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Consumers Energy

A CMS Energy Company

Environmental Services

January 8, 2014

Mr. Dennis Dunlap, Environmental Quality Specialist
Michigan Department of Environmental Quality – Air Quality Division
Kalamazoo District Office
7953 Adobe Road
Kalamazoo, MI 49009-5025

Re: Consumers Energy Company's White Pigeon Compressor Station (N5573)
Response to Notice of Violation, Dated December 18, 2013

Mr. Dunlap:

Consumers Energy Company (CE) is providing this written response to the Michigan Department of Environmental Quality-Air Quality Division (MDEQ-AQD) Violation Notice, dated December 18, 2013, in reference to the five (5) stationary spark ignition (SI) internal combustion engines (ICE) that commenced commercial operation at Consumers Energy's White Pigeon Compressor Station in 2010, pursuant to MDEQ Permit to Install (PTI) No. 137-08. The five (5) engines are identified as EUENGINE1, EUENGINE2, EUENGINE3, EUENGINE4 (production engines) and EUEMERGGEN (emergency engine). These engines are subject to 40 CFR Part 60 Subpart JJJJ-Standards of Performance for Stationary Spark Ignition Internal Combustion Engines as well as 40 CFR Part 63 Subpart ZZZZ-National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE).

Cited Violation:
EUEMERGGEN: Initial performance test was not performed [40 CFR 60.4243(b)(2)(ii)]

CE Response:
As we discussed with you on November 19, 2013, when we self-reported these issues, and at our December 10, 2013 meeting at your office, it was always Consumers Energy's intent to purchase engines ***certified*** as compliant with Subpart JJJJ and maintain these engines and associated control devices according to the manufacturer's emission-related written instructions. As such, these engines would not be subject to periodic emissions testing in order to demonstrate compliance with 40 CFR Part 60, Subpart JJJJ. Until recently, Consumers Energy had believed that the site-specific technical data sheet, reflected in Attachment 1, was the equivalent of certification of this engine pursuant to 40 CFR Part 60, Subpart JJJJ. Thus, Consumers Energy had been relying on the site-specific technical data sheet, coupled with maintaining the engine and associated control devices according to the manufacturer's emission-related written instructions, as the compliance mechanism under Subpart JJJJ.

After lengthy discussions with Caterpillar, the engine manufacturer, regarding similar engines installed at another CE compressor station, it has come to our attention that Caterpillar has not

certified (within the context of Subpart JJJJ) their G3516B LE engine (the type installed at White Pigeon Compressor Station) as meeting the applicable Subpart JJJJ emission limits. Thus, it is our understanding that periodic stack testing for NO_x, CO and VOCs must be conducted on this engine. Although §60.4243(b)(2)(ii) is silent on when the initial performance test must be conducted, we believe the intent is to require the initial performance test within 1 year of startup of the engine (as stated in §60.4243(a)(2)(ii)). This belief appears to be consistent with the MDEQ's understanding, as evidenced by the testing condition cited in MDEQ PTI documents for similar engines (e.g., PTI Nos. 9-13 and 123-11). The date for conducting the initial performance test has therefore inadvertently been surpassed.

§60.4243(b)(2)(ii) states that SI RICE rated at greater than 500 hp must conduct an initial performance test and subsequent performance tests every 8,760 operating hours or 3 years, whichever comes first. Attachment 5 contains a summary of accumulated operating hours for each engine between the commencement of operation through December of 2013. As EUEMERGGEN commenced operation in 2010, the initial performance test was not due until 2011 and the first re-test of this engine is not due until 2014 (i.e., 3 years after the initial performance test was due, as the engine has not yet accumulated 8,760 operating hours).

Even though official testing under Subpart JJJJ has not yet occurred, Consumers Energy believes there is substantial and convincing evidence that EUEMERGGEN has been compliant with the applicable Subpart JJJJ emission limits. Based upon the manufacture date of EUEMERGGEN, the applicable emission standards have been highlighted in yellow within Attachment 2, and they include the following: NO_x = 2.0 g/hp-hr; CO = 4.0 g/hp-hr; VOC = 1.0 g/hp-hr. The vendor guaranteed emission rates at 100% load for NO_x, CO and VOC (as non-methane hydrocarbons, or NMHC) are 0.50 g/bhp-hr, 2.5 g/bhp-hr, and 0.81 g/bhp-hr, respectively, which are all well below the applicable Subpart JJJJ emission limits.

Consumers Energy is fully committed to conducting formal performance testing of EUEMERGGEN as required in 40 CFR Part 60, Subpart JJJJ. Prior to learning of our obligation to conduct performance tests under Subpart JJJJ, Consumers Energy scheduled the next Continued Compliance Demonstration for 40 CFR Part 63, Subpart ZZZZ during the week of March 10, 2014. As such, Consumers Energy intends to conduct the necessary Subpart JJJJ performance testing during this previously scheduled testing event. Prior to conducting any Subpart JJJJ performance testing, Consumers Energy will submit a test protocol for MDEQ-AQD review and comment.

Cited Violation:
EUENGINE1, EUENGINE2, EUENGINE3, EUENGINE4: Initial performance test was not performed for volatile organic compounds (VOC); performance test for oxides of nitrogen (NO_x) performed late (after 180 days) [40 CFR 60.4243(b)(2)(ii)]

CE Response:
As noted previously, Consumers Energy was relying on the purchase of certified engines (and operation of said engines and associated control devices according to the manufacturer's emission-related written instructions) as the compliance mechanism under 40 CFR Part 60, Subpart JJJJ. Consumers Energy had believed that the site-specific technical data sheets, reflected in Attachments 3 and 4, were the equivalent of certification of these engines pursuant to 40 CFR Part 60, Subpart JJJJ. Thus, Consumers Energy had been relying on the site-specific technical data sheets, coupled with maintaining the engines and associated control devices

according to the manufacturer's emission-related written instructions, as the compliance mechanism under Subpart JJJJ.

After lengthy discussions with Caterpillar, the engine manufacturer, regarding similar engines installed at another CE compressor station, it has come to our attention that Caterpillar has not certified (within the context of Subpart JJJJ) their G3608 or G3616 engines (the type installed at White Pigeon Compressor Station) as meeting the applicable Subpart JJJJ emission limits. Thus, it is our understanding that performance testing for NO_x, CO and VOCs must be conducted on these engines.

§60.4243(b)(2)(ii) states that SI RICE rated at greater than 500 hp must conduct an initial performance test and subsequent performance tests every 8,760 operating hours or 3 years, whichever comes first. Although §60.4243(b)(2)(ii) is silent on when the initial performance test must be conducted, we believe the intent is to require the initial performance test within 1 year of startup of the engine (as stated in §60.4243(a)(2)(ii)). This belief appears to be consistent with the MDEQ's understanding, as evidenced by the testing condition cited in MDEQ PTI documents for similar engines (e.g., PTI Nos. 9-13 and 123-11). The date for conducting the initial performance test has therefore inadvertently been surpassed. Attachment 5 summarizes the operating history of the four production engines in relation to the obligation to conduct subsequent performance tests within three years or 8,760 operating hours, whichever occurs first. As shown within Attachment 4, at most the engines would have been required to conduct one additional performance test following the initial performance test requirement.

Even though Consumers Energy has never conducted a formal Subpart JJJJ performance test on the four (4) production engines, emissions verification testing for NO_x and CO was conducted in March 2011, at the request of the MDEQ-AQD, within 1 year of startup of the engines. Table 1 summarizes the results of the NO_x and CO emissions verification testing which was conducted in March of 2011. These results are significantly lower that the Subpart JJJJ emission limits for NO_x (2.0 g/bhp-hr) and CO (4.0 g/bhp-hr).

Table 1. Summary of PTI No. 137-08 Emissions Verification Testing

Engine	Average NO_x Emission Rate (g/bhp-hr)	NOx Emission Limit (g/bhp-hr)	Average CO Emission Rate (g/bhp-hr)	CO Emission Limit (g/bhp-hr)
EUENGINE1	0.36	0.50	0.0244	0.2
EUENGINE2	0.28	0.50	0.0252	0.2
EUENGINE3	0.30	0.50	0.0338	0.2
EUENGINE4	0.29	0.50	0.0321	0.2

VOC testing was not conducted as part of the emissions verification testing. However, based on 2013 emissions testing conducted on similar engines (G3616) with similar oxidation catalysts at another CE compressor station, we believe that the VOC emission rates are well below the Subpart JJJJ emission standards. For the two G3616 engines which were tested at another CE compressor station in 2013, average VOC emissions were between 0.00441 and 0.0179 g/bhp-hr. This is orders of magnitude lower than the Subpart JJJJ emission limit for VOC of 1.0 g/bhp-hr.

In addition to the PTI emissions verification testing conducted in March of 2011, the 40 CFR Part 63, Subpart ZZZZ Initial Compliance Demonstration and subsequent Continued Compliance

Demonstrations have been, and continue to be conducted, at the required frequency. While these tests were conducted to demonstrate compliance with oxidation catalyst destruction efficiency of ≥93%, the associated data can also be used to derive the CO g/bhp-hr emission rates at the outlet of the oxidation catalysts. Table 2 summarizes the results of the Subpart ZZZZ compliance tests and the associated CO g/bhp-hr emission rates observed at the catalyst outlet. Once again, all of these test results are significantly lower than the Subpart JJJJ emission limit for CO of 4.0 g/bhp-hr.

Please note that copies of the test reports associated with the data presented in Tables 1 and 2 have already been submitted to the MDEQ-AQD. Consumers Energy maintains copies of these test reports and can resubmit them upon request.

Table 2. Summary of 40 CFR Part 63, Subpart ZZZZ Compliance Tests

Test Date(s)	Applicable Requirement	CO Destruction Efficiency (%)	Outlet CO Emission Rate (g/bhp-hr)
October 5-6, 2010	§63.6610(a), §63.6620, Subpart ZZZZ-Table 4	EUENGINE1: 99.9 EUENGINE2: 99.9 EUENGINE3: 99.7 EUENGINE4: 99.8	EUENGINE1: 0.00154 [1] EUENGINE2: 0.00270 [1] EUENGINE3: 0.00453 [1] EUENGINE4: 0.00351 [1]
March 30-31, 2011	§63.6640, Subpart ZZZZ-Table 6	EUENGINE1: 98.7 EUENGINE2: 99.1 EUENGINE3: 98.4 EUENGINE4: 98.7	Refer to Table 1 for a summary of the g/bhp-hr CO emission rates.
March 13-14, 2012	§63.6640, Subpart ZZZZ-Table 6	EUENGINE1: 98.9 EUENGINE2: 99.9 EUENGINE3: 98.7 EUENGINE4: 96.9	EUENGINE1: 0.0180 EUENGINE2: 0.00207 EUENGINE3: 0.0215 [2] EUENGINE4: 0.0552
March 12-13, 2013	§63.6640, Subpart ZZZZ-Table 6	EUENGINE1: 99.1 EUENGINE2: 96.9 EUENGINE3: 97.7 EUENGINE4: 93.3	EUENGINE1: 0.0119 EUENGINE2: 0.0542 EUENGINE3: 0.0325 EUENGINE4: 0.0604

[1] A test specific natural gas heating value was not recorded during these emissions tests. To permit the determination of CO g/bhp-hr emission rates, a natural gas heating value of 1,020 Btu/scf has been assumed.

[2] As detailed within the test report, engine operational issues were encountered during the 3rd test run and a 4th test run was therefore conducted to yield three valid test runs. The average outlet CO g/bhp-hr emission rate is based upon the averages of Runs 1, 2 and 4.

Consumers Energy is fully committed to conducting formal performance testing of EUENGINE1, EUENGINE2, EUENGINE3 and EUENGINE4, as required in 40 CFR Part 60, Subpart JJJJ. Prior to learning of our obligation to conduct performance tests under Subpart JJJJ, Consumers Energy scheduled the next Continued Compliance Demonstration for 40 CFR Part 63, Subpart ZZZZ during the week of March 10, 2014. As such, Consumers Energy intends to conduct the necessary Subpart JJJJ performance testing during this previously scheduled testing event. Prior to conducting any Subpart JJJJ performance testing, Consumers Energy will submit a test protocol for MDEQ-AQD review and comment.

Cited Violation:
EUEMERGGEN, EUENGINE1, EUENGINE2, EUENGINE3, EUENGINE4: Initial Notification not submitted [40 CFR 60.4245(c)]

CE Response:
Initial notifications were submitted, pursuant to 40 CFR 63 Subpart ZZZZ, for each of the units (refer to Attachments 6 and 7). However, these initial notifications did not directly reference Subpart JJJJ; as discussed above, it was always Consumers Energy's intent to purchase engines certified as compliant with Subpart JJJJ and maintain these engines and associated control devices according to the manufacturer's emission-related written instructions. Accordingly, Consumers Energy believed it was in full compliance with the applicable regulations, as the requirement to submit an initial notification only applies to non-certified engines (§60.4245(c)). Although much of the information included in the 40 CFR 63, Subpart ZZZZ initial notification is identical to that required in the 40 CFR 60, Subpart JJJJ initial notification, CE's corrective action for this cited violation consists of submittal of the Subpart JJJJ initial notification. Please refer to the Subpart JJJJ initial notification which is being submitted concurrently with this response.

In conclusion, all of the citied violations are the direct result of a misunderstanding regarding the certification status of these engines pursuant to 40 CFR Part 60, Subpart JJJJ. Consumers Energy is reviewing its procurement, agency notification and testing policies and procedures to prevent a reoccurrence of any similar incident. Consumers Energy takes great pride in being a strong, ethical corporate citizen and environmental steward in the communities it serves. It was this diligence that brought this matter to the attention of company personnel who then shared it with MDEQ. As detailed within this response, Consumers Energy believes that there is substantive evidence which shows that all five SI-ICE citied within this Violation Notice have always been in compliance with the applicable emission limits under 40 CFR Part 60, Subpart JJJJ, and, consequently, there has been no adverse air quality impact from our misunderstanding of our engine certification status. We look forward to conducting formal compliance demonstrations for these engines in the near future. If you have any questions, or would like additional information, please contact me at 248-433-5805 or Amy Kapuga at 517-788-2201.

Sincerely,

Ocie Gregory Jr.

Ocie Gregory, Jr.
Consumers Energy Company
Manager of Gas Operations and Maintenance

Attachments

cc: Ms. Amy Kapuga, Senior Engineer – CE Air Quality
Mr. James Walker, Senior Engineer Lead – CE Air Quality
Mr. Jason Prentice, Senior Engineer – CE Air Quality
Mr. Scott Sinkwitts, Corporate Counsel, CE