

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Stack Test Observation

N599132547

<b>FACILITY:</b> Citizens Disposal, Inc.	<b>SRN / ID:</b> N5991
<b>LOCATION:</b> 2361 W. Grand Blanc Rd., GRAND BLANC	<b>DISTRICT:</b> Lansing
<b>CITY:</b> GRAND BLANC	<b>COUNTY:</b> GENESEE
<b>CONTACT:</b> Dan Zimmerman , Compliance Manager	<b>ACTIVITY DATE:</b> 12/15/2015
<b>STAFF:</b> Julie Brunner	<b>COMPLIANCE STATUS:</b> Compliance
<b>SUBJECT:</b> Stack test for EU-ENGINE6 and EU-ENGINE7	<b>SOURCE CLASS:</b> MAJOR
<b>RESOLVED COMPLAINTS:</b>	

On December 15, 2015, AQD staff observed the stack testing of two reciprocating internal combustion engines (RICE) owned and operated by Granger Energy located at the Citizens Disposal, Inc (municipal solid waste landfill). The two engines were tested for carbon monoxide (CO), nitrogen oxides (NOx), and non-methane volatile organic compounds (VOC) per the requirements of Renewable Operating Permit (ROP) No. MI-ROP-N5991-2010 and 40 CFR 60, Subpart JJJJ. The test plan was approved on November 25, 2015.

Testing to demonstrate compliance with the SOx permit limit was not requested for this event. Since evidence could not be found that compliance testing for the SOx permit limit has occurred since the start-up of the engines, it should probably be requested with the next testing of the engines.

The following specs were recorded for the engines:

EU-ENGINE6 - CAT G3520C landfill gas-fired RICE rated at 1600 kW (2,233 hp), Serial no. CAT GZJ00549 and 9WZ01055, operating hours – 28,794

EU-ENGINE7 - CAT G3520C landfill gas-fired RICE rated at 1600 kW (2,233 hp), Serial no. CAT GZJ00551 and 9WZ01057, operating hours – 28,743

I arrived at 9:35 AM. The weather conditions were in the low 40s degree F with a light wind and overcast skies. There were no visible emissions from any of the stacks. The Granger staff on-site were three plant operators, Tony, Mike and Doug; and their supervisor, Dan Zimmerman. They were monitoring the engine operational parameters and providing this information to the testing crew, Derenzo. All the engines in Plants 1 and 2 were operating: #1, #2, #3, #4, CAT16, 6, and 7.

During the test, the kW output, fuel flow (scfm), and methane content of the gas was measured at a minimum per the test plan. A computer in the engine room was continuously recording engine operating parameters. Readings were also being recorded manually. Methane content of the gas was ~49%.

The testing of EU-ENGINE6 was underway. During test run #2, the digital reading in the control room was ~1550 kW (greater than 90% of maximum output), fuel flow was ~550 SCFM, and fuel pressure was 16 psi.

For run #1, the testers provided the following information:

NOx = 93-94 ppm

CO = ~700 ppm

For run #2, the following information was collected:

NOx = 99.6 ppm

CO = 704 ppm

VOC = 21 ppm

The preliminary (uncorrected) results were:

<b>NOx (g/hp-hr)</b>	<b>0.6 – 0.65</b>
<b>CO (g/hp-hr)</b>	<b>2.85</b>
<b>VOC (g/hp-hr)</b>	<b>0.15</b>

The emission limits are:

NOx (g/hp-hr)	1.0
CO (g/hp-hr)	3.0
VOC (g/hp-hr)	1.0

Flow measurements were taken with each run and the instruments were calibrated for each run.

Run #3 for EU-ENGINE6 was from 10:47 AM to 11:47 AM.

The average for Run #3 was as follows:

NOx = 96 ppm  
CO = 700 ppm  
VOC = 21.5 ppm

The testing of EU-ENGINE7 was also observed as being conducted at ~1550 kW (greater than 90% of maximum output).

Run #1 for EU-ENGINE7 was from conducted from 12:15 to 1:15 PM.

Spot readings were recorded as follows:

Start of the run –  
NOx = 105 - 110 ppm  
CO = 675 ppm  
VOC = 17.5 ppm

12:32 PM –  
NOx = 126 - 133 ppm  
CO = 683 ppm  
VOC = 18.6 ppm  
CH<sub>4</sub> = 1678 ppm

A preliminary estimate from the tester using 120 ppm was NOx = 0.79 g/hp-hr for EU-ENGINE7.

Run #2 for EU-ENGINE7 was from conducted from 1:42 to 2:42 PM.

A spot reading at 1:44 PM was taken:

NOx = 117 ppm  
CO = 666 ppm  
VOC = 20.3 ppm

Based on the preliminary results, the two engines are projected to be in compliance with permitted emission limits at maximum routine operating conditions.

I left at 1:46 PM prior to the start of the 3rd test run.

NAME Julie L. Bunn DATE 12/16/15 SUPERVISOR B.M.