

Volatile Organic Compound Compliance Report

New Covert Generating Company, LLC New Covert Generating Facility EUTURBINE1/DB1, EUTURBINE2/DB2, and EUTURBINE3/DB3 Stack Covert, Michigan September 15 through 17, 2020

Report Submittal Date October 16, 2020

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Project No. M203806D

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1.0 EXECUTIVE SUMMARY

MOSTARDI PLATT conducted a compliance emissions test program for New Covert Generating Company, LLC at the New Covert Generating Facility in Covert, Michigan, on the Emission Unit Turbine 1 and duct burner 1 (EU-TURBINE1/DB1), EU-TURBINE2/DB2, and EU-TURBINE3/DB3 Stacks on September 15 through 17, 2020. This report summarizes the results of the test program and test methods used. The test location, test dates, and test parameters are summarized below.

TEST INFORMATION										
Test Location	Test Dates	Test Parameters								
EUTURBINE1/DB1 Stack	September 15, 2020									
EUTURBINE2/DB2 Stack	September 16, 2020	Non Methane Non Ethane Volatile Organic Compounds (NMNE VOC), Methane (CH ₄), Ethane (C ₄ H ₄), and Volumetric Elow								
EUTURBINE3/DB3 Stack	September 17, 2020	Ethane (02116), and volument how								

New Covert owns and operates the New Covert Generating Facility located at 26000 77th Street in Covert, Michigan. The facility consists of three natural gas-fired Mitsubishi 501G turbines with heat recovery steam generators (HRSGs), designated as EU-TURBINE1, EU-TURBINE2 and EU-TURBINE3. Each HRSG contains a duct burner designated as EU-DB1, EU-DB2 and EU-DB3, respectively, to provide additional steam generating capability and increase the maximum power generating capability of the HRSG. Each duct burner is rated at approximately 256 million British thermal units per hour (MMBtu/hr). Each turbine and duct burner set are equipped with a dry low-NO_x combustor, and each HRSG is equipped with a selective catalytic reduction (SCR) system and an oxidation catalyst to control NO_x and CO emissions.

The stacks are circular and measure 22.1 feet (ft) (265 inches) in diameter at the test ports which are approximately 140 ft above grade level with an exit elevation of approximately 160 ft above grade level. The test ports are located approximately 85 ft (1020 inches) downstream and approximately 20 ft (240 inches) upstream from the nearest disturbances.

A single, dedicated CEMS is installed at each unit. The CEMS configuration includes a NO_x analyzer, a CO analyzer, a diluent gas O_2 monitor for measurements at the outlet stack, and a data acquisition and handling system (DAHS).

The purpose of the test program was to demonstrate total non-methane, non-ethane hydrocarbon emissions on each source. Selected results of the test program are summarized below. A complete summary of emission test results follows the narrative portion of this report.

TEST RESULTS											
Test Location	Test Parameter	Test Condition	Emission Limit	Emission Rate							
EUTURBINE1/DB1 Stack		· · · · · · · · · · · · · · · · · · ·		0.6 ppmv dry as CH₄ @ 15% O₂							
EUTURBINE2/DB2 Stack	NMNE VOC	Full Load Duct Burners On	1.0 ppmv dry as CH₄ @ 15% O₂	0.3 ppmv dry as CH₄ @ 15% O₂							
EUTURBINE3/DB3 Stack				0.4 ppmv dry as CH₄ @ 15% O₂							

The identification of individuals associated with the test program is summarized below.

TEST PERSONNEL INFORMATION									
Location	Address	Contact							
Test Facility	New Covert Generating Company, LLC New Covert Generating Facility 26000 77 th Street Covert, Michigan 49043	Mr. Chris Head Operations Manager (269) 764-3805 (phone) CHead@camsops.com							
Testing Company Supervisor	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Mr. John S. Nestor Project Manager 630-993-2100 (phone) jnestor@mp-mail.com							

The test program was conducted by Messrs. J. Priesz and J. Nestor of Mostardi Platt.

2.0 TEST METHODOLOGY

Emission testing was conducted following the methods specified in 40 CFR, Part 60, Appendix A, and 40 CFR, Part 63, Appendix A. Schematics of the test section diagrams and sampling trains used are included in Appendix A and B, respectively. Calculation examples and nomenclature are included in Appendix C. Copies of analyzer print-outs and field data sheets for each test run are included in Appendix D and E, respectively.

The following methodologies were used during the test program:

Method 3A Oxygen (O₂) Determination

Flue gas O₂ was determined in accordance with Method 3A. A Servomex analyzer was used to determine stack gas oxygen content and was connected to the outlet of the FTIR analyzer.

Stack gas was delivered to the analyzer via a Teflon® sampling line, heated to a minimum temperature of 375°F. The entire system was calibrated in accordance with the Method, using certified calibration gases introduced at the probe, before and after each test run.

All of the equipment used was calibrated in accordance with the specifications of the Method and calibration data are included in Appendix F. Copies of the gas cylinder certifications are included in Appendix I.

Method 25A Volatile Organic Compound (VOC) Determination

VOC concentrations and emission rates were determined in accordance with Method 25A. A Thermo 51i flame ionization detector (FID) analyzer was used to determine total hydrocarbon (THC) concentrations, while Method 320 was performed simultaneously to subtract CH_4 and C_2H_6 concentrations to determine VOC. Stack gas was delivered to the system via a Teflon® sampling line, heated to a minimum temperature of 300°F. Sample was delivered first to the Method 320 FTIR analyzer, with the Method 25A FID analyzer connected to the exhaust of the FTIR analyzer.

The system was calibrated before and after each test run using certified calibration gases of methane for the THC determination. Methane and ethane concentrations were then subtracted based upon the simultaneous data collected and recorded by the FTIR analyzer. A list of calibration gases used and the results of all calibration and other required quality assurance

checks can be found in Appendix F. Copies of calibration gas certifications can be found in Appendix G.

Method 320 Fourier Transform Infrared (FTIR) Detector Multi-Gas Determination of Methane (CH₄), Ethane (C₂H₆) and Moisture (H₂O) The Method 320 sampling and measurement system meets the requirements of US EPA Reference Method 320, "Vapor Phase Organic and Inorganic Emissions by Extractive FTIR," 40CFR63, Appendix A. This method applies to the measurement of methane, ethane, and moisture concentrations. USEPA Method 4, 40CFR60, specifies method 320 as an acceptable alternative for moisture determination.

With this method, gas samples are extracted from the sample locations through heated Teflon sample lines to the analyzers. FTIR technology works on the principle that most gases absorb infrared light. This is true for all compounds with the exception of homonuclear diatomic molecules and noble gases such as: N2, O2, H2, He, Ne, and Ar. Vibrations, stretches, bends, and rotations within the bonds of a molecule determine the infrared absorption distinctiveness. The absorption creates a "fingerprint" which is unique to each given compound. The quantity of infrared light absorbed is proportional to the gas concentration. Most compounds have absorbencies at different infrared frequencies, thus allowing the simultaneous analysis of multiple compounds at one time. The FTIR software compares each sample spectrum to a userselected list of calibration references and concentration data is generated.

FTIR data was collected using an MKS MultiGas 2030 FTIR spectrometer. Spiking was performed following each test run to verify the ability of the sampling system to quantitatively deliver a sample containing volatile organic compounds from the base of the probe to the FTIR. Analyte spiking assures the ability of the FTIR to quantify analytes of interest in the presence of effluent gas. All analyte spikes were introduced using an instrument grade stainless steel rotameter. All QA/QC procedures were within the acceptance criteria allowance of Method 320. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix F.

Methane and ethane concentrations were subtracted from the total hydrocarbon emissions to determine non-methane non-ethane volatile organic emissions from each unit. Moisture numbers were used to calculate emissions on a dry basis

3.0 TEST RESULT SUMMARIES

	New Covert Generating Company, LLC New Covert Generating Facility EUTURBINE1/DB1 Stack VOC Summary - Full Load With Duct Burners												
Test No.	Date	Start Time	End Time	H₂O (%v)	O₂ (%v dry)	THC ppm as C ₃ H ₈ (wet)	THC ppm as CH4 (wet)	CH4 ppm as CH4 (wet)	C ₂ H ₆ ppm as CH ₄ (we!)	VOC ppm as CH₄ (wet)	VOC ppm as CH₄ (dry)	VOC lb/mmBlu as CH ₄	VOC ppmv dry as CH ₄ @ 15% O ₂
1	09/15/20	10:20	11:52	8.4	12.5	0.3	0.9	0.1	0,4	0.9	1.0	0.0009	0.7
2	09/15/20	12:20	13:42	8.5	12.5	0.2	0.6	0.1	0.4	0.6	0.7	0.0006	0.5
3	09/15/20	14:05	15:22	8.2	12.5	0.3	0.9	0.2	0.4	0.9	1.0	0.0009	0.7
	Average 8.4 12.5 0.3 0.8 0.1 0.4 0.8 0.9 0.000B 0.6												
"Methane	and Bhan	e values were	below detec	tion and we	re not used t	o calculate Non-m	ethane non etha	ne VOC number	\$				

	New Covert Generating Company, LLC												
	New Covert Generating Facility												
	EUTURBINE2/DB2 Stack												
	VOC Summary - Full Load With Duct Burners												
				H ₂ O	02	THC ppm as	THC ppm as	CH₄ ppm as	C ₂ H ₆ ppm as	VOC ppm as	VOC ppm as	VOC (b/mmBtu	VOC ppmv dry as
Test No.	Date	Start Time	End Time	(%v)	(%v drý)	C ₃ H ₈ (wet)	CH ₄ (wet)	CH4 (wet)	CH ₄ (wet)	CH₄ (wet)	CH4 (dry)	as CH4	CH4 @ 15% O2
1	09/16/20	9:40	11:12	8.8	13,0	1.4	4.2	3.1	0.6	0.5	0.5	0,0005	0.4
2	09/16/20	11:40	13:07	8.9	12.9	0.6	1.8	1.2	0.4	0.2	0.2	0.0002	0.2
3	09/16/20	13:30	15:07	9.0	13,0	0.7	2.1	1,2	0.4	0.5	0.5	0,0005	0.4
	Average 8.9 13.0 0.9 2.7 1.8 0.5 0.4 0.4 0.0004 0.3												

	New Covert Generating Company, LLC												
	New Covert Generating Facility												
	EUTURBINE3/DB3 Stack												
	VOC Summary - Full Load With Duct Burners												
Test No.	Date	Start Time	End Time	H₂O (%v)	O2 (%v dry)	THC ppm as C ₃ H ₈ (wet)	THC ppm as CH₄ (wet)	CH₄ ppm as CH₄ (wet)	C ₂ H ₆ ppm as CH ₄ (wet)	VOC ppm as CH₄ (wet)	VOC ppm as CH₄(dry)	VOC lb/mmBtu as CH4	VOC ppmv dry as CH4@ 15% Oz
1	09/17/20	9:40	10:57	8,5	12.7	0.3	0,9	0.2	0.0	0.9	1.0	0.0009	0.7
2	09/17/20	11:35	12:52	8.8	12.7	0.1	0.3	0.1	0.0	0.3	0.3	0,0003	0.2
3	09/17/20	13:25	14:47	8.8	12.8	0.1	0.3	0.3	0.0	0.3	0.3	0.0003	0.2
	A	/erage		8.7	12.7	0.2	0.5	0,2	0.0	0.5	0.5	0,0005	0.4

hane values were below detection and were not used to calculate Non-methane non ethane VOC numbers ne and B

Project No. M203806D EUTURBINE1/DB1, EUTURBINE2/DB2, and EUTURBINE3/DB3 Stack

4.0 CERTIFICATION

MOSTARDI PLATT is pleased to have been of service to New Covert Generating Company, LLC. If you have any questions regarding this test report, please do not hesitate to contact us at 630-993-2100.

CERTIFICATION

As project manager, I hereby certify that this test report represents a true and accurate summary of emissions test results and the methodologies employed to obtain those results, and the test program was performed in accordance with the methods specified in this test report.

MOSTARDI PLATT

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