

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

B724470091

FACILITY: JBS Plainwell, Inc.		SRN / ID: B7244
LOCATION: 11 11th Street, PLAINWELL		DISTRICT: Kalamazoo
CITY: PLAINWELL		COUNTY: ALLEGAN
CONTACT: Abe Anderson , Environmental Manager		ACTIVITY DATE: 12/06/2023
STAFF: Cody Yazzie	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: NSPS JJJJ Engine (NOx, CO, VOC, HCHO) Emission Initial Testing		
RESOLVED COMPLAINTS:		

On December 6, 2023 JBS Plainwell, Inc. (hereafter JBS) SRN (B7244) conducted nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOCs), total reduced solids (TRS), and formaldehyde (HCHO) emission testing in accordance with the Site-Specific Test Plan (SSTP) submitted by JBS. The SSTP is required for determining compliance with Permit to Install No. 111-23 and Title 40 of the Code of Federal Regulations (40 CFR), Part 60, Subpart JJJJ. The source being tested are four spark ignition reciprocating internal combustion engines (RICE) that are referred to in PTI No. 111-23 as EUBIOGEN1, EUBIOGEN2, EUBIOGEN3, and EUBIOGEN4. Operational parameters that were required to be recorded during testing included engine load (KW), biogas heat content (BTU), biogas methane content (%), and biogas fuel flow (SCFM). The testing plan was approved by the Air Quality Division (AQD), Technical Programs Unit (TPU) on November 20, 2023.

AQD District Staff (Cody Yazzie, Jared Edgerton, and Mariah Scott) arrived at 11 11th Street, Plainwell Michigan at 9:00 A.M on December 6, 2023. AQD-District Staff were escorted around the facility by Abe Anderson, JBS, Environmental Manager. AQD District Staff observed testing from both the testing trailer and the engine control trailer. Trevor Drost with the AQD Technical Programs Unit (TPU) was onsite to observe the test on 12/6/2023 and 12/8/2023.

December 6th Testing Observations:

When Staff arrived at the facility the stack test had not started. The reason for the delay was a small leak on what Staff understood to be associated with the HCHO line. This was eventually diagnosed and fixed before the first test run. Testing data for the first run on EUBIOGEN1 is listed below. Staff was told that the typical methane content is between 70 – 76%. Staff was told that when the lagoon is fuller the facility typically sees that the methane content decreases. This would typically mean that in the winter months the methane content is higher and lower in the summer months as the lagoon is typically fuller in the summer months. At the end of test Run 1 for EUBIOGEN1 Staff was told that the preliminary data appeared to be meeting all required ppm limits for the federal regulation for NOx, CO, and VOC. The stack testing group indicated that the preliminary NOx pph emission rate would likely fail as the preliminary value given to Staff was 4.6 pph. The permitted limit is 3.12 pph of NOx emissions.

Due to the facility likely failing the Stack Test for EUBIOGEN1 and from the facilities knowledge the engines are identical models and tuned in the similar fashions wanted to check the NOx emissions of the other engines to see if they would likely fail those as well. The facility had plans to get a representative from CAT onsite and see if the engines could be tuned to meet the emission limits. Staff was told that all the engines were reading similar NOx emissions numbers

after Run 1 was abandoned and had the plan of a representative from CAT coming on December 12th to tune the engines and testing would resume December 13th.

Staff told the facility that if the engine tuning could not resolve the emission exceedance that a violation notice would likely be sent for exceeding the NOx emission limit.

During testing Staff did note that all the engines were installed with rain flaps that get lifted based on the draft through the stack. Special Condition VIII.1-4 of FG BIOGENS in PTI No. 111-23 require that the exhaust gases from the stack be discharged unobstructed vertically upwards. With these stack flaps installed Staff noted that the exhaust gases were not discharged unobstructed. Since the flap lifts based on the draft in the stack Staff did notice that the flap would hang over the stack occasionally during the test run. Staff would plans to send a violation notice for violating the stack/vent restrictions requirements.

December 6th Data:

EUBIOGEN1

Run hours: 1,127

EUBIOGEN2

Run hours: 773

EUBIOGEN3

Run hours: 1,164

EUBIOGEN4

Run hours: 1,103

EUBIOGEN1	Test Run 1	Test Run 2	Test Run 3
Time	10:18 - 11:18		
Engine Load (KW)	2,000		
Biogas Fuel Flow (SCFM)	400		
Biogas Methane Content (%)	75.2		

December 8th Observations:

AQD District Staff (Cody Yazzie and Mariah Scott) arrived at the facility at 9:45 AM. When District Staff arrived the facility the facility was almost done with Run 1 testing on EUBIOGEN4. Staff was told that from the tuning that took place on the engines it would appear that the facility would likely be to now meet the federal and state emission limits that are in PTI No. 111-23. The facility planned to essentially start testing over and conduct 3-test runs on all the engines including EUBIOGEN1. Testing Plans were to conduct Testing on EUBIOGEN3 and EUBIOGEN4 on December 8th. Then finish testing on December 12th for EUBIOGEN1 and EUBIOGEN2. Testing Data that was collected for EUBIOGEN3 and EUBIOGEN4 are listed below.

Testing during this day went along with minimal/no issues. Staff was provided with preliminary results that could change some as the results still had to be drift corrected but would likely not change enough to have compliance issues.

Staff again noticed that the stack flaps would occasionally obstruct the exhaust gases while the engines were operating. As previously noted a violation notice would be sent for the stack/vent restriction requirement violations.

December 8th Operational Data:

EUBIOGEN4	Test Run 1	Test Run 2	Test Run 3
Time	9:00 - 10:00	10:34 - 11:34	12:01 - 13:01
Engine Load (KW)	1850	1900	NC
Biogas Fuel Flow (SCFM)	390	395	NC
Biogas Methane Content (%)	71.8	71.8	NC

*NC - Not Collected

*DNO - Did Not Observe

EUBIOGEN3	Test Run 1	Test Run 2	Test Run 3
Time	14:07 - 15:07	DNO	DNO
Engine Load (KW)	1900	DNO	DNO
Biogas Fuel Flow (SCFM)	395	DNO	DNO
Biogas Methane Content (%)	73.9	DNO	DNO

*NC - Not Collected

*DNO - Did Not Observe

December 8th Results:

EUBIOGEN4	Test Run 1	Test Run 2	Test Run 3
NOx (pph)	2.85	2.66	2.73
CO (pph)	0.26	0.25	0.25
VOC (pph)	-0.3	0.31	0.18

*NC - Not Collected

*DNO - Did Not Observe

EUBIOGEN3	Test Run 1	Test Run 2	Test Run 3
NOx (pph)	2.89	DNO	DNO
CO (pph)	0.22	DNO	DNO
VOC (pph)	-0.3	DNO	DNO

*NC - Not Collected

*DNO - Did Not Observe

NAME Cody Yonig

DATE 12/12/2023

SUPERVISOR Monica Brothers