

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

N595529990

|   |                               |                           |
|---|-------------------------------|---------------------------|
| FACILITY: LOTUS ENGINEERING INC   |                               | SRN / ID: N5955           |
| LOCATION: 1254 N. MAIN ST, ANN ARBOR  |                               | DISTRICT: Jackson         |
| CITY: ANN ARBOR   |                               | COUNTY: WASHTENAW         |
| CONTACT: Michael Dykstra, Quality Manager   |                               | ACTIVITY DATE: 07/01/2015 |
| STAFF: Diane Kavanaugh-Vetort   | COMPLIANCE STATUS: Compliance | SOURCE CLASS: MAJOR       |
| SUBJECT: Major Source, ROP renewed in 2014. Full Compliance Evaluation (FCE) and Inspection (PCE) |                               |                           |
| RESOLVED COMPLAINTS:  |                               |                           |

**CONTACT: Michael Dykstra - Quality Manager, [Michael.dykstra@lotus-usa.com](mailto:Michael.dykstra@lotus-usa.com) (734) 995-2544**

On July 1, 2015, I conducted a complete scheduled inspection, announced, of the Lotus Engineering, Inc. Facility in Ann Arbor. I was accompanied by new AQD Jackson District Staff, Michael Gabor and Zachary Durham, present for training purposes. The purpose of the inspection was to determine the Facility's compliance status with the applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules, and conditions of Lotus' Renewable Operating Permit (ROP) No. MI-ROP-N5955-2014.

Lotus operates an automotive research and testing facility principally involved in non-production research and development activities, testing internal combustion engines and drive trains. They operate dynamometer engine test cells/stands and chassis dynamometers.

Lotus was last inspected on September 6, 2012. Lotus 2014 MAERS reported: 81 tons CO, 4 tons NOx, and 3 tons VOC. They conducted primarily gasoline engine testing. No catalytic converter control factor is used; Lotus assumes all uncontrolled testing as a conservative and easier method of record keeping and calculation.

The Company's ROP is organized with the following Flexible Groups (FG):

**FG TESTSITES** - covers the only New Source Review (NSR) permitted Diesel Engine Test Cell dynamometer 17E and 17S.

**FG OTHER TESTSITES** - all the other (23) engine dynamometers, gasoline or diesel, and Rule 201 exempted pursuant to Rule 285 (g).

**FGCOLDCLEANERS** - exempt cold cleaner template table. Lotus currently operates two Crystal Clean Units using mineral spirits.

**FGGDFMACT** - includes existing and new/reconstructed stationary gasoline dispensing facility (GDF) located at an area source of HAPs. Covers EUTANK A/B (15,000), EUTANK C/D/E (12,000, 10,000, 8,000).

At the time the Lotus ROP was issued their underground fuel storage tanks (UST) for dispensing gasoline into Engine Test Cells and/or fleet vehicles were considered as an applicable facility subject to the Area Source Gasoline Distribution Facilities MACT. (EPA issued a revision to the initial standard clarifying that it was always their intent that the dispensing to Engine Test Cells be applicable). Lotus is considered to be a minor source of HAPs and is therefore an Area Source. I discussed the standard with Lotus briefly during the inspection. AQD does not currently have delegation of authority from EPA for the Area Source MACTs.

Upon my arrival to the facility I did not observe any visible emissions or odors. MG, ZD and I entered the reception area, provided our identification and stated the purpose of the inspection. We held a pre-inspection conference with Michael (Mike) Dykstra (MD), Quality Manager. I gave MD a copy of the MDEQ brochure: Rights and Responsibilities Environmental Regulatory Inspections. During prior inspections I also gave MD a copy of the Handbook of Rule 201 Permit Exemptions, and a couple Orange Cold Cleaner Rule & Procedure Stickers for their units.

I informed MD that we would need to have a facility tour, especially of the Engine Test Sites. Lotus prefers to use the term "Test Sites" for their dynamometers. I also requested copies of Lotus compliance

recordkeeping for the previous 12 months ending May 2015. I referenced their ROP applicable requirements, primarily FGTESTSITES and FGOOTHERTESTSITES.

Per Mike they operate 24 hours/day, 7 days/wk except for a few holidays. MD stated some facility changes since the prior inspection are: Design -interiors have expanded; they operate a Vehicle emissions lab for ATVs and motorcycles (chassis dynamometers); they are conducting some end of line emissions testing (chassis dynamometers). Today they are audit testing for Chrysler, run @ 26 engines per day for a 20 or 60 minute test process, and they currently are running a Department of Defense job.

I inquired as to the proposed facility expansion discussed in 2013 and 2014 prior to the last Renewal. MD indicated they are still considering some things and it may happen next year.

#### FACILITY INSPECTION

MD accompanied me (and MG and ZD) during the facility inspection. I observed FG TESTSITE (17E & 17S) was not operating. This is the only Dynamometer with emission limits for NOx (39.3 tpy) and CO (22.17 tpy) and a diesel fuel usage limit (341,000 gallons) per 12 month rolling time periods. 17E & 17S was originally constructed for a very large boat engine testing contract. That contract finished long ago.

Lotus does have two USTs for gasoline or diesel as indicated above. We observed that area directly outside the north side of the building. One tank has three compartments and the other has five. The area was well maintained and I did not observe any visible emission or odors in this area.

During the inspection we walked outside around most of the plant buildings and inside several areas. They have several storage areas. I viewed one or more Dynamometer Sites and observed that each room has a fuel meter. There is a Tank fuel monitor and a fuel totalizer. There are two Engine test sites per room. The building area that contains engine testing is shaped like a horseshoe. There are 24 test sites in this area. MD affirmed my inquiry that they can conduct performance, development, catalyst aging, and transmission testing. He said it depends on the customer and request. They can run 24/7 for many days. They can re-fuel as they continue to test. They can change what type of test occurs in any particular cell if necessary. Regarding catalyst aging, this is testing that attempts to have a catalyst fail.

Per MD, they test all types of engines, electric, motorcycles, cars and trucks, military, lawn & garden, boats. MD showed us the Chrysler engine project where they are currently receiving production engines for testing and then returning them to Chrysler's Trenton Plant for production.

MD again confirmed for me that they report all emissions as uncontrolled and do not take credit for Catalyst control efficiency. It is noted that Diesel testing as a rule is uncontrolled. Because they are overestimating emissions then I do not see this as a concern.

#### RECORDKEEPING REVIEW

MD showed us on his computer how all recordkeeping is electronically kept. They have daily, weekly, monthly, quarterly and then annual record summaries used for annual MAERS. Unfortunately Lotus has not been attaching background records to MAERS (use MAERS EF) and also has not submitted records with their Semi-annual and Annual Deviation & Certification Reports. However, it is noted that Lotus has submitted all their reports timely and has not yet reported any deviations. I was aware of the FY15 Full Compliance Evaluation inspection, and decided to discuss this with Lotus during the inspection and to obtain necessary record documentation at that time.

It appears that Lotus is maintaining complete records in an acceptable format. During the inspection I requested copies of their fuel usage records and the resulting emissions of CO, NOx, PM10, PM2.5, SOx, and VOC for the 12 month period ending May 2015. Following the inspection, I received an email from MD with the requested records for Test Site 17 (FG TESTSITES), for all Cells, and Fuel Usage total. I replied with a request for the background emission factors being used in the spreadsheets and he sent the factors in an email dated July 2nd. All Records are Attached to this Report - to file.

17E & 17S: Report zero emissions and fuel usage.

ALL CELLS: Report fuel throughput for 12 months rolling ending May, 2015: 27,721 gallons

Emissions for 12 month rolling as of May 2015: 45 tons CO; 2.25 tons NOx; 0.34 tons SOx; 0.20 tons VOC; and 0.09 PM10 and 0.089 tons PM2.5.

The highest Fuel usage month in the previous 12 months was in July 2014 at 7715 gallons. The highest 12 month rolling during that time was May 2014 at 80,300 gallons.

#### COMPLIANCE SUMMARY

It appears that Lotus Engineering is in substantial compliance with the applicable requirements and their ROP MI-ROP-N5955-2014 at this time. Lotus has submitted all their required reports timely during the prior 12 month period.

NAME *Diane Kelly Vertat*

DATE 8/6/15

SUPERVISOR *[Signature]*