same as permitted stacks for 5 engine dynos & 3 chassis. Detailed audit, CO modeling determined compliant w/NAAQS. Will submit permit revision application. Future prevention = construction review w/permit.
03/28/2018	CAM Excursions/Exceedances	Compliance	Report 1 performance indicator excursion on EU-EG2 catalyst inlet temperature. Temperature was not read/recorded during test, it was recorded after test and therefore was below required range (min/max). Instructions / training was provided to Technical Managers.
03/28/2018	CAM monitor downtime	Compliance	Required as part of CAM plan however TMNA does not have Continuous emissions monitor (CEMs/COMs). Monitor temperatures of catalysts only.
03/20/2018	Stack Test Observation	Compliance	MI-ROP-N2915-2017a (PTI 186-13D) EG6 required stack test for CO. TPU: Mark Dziadosz and Regina Hines. TMNA consultant Derenzo conducted testing. Patrick Sickon was out of town. Andrew Leet, TMNA was also present. Ran catalyst aging Test Pattern usual for this Dyno. to determine lb CO/1000 gallon fuel EF and limit (PPH) compliance.
03/15/2018	Telephone Notes	Unknown	Contacted AQD to let us know audited all stacks associated with ROP/Permit following discovery of EG6 stack being different than permitted. Hired Derenzo to confirm TMNA findings. Re-ran modeling for all pollutants at existing dimensions and all passed.

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03/14/2018	MAERS	Compliance	MAERS ROP Cert received 3-15-18. Support docs attached. Report: 46 tons CO, 7.1 tons NOx, 2 tons VOC, less than 1 all others. Added 2 permitted Gensets EU/FG. Natural gas. Use tested EFs and thruputs. Most have catalytic controls; also Thermal Oxidizer on some. Lots of changes growth last couple years. Calc based on gasoline thruput & CE.
03/01/2018	Other Non ROP	Compliance	Notification of completion of installation 2 of 3 Engine dynos in FG-EG789. EU-EG8 was completed 2/20 and EU-EG9 was completed 2/26. Thermal Oxidizer installed. Completing parts/maintenance details & associated testing and will submit MAP required for TO. EU-EG7 ordered, estimate install complete end of 2018.
02/27/2018	Stack Test	Compliance	Air Emissions Test Plan associated with compliance testing of emission Unit EG6 as specified by Permit to Install No. 186-13D and ROP. Regina Hines, TPU. DKV & TPU Q's called Stephanie Jarrett & conf call with TMNA Patrick Sichon & Josh. Will submit additional information clarify/Rain cap & Test Pattern proposed for compliance testing. Test scheduled for 3/20.
02/27/2018	Telephone Notes	Compliance	AQD called to discuss Test Protocol EG6 and stack diameter. Consultant Stephanie Jarrett at TMNA w/Patrick Sichon and Josh so we had brief conference call.
02/16/2018	Telephone Notes	Compliance	Received call to notify AQD two compliance related items regarding EG-6.
12/07/2017	ROP Annual Cert	Compliance	REVISED REPORT - part of required response to VN issued November 6, 2017. Previously unreported deviation added to 2016 1st/2nd Semi-annual and Annual Reports. FG-EG6 Intermittent deviation due to fuel rich high air intake testing scenarios = higher emissions/less efficient catalyst then permit required. Permit revised/approved October 2017.

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12/07/2017	ROP Semi 1 Cert	Compliance	REVISED REPORT - part of required response to VN issued November 6, 2017. Previously unreported deviation added to 2016 1st/2nd Semi-annual and Annual Reports. FG-EG6 Intermittent deviation due to fuel rich high air intake testing scenarios = higher emissions/less efficient catalyst then permit required. Permit revised/approved October 2017.
12/07/2017	ROP SEMI 2 CERT	Compliance	REVISED REPORT - part of required response to VN issued November 6, 2017. Previously unreported deviation added to 2016 1st/2nd Semi-annual and Annual Reports. FG-EG6 Intermittent deviation due to fuel rich high air intake testing scenarios = higher emissions/less efficient catalyst then permit required. Permit revised/approved October 2017.
12/04/2017	ROP Other	Compliance	As required by FG-GENSETS VII (2) and R336.1201(3) each engine EUGENSET1 and EUGENSET2 will be operated in a non-certified manner. The initial start-up of the two Genset engines began on November 20, 2017 and are fully operational. NOTE: TESTING REQ'D WITHIN 1 YR OF THIS DATE -DKV
11/20/2017	CAM Excursions/Exceedances	Compliance	TMNA Renewal application was submitted 11/3/16. During review CAM applicability was identified and CAM Plan needed to be revised due to significant permit changes (PTIs issued) prior to and during renewal. AQD required an updated plan be submitted. It was received on 11/13/17; AQD review = Acceptable. It covers all catalysts types on all EU/FG Dynamometer test cells. EPA 45 day review 10/31/17 to 12/18/17.

Activity Date	Activity Type	Compliance Status	Comments
10/05/2017	Meeting Notes	Non Compliance	TMNA requested meeting to discuss recently submitted 2017 1st Semi-annual ROP Cert & Deviation report. One deviation reported for EG6 dynamometer test cell. Report potential CO pph emission limit exceedances during period of 1/1 to 5/23. Specific Test pattern may have caused higher EF than in current permit. Ceased pattern & PTI revision to increase short term limit submitted on 7/24. Will conduct testing following PTI issuance to verify new EF and emission limit.

Name:

Daniel J. Stetson

Date:

10/8/18

Supervisor:

[Signature]