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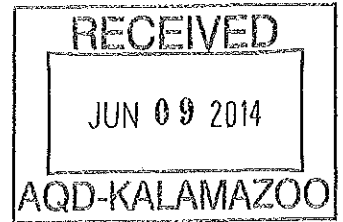


A CMS Energy Company

Environmental Services

June 6, 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 May 21, 2014

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 May 21, 2014, in reference to three (3) stationary spark ignition (SI) internal combustion engines (ICE) in operation at Consumers Energy's White Pigeon Compressor Station. The three (3) engines are identified as EUENGINE2, EUENGINE3 and EUENGINE4. 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:**

EUENGINE2: Carbon monoxide reduction efficiency not achieved. [SC I.3 of permit MI-ROP-N5573-2013; 40 CFR 63.6600(b) and Table 2a]

**CE Response:**

As our test protocol, dated January 8, 2014, and our follow-up email, dated March 3, 2014 (see Attachment 1) indicated, CE began the testing event on March 11, 2014. Testing of EUENGINE2 began on March 12, 2014 and preliminary results indicated that the carbon monoxide (CO) reduction efficiency was less than 93%, as required. Based on the preliminary information, testing was temporarily suspended to permit troubleshooting engine emission performance. The events described below were memorialized in our e-mail to you on March 19, 2014 (see Attachment 3). As a result of the troubleshooting, four new catalyst modules were installed in EUENGINE2. After reviewing the site-specific Preventative Maintenance/Malfunction Abatement Plan (PM/MAP), the White Pigeon Plant 3 Maintenance Procedures Manual, and oxidation catalyst vendor operation and maintenance recommendations, we concluded that all required maintenance had been conducted for the oxidation catalysts. The vendor recommends removing, inspecting and cleaning (as needed) when a change in temperature rise across the catalyst drops to one-half the initial value or the pressure drop across the catalyst changes by ±2 inches of water column. The facility monitors these values and there was no indication of an issue with either of these conditions. In addition, the vendor

recommends regenerating (washing) the catalyst “when emission limits cannot be met and cleaning has not adequately improved the performance”. Again, there was no indication that catalyst regeneration was necessary, as the monitored parameters were within the specified operating ranges.

As our e-mail, dated March 14, 2014 (see Attachment 2) indicated, testing of the engines resumed on March 14, 2014. Testing of EUENGINE2 resumed and was completed on March 15, 2014 and all emission limits were met. Consumers Energy has updated the catalyst preventative maintenance procedures to include scheduled preventative maintenance on a more frequent interval to avoid a similar situation in the future.

It should be noted that during the initial testing, volatile organic compound (VOC) sampling and analysis was conducted for EUENGINE3 and EUENGINE4 (while samples were obtained for EUENGINE2, they were not analyzed as the test was suspended after only two test runs). Consumers Energy notes that the average total non-methane, non-ethane organic concentration (TNMNEOC) for EUENGINE4 was only 1.86 ppm<sub>dv</sub> at 15% O<sub>2</sub>.

The emission limitation under 40 CFR Part 63, Subpart ZZZZ for 4SLB stationary RICE [Table 2a] is (a) a 93% CO reduction efficiency or (b) a formaldehyde emission of 14 ppm<sub>dv</sub> or less at 15% O<sub>2</sub>. While Consumers Energy did not directly test the formaldehyde concentration from EUENGINE4, the average TNMNEOC value (of which formaldehyde is a subset) was less than 15% of the Subpart ZZZZ formaldehyde emission limit. As initial testing on EUENGINE2 showed a CO removal efficiency which was only slightly lower than that achieved by EUENGINE4, and both engines were using the same pipeline natural gas fuel supply, we believe that the TNMNEOC for this engine was also less than 14 ppm<sub>dv</sub> at 15% O<sub>2</sub>. Based on the credible evidence available, it is clear that we passed the requirements for Subpart ZZZZ for all of the engines, including EUENGINE2, during the initial testing event. Based on the provided information, we respectfully request that this specific citation be retracted.

**Cited Violation:**

EUENGINE3: NO<sub>x</sub> emission limit exceeded. [SC I.1 of permit MI-ROP-N5573-2013]

**CE Response:**

As noted previously, we began the testing event on March 11, 2014. Testing of EUENGINE3 began on March 12, 2014 and preliminary results indicated that the nitrogen oxides (NO<sub>x</sub>) emission rate was greater than 0.5 grams per brake horsepower-hour (g/bhp-hr). Based on the preliminary information, testing was temporarily suspended to permit troubleshooting engine emission performance. In reviewing the Caterpillar (vendor) manual, and comparing set points to what was programmed in the engine control panels, it was discovered that the natural gas heating value [lower heating value (LHV)] programmed into each engine’s control panel was not representative of actual fuel gas conditions at the time of testing. The LHV is used to calculate a fuel correction factor used in the engine control panels. The site obtained the actual LHV from the on-site gas chromatograph and entered that into the engine control panels. Once the LHV adjustment was made, the NO<sub>x</sub> emission rates were in compliance. The Caterpillar manual does provide information on the LHV and adjustment of the gas correction factor, but the review of this set point value is not part of the Caterpillar recommended maintenance checklist and, therefore, was not part of CE’s PM/MAP as approved by the MDEQ-AQD. Currently, the natural gas heating value data is not sent to the Supervisory Control and Data Acquisition (SCADA) system, so it has to be reviewed manually.

As our e-mail, dated March 14, 2014, indicated, testing of the engines resumed on March 14, 2014. Testing of EUENGINE3 resumed and was completed on March 15, 2014 and all emission limits were met. Consumers Energy is looking into how best to manage and update the LHV setpoint so that the heating value in the engine control panels is regularly updated based on the onsite natural gas analyses.

**Cited Violation:**

EUENGINE4: Carbon monoxide reduction efficiency not achieved; NO<sub>x</sub> emission limit exceeded. [SC I.1 and SC I.3 of permit MI-ROP-N5573-2013; 40 CFR 63.6600(b) and Table 2a]

**CE Response:**

As noted previously, we began the testing event on March 11, 2014. Testing of EUENGINE4 began on March 11, 2014 and preliminary results indicated that the CO reduction efficiency was less than 93% and the NO<sub>x</sub> emission rate was greater than 0.5 g/bhp-hr. Based on the preliminary information, testing was temporarily suspended to permit troubleshooting engine emission performance. As a result of the troubleshooting, two new catalyst modules were installed in EUENGINE4. After reviewing the PM/MAP, the White Pigeon Plant 3 Maintenance Procedures Manual, and oxidation catalyst vendor operation and maintenance recommendations, we concluded that all required maintenance had been conducted for the oxidation catalysts. The vendor recommends removing, inspecting and cleaning (as needed) when a change in temperature rise across the catalyst drops to one-half the initial value or the pressure drop across the catalyst changes by  $\pm 2$  inches of water column. The facility monitors these values and there was no indication of an issue with either of these conditions. In addition, the vendor recommends regenerating (washing) the catalyst "when emission limits cannot be met and cleaning has not adequately improved the performance". Again, there was no indication that catalyst regeneration was necessary, as the monitored parameters were within the specified operating ranges.

In reviewing the Caterpillar manual, and comparing set points to what was programmed in the engine control panels, it was discovered that the natural gas LHV programmed into each engine's control panel was not representative of actual fuel gas conditions at the time of testing. The LHV is used to calculate a fuel correction factor used in the engine control panels. The site obtained the actual LHV from the on-site gas chromatograph and entered that into the engine control panels. Once the LHV adjustment was made, the NO<sub>x</sub> emission rates were in compliance. The Caterpillar manual does provide information on the LHV and adjustment of the gas correction factor, but the review of this set point value is not part of the Caterpillar recommended maintenance checklist. Consequently, it was not part of the Consumers Energy normal maintenance checklist and we would not have discovered this issue except for looking for solutions to this stack test event. Currently, the natural gas heating value data is not sent to the SCADA system, so it has to be reviewed manually.

As our e-mail, dated March 14, 2014, indicated, testing of the engines resumed on March 14, 2014. Testing of EUENGINE4 resumed and was completed on March 16, 2014 and all emission limits were met. As identified above, Consumers Energy has updated the catalyst preventative maintenance procedures to include scheduled preventative maintenance on a more frequent interval. Consumers Energy is looking into how best to manage and update the LHV setpoint so that the heating value in the engine control panels is regularly updated based on the onsite natural gas analyses.

It should be noted that during the initial testing, VOC sampling and analysis was conducted for EUENGINE3 and EUENGINE4. Consumers Energy notes that the average total non-methane, non-ethane organic concentration (TNMNEOC) for EUENGINE4 was only 1.86 ppmvd at 15% O<sub>2</sub>.

The emission limitation under 40 CFR Part 63, Subpart ZZZZ for 4SLB stationary RICE [Table 2a] is (a) a 93% CO reduction efficiency or (b) a formaldehyde emission of 14 ppmvd or less at 15% O<sub>2</sub>. While Consumers Energy did not directly test the formaldehyde concentration from EUENGINE4, the average TNMNEOC value (of which formaldehyde is a subset) was significantly less than 15% of the Subpart ZZZZ formaldehyde emission limit. Based on the credible evidence available, it is clear that we passed the requirements for Subpart ZZZZ for all of the engines, including EUENGINE4, during the initial testing event. Based on the provided information, we respectfully request that this specific citation be retracted.

**Cited Violation:**

EUENGINE1, EUENGINE2, EUENGINE3, EUENGINE4: AQD was not notified of the re-test dates of March 14-16 [R 336.2001(4)]

**CE Response:**

The timeline of the testing event was as follows:

January 8, 2014: Test protocol submitted to MDEQ  
February 19, 2014: Test protocol acceptance from MDEQ  
March 3, 2014: E-mail notification of test schedule to MDEQ  
March 11, 2014: Testing event began, MDEQ on-site  
March 12, 2014: Testing event temporarily suspended, MDEQ on-site  
March 14, 2014: Email notification to MDEQ-AQD to update status of testing event (see attached)  
March 14, 2014: Testing event resumed  
March 15, 2014: Testing event continued  
March 16, 2014: Testing event completed (EUENGINES 1-4)

Rule 1001(4) requires “Not less than 7 days before performance tests are conducted....shall notify the department, in writing, of the time and place of the performance tests...” Consumers Energy provided initial notification on March 3, 2014 and an update on the status of the testing event, via email, to Mr. David Patterson and Mr. Dennis Dunlap on March 14, 2014 at 8:39 AM (see attached). The testing continued throughout the weekend (March 14-16, 2014). MDEQ-AQD was onsite for the beginning of this test event and was kept apprised of the status. Notification occurred via e-mail on March 3, 2014 (Attachment 1) and MDEQ-AQD was further notification that the testing was ongoing through the weekend of March 15-16, 2014 on March 14, 2014 (Attachment 2). At no time did MDEQ-AQD object to CE continuing the testing. Based on the provided information, we respectfully request that this specific citation be retracted.

In conclusion, the first three cited violations are the result of items that were not part of the vendor (Caterpillar) recommendations and preventative maintenance plans. Consumers Energy was in compliance with the vendor recommended maintenance checklist and Consumers Energy’s MDEQ-AQD approved PM/MAP at all times. Consumers Energy is reviewing its maintenance 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. 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.  
Consumers Energy Company  
Manager of Gas Operations and Maintenance

Attachments

cc: Ms. Mary Douglas, District Supervisor - MDEQ-AQD Kalamazoo District  
Mr. Thomas Hess, Supervisor, Enforcement Unit – MDEQ-AQD  
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. Michael Vigrass, Gas Compressor Manager, CE  
Mr. Scott Sinkwitts, Corporate Counsel, CE