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Compliance Emissions Test Report

Lansing Board of Water and Light (LBW&L)
Delta Energy Park Facility
Combustion Turbine Generator
DEPC3 Stack
3725 South Canal Road
Lansing, Michigan 48917
September 1, 2022

Report Submittal Date
September 28, 2022

Report No. M223509C

Crown Point, IN | Mendota Heights, MN | Denver, CO | Henderson, NV

Corporate Headquarters
888 Industrial Drive
Elmhurst, Illinois 60126
630-993-2100

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1.0 EXECUTIVE SUMMARY

Mostardi Platt performed a formaldehyde (CH_2O) compliance emissions test program on combustion turbine generator DEPC3 located at the Lansing Board of Water and Light's (LBW&L), Delta Energy Park in Lansing, Michigan. Testing was conducted in accordance with United States Environmental Protection Agency (USEPA) Methods 1, 3A, and 320, while operating the unit at/near the maximum potential operational load for the ambient temperature, pressure and humidity, while the unit was combusting natural gas.

The test location, test date, test parameters, and test methodologies are summarized below.

TEST INFORMATION			
Test Location	**Test Date**	**Test Parameters**	**Test Methodologies**
DEPC3	September 1, 2022	Oxygen (O_2) and formaldehyde	USEPA Method 3A, 40CFR60, Appendix A and Method 320, 40CFR63, Appendix A

The purpose of this test program was to demonstrate formaldehyde concentrations meet the requirement of Table 1 of United States Environmental Protection Agency (USEPA) Title 40, Code of Federal Regulations, Part 63, Subpart YYYY – "National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines".

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	**Formaldehyde Emission Limit**	**Formaldehyde Test Result**
DEPC3	91 ppbvd @ 15% O_2	54.5 ppbvd @ 15% O_2

The identifications of the individuals associated with the test program are summarized below.

TEST PERSONNEL INFORMATION		
Location	**Address**	**Contact**
Test Coordinator	Lansing Board of Water and Light 1232 Haco Drive Lansing, Michigan 48912-1610	Nathan Hude Environmental Compliance Specialist (517) 702-6170 (phone) Nathan.hude@lbwl.com
Test Facility Representative	Lansing Board of Water and Light Delta Energy Park Facility 3725 South Canal Road Lansing, Michigan 48917	
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Jeff Gross Project Manager (630) 993-2100 (phone) jgross@mp-mail.com

2.0 TEST METHODOLOGY

Emissions testing was conducted following the methods specified in 40CFR60 and 40CFR63, Appendix A. A schematic of the test section diagram is found in Appendix A and a schematic of the sampling train used is included in Appendix B. Calculation, nomenclature and sample calculations are included in Appendix C. Copies of analyzer print-outs for each test run are included in Appendix D and FTIR QA/QC is found in Appendix E.

The following methodologies were used during the test program:

2.1 Method 3A Oxygen (O_2) Determination

Stack gas O_2 concentrations were determined in accordance with USEPA Method 3A, 40CFR60, Appendix A. An ECOM analyzer was used to determine O_2 concentrations in the manner specified in the Method. The instrument was operated in the nominal range of 0% to 25% with the specific range determined by the high-level span calibration gas. High-range calibrations were performed using U.S. EPA Protocol gas. Zero nitrogen (a low ppm pollutant in balance nitrogen calibration gases) was introduced during other instrument calibrations to check instrument zero. High- and a mid-range % O_2 levels in balance nitrogen were also introduced. Zero and mid-range calibrations were performed using U.S. EPA Protocol gas after each test run. Copies of the gas cylinder certifications are found in Appendix F. This testing met the performance specifications as outlined in the Method.

2.2 Method 320 Fourier Transform Infrared (FTIR) Detector for Formaldehyde Determination

Extractive Fourier transform infrared (FTIR) spectrometry following USEPA Method 320 was performed for determination of formaldehyde.

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: N_2, O_2, H_2, 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 user-selected list of calibration references and concentration data is generated.

FTIR data was collected using an MKS MultiGas 2030 FTIR spectrometer equipped with a low level detector in order to routinely quantify formaldehyde concentrations in the low double digit parts per billion range. Analyte spiking was performed to assure the ability of the FTIR to quantify analytes in the presence of effluent gas. All analyte spikes were introduced using an instrument grade stainless steel rotometer. All QA/QC procedures were within the acceptance criteria allowance of Method 320.

A stratification test was performed using oxygen (O2) prior to the CH2O testing. The results of the stratification test showed that all results were less than 5%. Consequently, all sampling was conducted from one port using one point. All samples below the FTIR detection limit of 10ppb for formaldehyde were corrected to the detection limit and used in averaging of each run.

FTIR QA/QC PROCEDURES						
QA/QC Specification	**Purpose**	**Calibration Gas Analyte**	**Delivery**	**Frequency**	**Acceptance Criteria**	**Result**
M320: Zero	Verify that the FTIR is free of contaminants & zero the FTIR	Nitrogen (zero)	Direct to FTIR	pre/post test	< MDL or Noise	**Pass**
M320: Calibration Transfer Standard (CTS) Direct	Verify FTIR stability, confirm optical path length	Methane	Direct to FTIR	pretest	+/- 5% cert. value	**Pass**
M320: CTS Response	Verify system stability, recovery, response time	Methane	Sampling System	Daily, pre/post test	+/- 5% of Direct Measurement	**Pass**
M320: Zero Response	Verify system is free of contaminants, system bias	Nitrogen (zero)	Sampling System	pretest	Bias correct data	**Pass**
M320: Analyte Spike	Verify system ability to deliver and quantify analyte of interest in the presence of other effluent gases	Formaldehyde	Dynamic Addition to Sampling System, ~1:10 effluent	pre test	+/- 30% theoretical recovery	**Pass**

Note: The determined concentrations from direct analyses were used in all system/spike recovery calculations.

CALIBRATION GAS STANDARDS				
Components	**Concentration (ppm)**	**Vendor**	**Cylinder #**	**Standard Type**
Methane	89.88	Airgas	CC326314	Certified Standard-Spec +/- 2%
Formaldehyde N_2O	1.09 102	SPECGAS, Inc.	CC522694	Certified Standard-Spec +/- 5% Certified Standard-Spec +/- 2%
Zero Nitrogen	0.0	Airgas	N/A	UHP Grade

Analyte Spiking
Formaldehyde spiking was performed prior to testing and before each test run to verify the ability of the sampling system to quantitatively deliver a sample containing formaldehyde from the base of the probe to the FTIR. Analyte spiking assures the ability of the FTIR sampling system to recover acid gases in the presence of effluent gas.

As part of the spiking procedure, samples were measured to determine native formaldehyde and moisture concentrations to be used in the spike recovery calculations. Moisture in the stack gas prior to spiking and during spiking was used to determine dilution ratios of the formaldehyde. The spike target dilution ratio was 1:10 or less. The following equation illustrates the percent recovery calculation:

$$DF = 1 - \frac{H2O\ (spike)}{(native)}$$ (Sec. 9.2.3 (3) USEPA Method 320)

$$CS = DF * Spike(dir) + Unspike(1 - DF)$$ (Sec. 9.2.3 (4) USEPA Method 320)

DF = Dilution factor of the spike gas
$Spike_{dir}$ = Concentration of the analyte in the spike standard measure by the FTIR directly
CS = Expected concentration of the spiked samples
Unspike = Native concentration of analytes in unspiked samples

Detection Limit
The detection limit of each analyte was calculated following Annex A2 of ASTM D6348-12 procedure using spectra that contained similar amounts of moisture.

FTIR DETECTION LIMITS			
Analyte	**Detection Limit (ppbv wet)**	**Detection Limit (%v)**	**Detection Limit (%v wet)**
Formaldehyde	10.0	—	—
Water	—	**0.1**	**N/A**

QA/QC data are found in Appendix E. Copies of gas cylinder certifications are found in Appendix F. All concentration data were recorded on a wet, volume basis. The sample and data collection followed the procedures outlined in Method 320.

3.0 TEST RESULTS SUMMARIES

Lansing Board of Water and Light Delta Energy Park DEPC3 Formaldehyde Summary								
Test No.	Date	Start Time	End Time	H2O% %v	O_2 % dry	Formaldehyde ppbv wet*	Formaldehyde ppbv dry	Formaldehyde ppbvd @ 15% O2
1	09/01/22	15:05	16:04	7.97	14.06	79.47	86.36	74.5
2	09/01/22	16:45	17:44	8.15	14.07	18.07	19.67	17.0
3	9/1/2022	18:03	19:02	8.22	14.17	75.37	82.12	72.0
Average				8.11	14.10	57.64	62.72	54.5

*Corrected for formaldehyde recovery

4.0 CERTIFICATION

Mostardi Platt is pleased to have been of service to Lansing Board of Water and Light. If you have any questions regarding this test report, please do not hesitate to contact us at 630-993-2100.

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.

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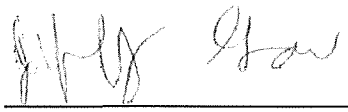
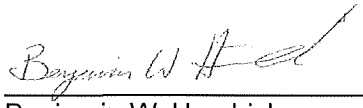


Project Manager

Jeffery M. Gross



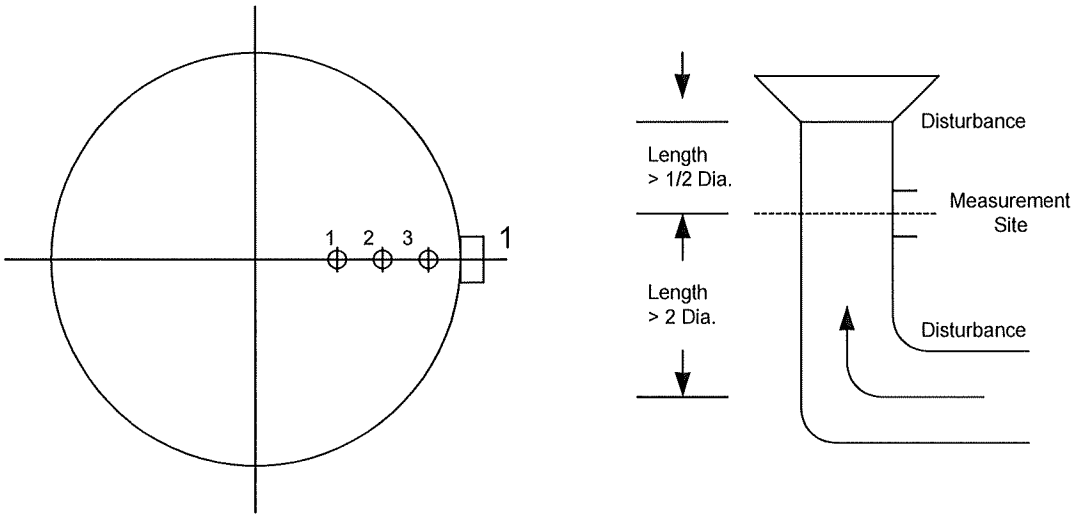
Quality Assurance

Benjamin W. Hendricks

APPENDICES

Appendix A - Test Section Diagram

GASEOUS TRAVERSE FOR ROUND DUCTS



Job: Lansing Board of Water and Light (LBW&L)
Delta Park Energy Park
Delta, Michigan

Date: September 1, 2022

Test Location: Combustion Turbine Generator DEPC3 Stack

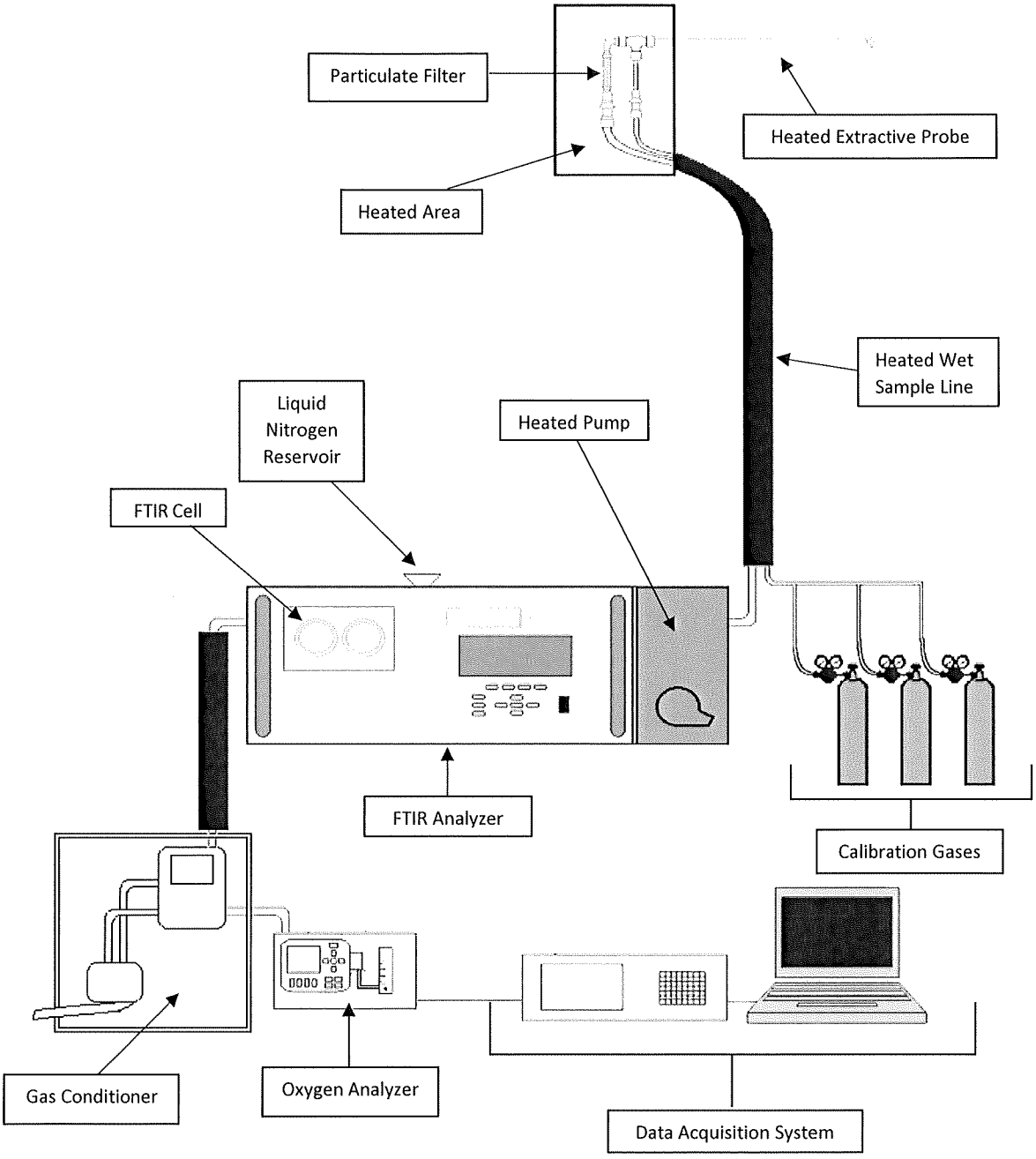
Duct Diameter: 11.901 Feet

Duct Area: 111.24 Square Feet

No. Sample Points: 3

Appendix B - Sample Train Diagram

USEPA Methods 3A and 320 – Sample Train Diagram



Appendix C - Calculation Nomenclature and Formulas

Client:	Lansing Board of Water and Light
Facility:	Delta Energy Park
Test Location:	DEPC3
Run:	1
Date:	9/1/2022
Method:	320
Source Condition:	Normal

Recovery % with Certified Transfer Standard System Purge

$$R_{cts} = \frac{Syscts}{Dcts} \times 100$$

Sys_{cts} = 85.2 D_{cts} = 88.1

R_{cts} = 96.6%

Dilution Factor for Analyte Spiking

$$DF = \frac{H_2O_{spk}}{H_2O_{nat}}$$

H_2O_{spk} = 7.442 H_2O_{nat} = = 7.981

DF = 0.07

Recovery % for Analyte Spike With Formaldehyde

$$R_x = \frac{Spkx}{(Nx \times (1\text{-}DF) + Dx \times DF)}$$

S_{pkx} = 86.2 N_x = 20.0

DF = 0.07 D_x = 705.3

R_x = 0.2 %

O2% Volume Dry Drift Correction

$$Cx = (C - Co) \times \frac{Cma}{Cm - Co}$$

where:
Cgas = Effluent gas concentration, dry basis, ppm
C = Average gas concentration indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initital and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

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Method 320 Nomenclature Sheet

C_x	=	Measured concentration of analyte in ppmv wet
C_{xd}	=	Measured concentration of analyte in ppmv dry
C_{xadj}	=	Measured concentration of analyte corrected to ppmv dry at 3%
$C_{lb/dscf}$	=	lbs of analyte per dscf of effluent gas
$C_{lb/mmBTU}$	=	lbs of analyte per million BTU heat input from the fuel combusted
$C_{lb/mmBTU}$	=	lbs of analyte per hour
DF	=	Dilution factor based on tracer gas recovery
D_{cts}	=	measured ppm concentration of the certified transfer standard direct to analyzer
D_x	=	measured ppm concentration of analyte standard direct to analyzer
D_{sf6}	=	measured ppm concentration of SF6 tracer gas standard direct to analyzer
F_c	=	Factor representing ratio of volume of Carbon Dioxide Generated to Calorific Value of fuel
N_x	=	Native Effluent analyte concentration prior to analyte spike
R_{cts}	=	Recovery % of a certified transfer standard system purge
R_x	=	Recovery % of a analyte system Spike
Sys_{cts}	=	measured ppm concentration of the certified transfer standard system purge
Spk_{sf6}	=	measured ppm concentration of SF6 tracer gas during analyte spike
Spk_x	=	measured pppm concentration of analyte gas during analyte spike
%CO2	=	percent carbon dioxide by volume wet basis
$\%CO2_D$		percent carbon dioxide by volume dry basis
%H2O	=	Measured concentration of H2O in % volume
%O2	=	percent oxygen by dry volume basis
385	=	Volume of 1 lb mole of gas at at 68°F and 29.92 in Hg
10^6	=	conversion of ppm v/v
36.453	=	Molecular weight of HCl

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Pollutant Concentration Correction 15% for Percent Oxygen

$$C_{adj} = C_d \frac{20.9 - 15\%}{20.9 - \%O_2}$$

where:

C_{adj} = Pollutant concentration corrected to percent O_2

20.9-15% = Percent O_2, the defined O_2 correction value, percent

20.9 = Percent O_2 in air

$\%O_2$ = Measured O_2 concentration dry basis, percent

C_d = Pollutant concentration measured, dry basis, ppm.

Appendix D – Reference Method Test Data

Compliance Stratification Test Results Summary
Lansing Board of Water and Light
Delta Energy Park
DEPC3
September 1, 2022

Number of Ports Sampled:	4
Number of Points per Port:	3
Total Number of Traverse Points:	12

Port No.	Point No.	Time	O_2%	Actual % Difference O_2%
1	1	13:59	14.20	0.06
	2	14:00	14.20	0.06
	3	14:01	14.20	0.06
2	1	14:06	14.20	0.06
	2	14:07	14.20	0.06
	3	14:08	14.20	0.06
3	1	14:12	14.40	1.35
	2	14:13	14.20	0.06
	3	14:14	14.20	0.06
4	1	14:20	14.20	0.06
	2	14:21	14.10	0.76
	3	14:22	14.20	0.06
Average			**14.21**	

Client: Lansing Board of Water and Light
Facility: Delta Energy Park
Project #: M223509
Operating Condition: Normal

Test Location: DEPC3
Date: 9/1/2022
Operator: JMG
FTIR s/n: 110212813

Run 1

Date	Time	H2O% %v	Formaldehyde ppbv wet	Formaldehyde ppbv wet R% Corrected	O_2 % dry
9/1/22	15:04:59	78512.0	41.8	36.5	14.10
9/1/22	15:06:00	78069.0	39.8	34.7	14.10
9/1/22	15:07:00	78562.4	43.4	37.9	14.10
9/1/22	15:08:00	79292.0	41.6	36.3	14.10
9/1/22	15:08:59	78856.2	46.8	40.9	14.10
9/1/22	15:10:00	79643.4	49.8	43.5	14.10
9/1/22	15:14:44	80019.1	55.0	48.0	14.10
9/1/22	15:15:44	80150.5	54.7	47.7	14.10
9/1/22	15:16:44	80306.0	58.3	50.9	14.10
9/1/22	15:17:44	80300.8	63.8	55.7	14.10
9/1/22	15:18:44	79267.3	64.6	56.3	14.10
9/1/22	15:19:45	79437.5	64.1	55.9	14.00
9/1/22	15:20:45	79621.4	63.5	55.4	14.00
9/1/22	15:21:45	79263.2	68.1	59.4	14.10
9/1/22	15:22:44	79054.7	69.8	60.9	14.10
9/1/22	15:23:44	79402.9	70.7	61.7	14.10
9/1/22	15:24:45	79835.9	70.1	61.1	14.10
9/1/22	15:25:45	79463.4	73.7	64.3	14.10
9/1/22	15:26:45	79283.5	77.6	67.7	14.10
9/1/22	15:27:45	78581.1	75.2	65.6	14.00
9/1/22	15:28:45	78449.7	80.2	70.0	14.10
9/1/22	15:29:45	78482.5	79.8	69.7	14.10
9/1/22	15:30:45	78456.8	81.5	71.1	14.10
9/1/22	15:31:45	78470.7	83.6	73.0	14.10
9/1/22	15:32:45	77996.6	84.6	73.8	14.10
9/1/22	15:33:45	78554.2	84.9	74.1	14.10
9/1/22	15:34:45	79456.1	84.8	74.0	14.10
9/1/22	15:35:45	79259.9	89.3	77.9	14.10
9/1/22	15:36:45	79430.8	89.5	78.1	14.10
9/1/22	15:37:45	80489.0	91.9	80.2	14.10
9/1/22	15:38:45	91048.0	89.7	78.3	14.10
9/1/22	15:39:45	84167.4	95.1	83.0	14.10
9/1/22	15:40:45	81881.7	97.8	85.4	14.00
9/1/22	15:41:45	80242.4	102.9	89.8	14.10
9/1/22	15:42:45	80179.0	100.5	87.7	14.10
9/1/22	15:43:45	79257.1	100.0	87.3	14.10
9/1/22	15:44:45	79574.6	101.8	88.9	14.10
9/1/22	15:45:45	79800.1	102.6	89.5	14.10
9/1/22	15:46:45	79884.3	105.7	92.2	14.00
9/1/22	15:47:45	79832.1	108.9	95.0	14.00
9/1/22	15:48:45	79683.0	110.9	96.8	14.00
9/1/22	15:49:45	79915.2	110.2	96.2	14.00
9/1/22	15:50:45	79594.2	111.6	97.4	14.00
9/1/22	15:51:45	79045.9	111.2	97.0	14.00
9/1/22	15:52:45	78446.8	116.0	101.2	14.00
9/1/22	15:53:45	78751.3	116.0	101.3	14.00
9/1/22	15:54:45	78123.8	115.2	100.5	14.00
9/1/22	15:55:45	77809.1	115.5	100.8	14.00
9/1/22	15:56:45	78827.9	120.5	105.1	14.00
9/1/22	15:57:45	79575.9	119.4	104.2	14.00
9/1/22	15:58:45	80013.6	122.4	106.8	14.00
9/1/22	15:59:45	87762.9	118.2	103.2	14.00
9/1/22	16:00:45	81493.5	125.7	109.7	14.00
9/1/22	16:01:45	80516.4	123.0	107.4	14.00
9/1/22	16:02:45	79574.1	128.6	112.2	14.00
9/1/22	16:03:45	77754.3	129.0	112.6	14.00
9/1/22	16:04:45	77190.7	129.2	112.8	14.00
9/1/22	16:05:45	77206.6	130.2	113.7	14.00
9/1/22	16:05:45	77206.6	130.2	113.7	14.00
9/1/22	16:13:34	81192.5	133.6	116.6	14.00
Average		**8.0**	**91.1**	**79.5**	**14.1**

Client:	Lansing Board of Water and Light	**Test Location:**	DEPC3
Facility:	Delta Energy Park	**Date:**	9/1/2022
Project #:	M223509	**Operator:**	JMG
Operating Condition:	Normal	**FTIR s/n:**	110212813

Run 2

Date	Time	H2O% %v	Formaldehyde ppbv wet	Formaldehyde ppbv wet R% Corrected	O_2 % dry
9/1/22	16:45:54	79738.8	10.0	9.4	13.90
9/1/22	16:46:54	79529.5	10.0	9.4	13.90
9/1/22	16:47:54	79568.8	10.0	9.4	13.90
9/1/22	16:48:54	79415.0	10.0	9.4	13.80
9/1/22	16:49:54	79172.3	10.0	9.4	13.80
9/1/22	16:50:54	79283.0	10.0	9.4	13.80
9/1/22	16:51:54	79403.0	10.0	9.4	13.90
9/1/22	16:52:54	79506.1	10.0	9.4	13.90
9/1/22	16:53:54	80134.4	10.0	9.4	13.90
9/1/22	16:54:54	80154.3	10.0	9.4	13.90
9/1/22	16:55:54	80244.7	10.0	9.4	13.90
9/1/22	16:56:54	79814.2	10.0	9.4	13.90
9/1/22	16:57:54	80040.6	11.4	10.8	13.90
9/1/22	16:58:54	79616.3	10.2	9.7	13.90
9/1/22	16:59:54	79979.7	10.0	9.4	13.90
9/1/22	17:00:54	80030.1	10.8	10.1	13.90
9/1/22	17:01:54	78760.1	13.3	12.5	14.00
9/1/22	17:02:54	79226.2	13.3	12.5	13.90
9/1/22	17:03:54	80609.8	11.2	10.6	13.90
9/1/22	17:04:54	93636.4	10.0	9.4	14.00
9/1/22	17:05:54	83973.7	10.2	9.7	14.00
9/1/22	17:06:54	81880.9	14.7	13.9	14.00
9/1/22	17:07:54	80942.2	15.5	14.6	14.00
9/1/22	17:08:54	80114.1	13.9	13.1	14.10
9/1/22	17:09:54	79836.1	10.7	10.1	14.10
9/1/22	17:10:54	82279.1	12.7	12.0	14.10
9/1/22	17:11:54	81929.0	18.5	17.5	14.10
9/1/22	17:12:54	81504.9	19.2	18.1	14.10
9/1/22	17:13:54	80672.3	17.7	16.7	14.10
9/1/22	17:14:54	81067.4	17.4	16.4	14.10
9/1/22	17:15:54	81089.9	16.5	15.5	14.00
9/1/22	17:16:54	80930.2	16.1	15.2	14.10
9/1/22	17:17:54	87426.8	15.4	14.5	14.10
9/1/22	17:18:54	85520.1	18.2	17.2	14.10
9/1/22	17:19:54	81612.0	20.0	18.9	14.10
9/1/22	17:20:54	80718.0	22.5	21.2	14.00
9/1/22	17:21:54	79571.8	24.3	23.0	14.00
9/1/22	17:22:54	79031.0	22.6	21.3	14.10
9/1/22	17:23:54	79224.5	21.7	20.5	14.10
9/1/22	17:24:54	79218.0	22.7	21.4	14.10
9/1/22	17:25:54	90661.0	20.2	19.0	14.10
9/1/22	17:26:54	84614.7	18.7	17.6	14.10
9/1/22	17:27:54	80552.0	24.5	23.2	14.10
9/1/22	17:28:54	79121.1	24.1	22.8	14.10
9/1/22	17:29:54	82138.7	23.5	22.1	14.20
9/1/22	17:30:54	85451.1	26.5	25.0	14.20
9/1/22	17:31:55	81804.4	24.7	23.3	14.20
9/1/22	17:32:55	80741.1	24.7	23.4	14.20
9/1/22	17:33:55	80772.9	24.2	22.9	14.20
9/1/22	17:34:55	79924.3	24.9	23.5	14.10
9/1/22	17:35:55	84723.7	28.6	27.0	14.10
9/1/22	17:36:55	85104.1	21.5	20.3	14.10
9/1/22	17:37:55	82422.1	28.8	27.2	14.20
9/1/22	17:38:55	81842.5	26.8	25.3	14.20
9/1/22	17:39:55	87211.1	25.8	24.3	14.20
9/1/22	17:40:55	84859.9	28.8	27.2	14.20
9/1/22	17:41:55	82252.0	32.2	30.4	14.20
9/1/22	17:42:55	80565.5	30.7	28.9	14.20
9/1/22	17:43:55	79632.8	32.4	30.5	14.20
9/1/22	17:44:55	79678.1	32.2	30.4	14.30
Average		**8.2**	**18.1**	**17.1**	**14.0**

Client: Lansing Board of Water and Light
Facility: Delta Energy Park
Project #: M223509
Operating Condition: Normal

Test Location: DEPC3
Date: 9/1/2022
Operator: JMG
FTIR s/n: 110212813

Run 3

Date	Time	H2O% %v	Formaldehyde ppbv wet	Formaldehyde ppbv wet R% Corrected	O_2 % dry
9/1/2022	18:03:25	77702.0	44.2	45.8	14.40
9/1/2022	18:04:25	77557.8	46.3	48.0	14.40
9/1/2022	18:05:25	78395.8	43.0	44.5	14.40
9/1/2022	18:06:25	78165.3	47.1	48.8	14.40
9/1/2022	18:07:25	77900.6	46.6	48.2	14.40
9/1/2022	18:08:25	77921.0	47.4	49.1	14.30
9/1/2022	18:09:25	80087.2	46.2	47.8	14.30
9/1/2022	18:10:25	79761.5	49.4	51.1	14.30
9/1/2022	18:11:25	79070.8	49.1	50.8	14.30
9/1/2022	18:12:25	79016.8	52.7	54.6	14.20
9/1/2022	18:13:25	78960.4	49.2	50.9	14.20
9/1/2022	18:14:25	89216.4	49.9	51.7	14.20
9/1/2022	18:15:25	82585.9	55.7	57.6	14.20
9/1/2022	18:16:25	79882.2	58.8	60.9	14.20
9/1/2022	18:17:25	78823.9	59.2	61.2	14.20
9/1/2022	18:18:25	83442.1	62.6	64.8	14.20
9/1/2022	18:19:25	81451.0	64.7	67.0	14.20
9/1/2022	18:20:25	79631.9	62.6	64.8	14.20
9/1/2022	18:21:25	95779.8	62.0	64.1	14.20
9/1/2022	18:22:25	87364.5	70.2	72.7	14.20
9/1/2022	18:23:25	82353.9	70.1	72.6	14.20
9/1/2022	18:24:25	79788.9	69.9	72.3	14.20
9/1/2022	18:25:25	79820.5	73.3	75.8	14.20
9/1/2022	18:26:25	87900.7	70.8	73.3	14.20
9/1/2022	18:27:25	83483.4	73.6	76.1	14.20
9/1/2022	18:28:25	80724.4	77.0	79.7	14.10
9/1/2022	18:29:25	78582.8	75.9	78.6	14.10
9/1/2022	18:30:25	79228.7	76.3	79.0	14.10
9/1/2022	18:31:25	80265.2	74.4	77.0	14.10
9/1/2022	18:32:25	79691.9	74.7	77.3	14.10
9/1/2022	18:33:25	79438.4	82.0	84.8	14.20
9/1/2022	18:34:25	86048.2	76.5	79.2	14.20
9/1/2022	18:35:25	86073.5	83.0	85.9	14.20
9/1/2022	18:36:25	85265.4	78.0	80.8	14.20
9/1/2022	18:37:25	87026.1	82.5	85.4	14.20
9/1/2022	18:38:25	83186.9	81.6	84.5	14.20
9/1/2022	18:39:25	81771.7	84.9	87.9	14.20
9/1/2022	18:40:25	80001.0	86.4	89.5	14.20
9/1/2022	18:41:25	80695.0	84.6	87.5	14.20
9/1/2022	18:42:25	85363.4	86.5	89.5	14.20
9/1/2022	18:43:25	81065.8	87.4	90.5	14.20
9/1/2022	18:44:25	80823.8	88.2	91.2	14.20
9/1/2022	18:45:25	79300.1	87.8	90.9	14.20
9/1/2022	18:46:25	84696.4	89.7	92.8	14.20
9/1/2022	18:47:25	94441.1	91.7	94.9	14.20
9/1/2022	18:48:25	83724.1	95.7	99.0	14.20
9/1/2022	18:49:25	80298.5	92.2	95.5	14.20
9/1/2022	18:50:25	83478.9	93.0	96.3	14.20
9/1/2022	18:51:25	84520.4	91.8	95.0	14.20
9/1/2022	18:52:25	80901.1	93.9	97.2	14.20
9/1/2022	18:53:26	84887.6	93.7	97.0	14.20
9/1/2022	18:54:25	82409.2	94.7	98.0	14.20
9/1/2022	18:55:25	80148.7	94.6	97.9	14.20
9/1/2022	18:56:25	80981.4	96.8	100.2	14.20
9/1/2022	18:57:26	79462.6	97.7	101.1	14.20
9/1/2022	18:58:26	86473.1	97.3	100.7	14.20
9/1/2022	18:59:26	90624.1	101.4	105.0	14.20
9/1/2022	19:00:26	82970.4	100.0	103.5	14.20
9/1/2022	19:01:26	82176.1	102.6	106.2	14.20
9/1/2022	19:02:26	80043.1	102.7	106.3	14.20
Average		**8.2**	**75.4**	**78.0**	**14.2**

Appendix E – QA/QC Data

Client:	Lansing Board of Water and Light	**Test Location:**	DEPC3
Facility:	Delta Energy Park	**Date:**	9/1/22
Project #:	M223509	**Operator:**	JMG
Operating Condition:	Normal	**FTIR s/n:**	110212813

Probe Length:	8.0	**ft**
Sample Plane:	Horizontal	
Port Length:	6.00	**in.**
Port Size (diameter):	6	**in.**
Port Type:	Nipple	
Duct Shape:	Circular	
Diameter:	11.901	**ft**
Duct Area:	111.24	**Sq. Ft.**
Upstream Diameters:	>0.5	
Downstream Diameters:	>2	

Type	Compound	Cylinder ID	Cylinder Value	Expiration Date
Zero Gas	Nitrogen	Zero Nitrogen	0	NA
Certified Transfer Standard	CH4	CC326314	89.88	11/14/2027
Analyte Spike Gas	Formaldehyde	CC522694	1.09	12/13/2022
	N2O		102	

Compounds Reported	Units for report
H2O%	%v
CO2%	%v wet
Formaldehyde	ppmv wet
N2O	ppmv wet

Client: Lansing Board of Water and Light
Facility: Delta Energy Park
Project #: M223509
Operating Condition: Normal

Test Location: DEPC3
Date: 9/1/2022
Operator: JMG
FTIR s/n: 110212813

Nitrogen (Zero) Direct to FTIR

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet
9/1/2022	14:31:22	0.4	#N/A	-0.6	1.5	123.2
9/1/2022	14:32:22	0.3	#VALUE!	-0.6	1.4	111.1
9/1/2022	14:33:22	0.3	#VALUE!	-0.5	1.4	106.6
9/1/2022	14:33:22	0.3	#VALUE!	-0.5	1.4	106.6

CTS, Direct to FTIR

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Recovery % CH4
9/1/2022	14:34:46	0.1	#N/A	-14.9	87.8	629.7	97.6%
9/1/2022	14:35:02	0.1	#VALUE!	-14.8	88.2	629.7	98.1%
9/1/2022	14:35:19	0.1	#VALUE!	-14.9	88.3	626.3	98.2%
9/1/2022	14:35:35	0.1	#VALUE!	-15.0	88.3	630.4	98.2%
9/1/2022	14:35:51	0.1	#VALUE!	-15.0	88.3	632.9	98.3%
9/1/2022	14:36:08	0.0	#VALUE!	-14.7	88.1	624.5	98.0%
9/1/2022	14:36:24	0.0	#VALUE!	-14.7	88.1	607.1	98.0%
9/1/2022	14:36:40	0.0	#VALUE!	-14.8	88.0	611.6	97.9%
Average					88.1		98.0%

Analyte Direct to FTIR

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppmv wet	Recovery % Formaldehyde
9/1/2022	14:38:39	0.4	#N/A	102.8	1.5	786.34	72141.5%
9/1/2022	14:38:56	0.4	#VALUE!	103.0	1.4	743.84	68241.9%
9/1/2022	14:39:12	0.4	#VALUE!	103.1	1.4	713.76	65482.4%
9/1/2022	14:39:29	0.4	#VALUE!	103.4	1.4	693.98	63667.7%
9/1/2022	14:39:45	0.4	#VALUE!	103.0	1.4	676.76	62088.0%
9/1/2022	14:40:01	0.4	#VALUE!	102.9	1.4	678.15	62215.9%
9/1/2022	14:40:18	0.4	#VALUE!	103.1	1.4	674.94	61921.1%
9/1/2022	14:40:18	0.4	#VALUE!	103.1	1.4	674.94	61921.1%
Average				103.1		705.34	64709.9%

CTS, System Purge and Reponse Time Test

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Recovery % CH4	Response Time
9/1/2022	14:42:08	7.8	#N/A	-1.2	1.0	17.2	1.2%	-
9/1/2022	14:42:15	4.7	#VALUE!	-1.7	23.8	271.3	27.0%	8
9/1/2022	14:42:23	1.8	#VALUE!	-10.2	71.3	415.3	80.9%	16
9/1/2022	14:42:31	0.7	#VALUE!	-12.8	81.8	461.9	92.8%	24
9/1/2022	14:42:38	0.4	#VALUE!	-13.2	84.4	487.4	95.8%	31
9/1/2022	14:42:46	0.3	#VALUE!	-13.4	85.2	490.4	96.6%	39

Zero Gas System Purge and Response Time Test

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Response Time
9/1/2022	14:45:12	0.1	#N/A	-14.5	86.2	634.4	-
9/1/2022	14:45:20	0.3	#VALUE!	-13.1	82.5	483.7	8
9/1/2022	14:45:28	4.4	#VALUE!	-5.1	31.0	200.2	16
9/1/2022	14:45:35	6.9	#VALUE!	-2.5	9.1	66.1	23
9/1/2022	14:45:43	4.6	#VALUE!	-4.8	26.8	159.7	31
9/1/2022	14:45:50	1.5	#VALUE!	-2.0	10.5	77.0	38
9/1/2022	14:45:58	0.8	#VALUE!	-1.2	4.2	57.9	46
9/1/2022	14:46:06	0.6	#VALUE!	-0.7	2.7	52.9	54

Client: Lansing Board of Water and Light
Facility: Delta Energy Park
Project #: M223509
Operating Condition: Normal

Test Location: DEPC3
Date: 9/1/2022
Operator: JMG
FTIR s/n: 110212813

Native Effluent Prior to Analyte Spike

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet
9/1/2022	14:53:24	8.0	#N/A	-1.0	0.9	14.3
9/1/2022	14:53:41	8.0	#VALUE!	-1.3	0.9	22.9
9/1/2022	14:53:41	8.0	#VALUE!	-1.3	0.9	22.9
		7.981				20.0

Effluent Spike Using Analyte

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Dilution Factor	Recovery % Formaldehyde
9/1/2022	14:57:00	7.4	#N/A	6.7	0.8	86.2	0.07	133.2%
9/1/2022	14:57:17	7.4	#VALUE!	6.6	0.8	84.3	0.06	131.5%
9/1/2022	14:57:33	7.4	#VALUE!	6.9	0.9	81.4	0.07	124.0%
9/1/2022	14:57:49	7.4	#VALUE!	6.9	0.9	81.8	0.07	124.1%
9/1/2022	14:58:06	7.4	#VALUE!	6.7	0.9	76.6	0.07	118.2%
9/1/2022	14:58:22	7.4	#VALUE!	6.9	0.9	72.9	0.07	110.6%
9/1/2022	14:58:39	7.4	#VALUE!	6.8	0.9	71.7	0.07	109.4%
9/1/2022	14:58:39	7.4	#VALUE!	6.8	0.9	71.7	0.07	109.4%
								120.1%

Native Effluent Prior to Analyte Spike

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet
9/1/2022	16:04:45	7.7	129.2	-0.9	0.9	129.2
9/1/2022	16:05:45	7.7	130.2	-0.9	0.9	130.2
9/1/2022	16:05:45	7.7	130.2	-0.9	0.9	130.2
		7.720				129.9

Effluent Spike Using Analyte

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Dilution Factor	Recovery % Formaldehyde
9/1/2022	16:17:40	7.3	#N/A	6.0	0.8	186.7	0.06	114.2%
9/1/2022	16:17:56	7.3	#VALUE!	6.0	0.8	176.0	0.06	107.8%
9/1/2022	16:18:13	7.3	#VALUE!	6.2	0.8	179.3	0.06	109.1%
9/1/2022	16:18:29	7.4	#VALUE!	6.0	0.8	171.9	0.06	105.1%
9/1/2022	16:18:46	7.4	#VALUE!	6.0	0.8	174.0	0.06	106.4%
9/1/2022	16:19:02	7.4	#VALUE!	6.2	0.8	179.7	0.06	109.3%
9/1/2022	16:19:18	7.4	#VALUE!	5.9	0.8	180.1	0.06	110.5%
9/1/2022	16:19:18	7.4	#VALUE!	5.9	0.8	180.1	0.06	110.5%
								109.1%

CTS, System Purge

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Recovery % CH4
9/1/2022	16:21:48	1.5	#N/A	-13.4	84.8	#N/A	94.4%
9/1/2022	16:22:04	1.3	#VALUE!	-13.4	85.1	#VALUE!	94.6%
9/1/2022	16:22:20	1.1	#VALUE!	-13.1	85.3	#VALUE!	94.9%
9/1/2022	16:22:37	1.0	#VALUE!	-13.8	85.4	#VALUE!	95.0%
9/1/2022	16:22:53	0.9	#VALUE!	-13.8	85.5	#VALUE!	95.2%
9/1/2022	16:23:10	0.8	#VALUE!	-14.0	85.6	#VALUE!	95.3%
9/1/2022	16:23:26	0.8	#VALUE!	-14.0	85.7	#VALUE!	95.3%
9/1/2022	16:23:42	0.8	#VALUE!	-14.0	85.6	#VALUE!	95.2%

Native Effluent Prior to Analyte Spike

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet
9/1/2022	17:44:55	8.0	#N/A	-1.3	0.9	32.2
9/1/2022	17:45:55	8.3	#VALUE!	-1.5	0.8	28.0
9/1/2022	17:45:55	8.3	#VALUE!	-1.5	0.8	28.0
		8.208				29.4

Client: Lansing Board of Water and Light
Facility: Delta Energy Park
Project #: M223509
Operating Condition: Normal

Test Location: DEPC3
Date: 9/1/2022
Operator: JMG
FTIR s/n: 110212813

Effluent Spike Using Analyte

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Dilution Factor	Recovery % Formaldehyde
9/1/2022	17:48:12	7.6	#N/A	9.8	0.9	100.4	0.10	106.9%
9/1/2022	17:48:30	7.6	#VALUE!	9.4	0.9	94.1	0.09	103.5%
9/1/2022	17:48:45	7.6	#VALUE!	8.6	1.0	94.2	0.08	109.6%
9/1/2022	17:49:01	7.5	#VALUE!	8.6	1.0	87.9	0.08	102.4%
9/1/2022	17:49:18	7.5	#VALUE!	8.4	1.0	84.6	0.08	100.1%
9/1/2022	17:49:34	7.4	#VALUE!	8.4	0.9	84.7	0.08	100.2%
9/1/2022	17:49:50	7.4	#VALUE!	8.7	0.9	85.8	0.08	99.6%
9/1/2022	17:49:50	7.4	#VALUE!	8.7	0.9	85.8	0.08	99.6%
								102.7%

CTS, System Purge

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Recovery % CH4
9/1/2022	17:51:30	2.2	#N/A	-13.7	84.0	525.1	93.5%
9/1/2022	17:51:46	1.8	#VALUE!	-13.6	84.4	551.8	93.9%
9/1/2022	17:52:03	1.6	#VALUE!	-13.6	84.8	542.2	94.3%
9/1/2022	17:52:19	1.4	#VALUE!	-13.5	85.0	553.1	94.6%
9/1/2022	17:52:35	1.3	#VALUE!	-13.6	85.2	556.4	94.7%
9/1/2022	17:52:52	1.2	#VALUE!	-13.5	85.3	559.3	94.9%
9/1/2022	17:53:08	1.1	#VALUE!	-13.6	85.4	560.0	95.0%
9/1/2022	17:53:24	1.0	#VALUE!	-14.3	85.5	588.8	95.1%

Native Effluent Prior to Analyte Spike

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet
9/1/2022	19:02:26	8.0	#N/A	-1.9	0.6	102.7
9/1/2022	19:03:25	7.9	#VALUE!	-2.0	0.6	99.1
9/1/2022	19:03:25	7.9	#VALUE!	-2.0	0.6	99.1
		7.936				100.3

Effluent Spike Using Analyte

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Dilution Factor	Recovery % Formaldehyde
9/1/2022	19:06:32	7.4	#N/A	8.3	0.5	136.9	0.08	92.0%
9/1/2022	19:06:48	7.4	#VALUE!	6.8	0.5	135.4	0.07	96.4%
9/1/2022	19:07:05	7.4	#VALUE!	7.2	0.5	127.9	0.07	89.6%
9/1/2022	19:07:21	7.4	#VALUE!	7.2	0.5	125.7	0.07	88.2%
9/1/2022	19:07:38	7.4	#VALUE!	7.1	0.5	129.8	0.07	91.3%
9/1/2022	19:07:54	7.4	#VALUE!	7.1	0.5	130.4	0.07	91.9%
9/1/2022	19:08:10	7.3	#VALUE!	7.1	0.6	123.9	0.07	87.4%
9/1/2022	19:08:10	7.3	#VALUE!	7.1	0.6	123.9	0.07	87.4%
								90.5%

CTS, System Purge

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Recovery % CH4
9/1/2022	19:11:18	2.5	#N/A	-14.1	84.3	553.9	93.8%
9/1/2022	19:11:34	2.1	#VALUE!	-14.3	84.8	557.3	94.3%
9/1/2022	19:11:51	1.9	#VALUE!	-14.3	85.0	575.8	94.5%
9/1/2022	19:12:07	1.7	#VALUE!	-14.2	85.2	579.4	94.8%
9/1/2022	19:12:24	1.6	#VALUE!	-14.2	85.3	574.9	94.9%
9/1/2022	19:12:40	1.5	#VALUE!	-14.3	85.5	571.3	95.1%
9/1/2022	19:12:40	1.5	#VALUE!	-14.3	85.5	571.3	95.1%
9/1/2022	19:12:58	1.4	#VALUE!	-14.1	85.6	578.2	95.3%

Client: Lansing Board of Water and Light
Facility: Delta Energy Park
Project #: M223509

Test Location: DEPC3
Date: 9/1/2022
Operator: JMG

Operating Condition: Normal

FTIR s/n: 110212813

CTS, Direct Purge

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet	Recovery % CH4
9/1/2022	19:22:17	0.0	#N/A	-15.7	88.9	956.6	99.0%
9/1/2022	19:22:34	0.0	#VALUE!	-15.7	89.0	960.3	99.0%
9/1/2022	19:22:50	0.0	#VALUE!	-15.7	89.0	952.6	99.0%
9/1/2022	19:23:06	0.0	#VALUE!	-15.9	89.0	955.3	99.0%
9/1/2022	19:23:23	0.0	#VALUE!	-15.8	89.0	955.7	99.0%
9/1/2022	19:23:39	0.0	#VALUE!	-15.7	89.0	959.0	99.0%
9/1/2022	19:23:55	0.0	#VALUE!	-15.6	89.0	960.7	99.0%
9/1/2022	19:23:55	0.0	#VALUE!	-15.6	89.0	960.7	99.0%
Average					89.0		

N2, Direct Purge

Date	Time	H2O% %v	Formaldehyde ppmv wet	N2O ppmv wet	CH4 ppmv wet	Formaldehyde ppbv wet
9/1/2022	19:26:59	0.4	#N/A	-0.9	1.5	325.5
9/1/2022	19:27:59	0.4	#VALUE!	-0.7	1.5	329.0
9/1/2022	19:27:59	0.4	#VALUE!	-0.7	1.5	329.0

Client:	Lansing Board of Water and Light	**Test Location:**	DEPC3
Facility:	Delta Energy Park	**Date:**	9/1/22
Project #:	M223509	**Operator:**	JMG
Operating Condition:	Normal		

Probe Length:	8.0	ft
Sample Plane:	Horizontal	
Port Length:	6.00	in.
Port Size (diameter):	6	in.
Port Type:	Flange	
Duct Shape:	Circular	
Diameter:	11.901	ft
Duct Area:	111.24	Sq. Ft.
Upstream Diameters:	>0.5	
Downstream Diameters:	>2	
Number of Ports Sampled:	1	
Number of Points per Port:	3	
Total Number of Traverse Points:	3	

Type	Setting	Cylinder ID	Cylinder Value	Analyzer Response	Difference, % of Span	Expiration Date	Mid cylinder % of high cylinder
O2 % (dry)	Zero	Zero Nitrogen	0	0.00	0.00%	NA	
	Mid	CC464836	10.01	10.00	0.05%	8/1/2030	51.23%
	High	LL13939	19.54	19.50	0.20%	3/19/2026	

Type	RM Analyzer Make/Model	RM Analyzer s/n	Analyzer Span	RM Gas Span
O2 % (dry)	Ecom/1440	2040	25	19.54

Client: Lansing Board of Water and Light
Facility: Delta Energy Park
Fuel Type: Natural Gas
Diluent: O2 %
Correction Factor: 15

Location: DEPC3
Date: 9/1/22
Operator: JMG
Project #: M223509

O2 % (dry) Correction Data

Run #	Cma	Precal	Postcal	Pre zero	Post zero	Co	Cm	C	Cgas	Span Bias	Span Drift	Zero Bias	Zero Drift
1	10.01	10.00	10.10	0.10	0.20	0.15	10.05	14.06	14.1	-0.51	0.51	-1.02	0.51
2	10.01	10.10	10.00	0.20	0.20	0.20	10.05	14.05	14.1	0.00	-0.51	-1.02	0.00
3	10.01	10.00	10.20	0.20	0.20	0.20	10.10	14.22	14.2	-1.02	1.02	-1.02	0.00

Calibration Corrected Data

Run #	Run Date	Start Time	End Time	O2 % (dry)
1	9/1/22	15:04:59	#N/A	14.1
2	9/1/22	16:45:54	#N/A	14.1
3	9/1/22	18:03:25	#N/A	14.2

Client: Lansing Board of Water and Light
Facility: Delta Energy Park
Project #: M223509
Test Location: DEPC3
Operating Condition: Normal
Date: 9/1/22

Linearity Cal/Pre 1 Cal

Time	O2 % (dry)	
5:45	19.50	
5:46	19.50	
5:46	19.50	ih
5:46	19.50	
5:47	4.30	
5:47	0.00	
5:47	0.00	iz
5:48	0.00	
5:48	0.50	
5:48	10.00	
5:49	10.00	
5:49	10.00	im
5:49	10.00	
13:20	0.10	
13:20	0.10	
13:21	0.10	z
13:21	0.10	
13:21	9.10	
13:22	11.90	
13:22	10.00	m
13:22	10.00	

Client: Lansing Board of Water and Li
Facility: Delta Energy Park
Project #: M223509

Test Location: DEPC3
Operating Condition: Normal
Date: 9/1/22

Post 1/Pre 2

Time	O2 % (dry)	
16:26	0.30	
16:26	0.30	
16:27	0.30	
16:27	0.30	
16:27	0.20	
16:28	0.20	z
16:28	0.20	
16:28	9.00	
16:29	9.70	
16:29	10.00	
16:29	10.00	
16:30	10.10	
16:30	10.10	
16:30	10.10	m
16:31	10.10	
16:31	10.10	

Post 2/Pre 3

Time	O2 % (dry)	
17:54	0.50	
17:55	0.40	
17:55	0.30	
17:55	0.20	z
17:56	0.20	
17:56	8.80	
17:56	10.00	
17:57	10.00	m

Post 3

Time	O2 % (dry)	
19:14	0.40	
19:14	0.30	
19:15	0.20	
19:15	0.20	z
19:15	1.20	
19:16	8.80	
19:16	10.10	
19:16	10.20	m
19:17	10.20	

Appendix F – Gas Cylinder Certifications

SPECGAS, INC.

CERTIFICATE

SPECGAS, Inc.
86 Vincent Circle
Warminster, PA. 18974
Tel. 215 443 2600
Fax. 215 443 2665
WWW.SPECGASINC.COM

ANALYTICAL REPORT-PRODUCT CERTIFICATION

SOLD TO: Red Ball Oxygen
PO Box 7316
Shreveport, LA. 71137-7316

SHIP TO: Mosterdi Plant Denver CO
7002 West 48th Avenue Unit A
Denver, CO 80216

DATE: 6/13/22
PO#: 4008464

CERTIFIED STANDARD MIXTURE

CYLINDER #
CC522694

Component		Nominal	Actual
FORMALDEHYDE	CH2O	1.00 ppm	1.09 ppm
NITROUS OXIDE	N2O	100 ppm	102 ppm
NITROGEN	N2	Balance	Balance

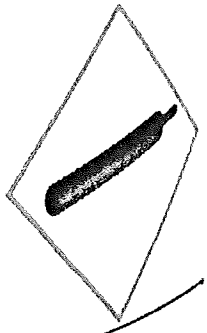
PRESSURE: 2000 psia
VALVE: CGA 350 s/s
CYL. SIZE: 150A"SGS" Sold
ANALYSIS DATE: 6/13/22
EXPIRATION DATE: 12/13/22
UN 1956, Compressed Gas N.O.S.
(Formaldehyde, Nitrogen) 2.2
Emergency Phone #: 1 800 535 5053

FORMALDEHYDE
Blend Tolerance: **+/- 20 %**
Analytical Tolerance: **+/- 5 %**

NITROUS OXIDE
Blend Tolerance: **+/- 5 %**
Analytical Tolerance: **+/- 2 %**

N.I.S.T.: Mixture was blended on a high resolution Scale (Sartorius Combics 1, Serial # 29503041) Traceable to N.I.S.T. through test # 211106

4kg wt. (Serial #85424) Standards traceable to N.I.S.T. through weight & measures test # 2267372



Warning
Contains gas under pressure
May explode if heated
May displace oxygen and cause rapid suffocation

ANALYST

6/13/22
DATE

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
12722 S. Wentworth Ave.
Chicago, IL 60628
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02AI99E15A0571	Reference Number:	54-401654222-1
Cylinder Number:	CC326314	Cylinder Volume:	146.0 CF
Laboratory:	124 - Chicago (SAP) - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12019	Valve Outlet:	590
Gas Code:	CH4,BALA	Certification Date:	Nov 14, 2019

Expiration Date: Nov 14, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
METHANE	90.00 PPM	89.88 PPM	G1	+/- 0.7% NIST Traceable	11/14/2019
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	99010618	ALM025017	100.2 PPM METHANE/AIR	+/- 0.6%	Apr 13, 2022

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801332	FTIR	Oct 15, 2019

Triad Data Available Upon Request

Approved for Release

RECEIVED
OCT 13 2022
AIR QUALITY DIVISION

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
12722 S. Wentworth Ave.
Chicago, IL 60628
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI80E15A0138	Reference Number:	54-402487829-1A
Cylinder Number:	CC464836	Cylinder Volume:	141.0 CF
Laboratory:	124 - Chicago (SAP) - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12022	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Aug 01, 2022

Expiration Date: Aug 01, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	9.874 %	G1	+/- 0.6% NIST Traceable	08/01/2022
OXYGEN	10.00 %	10.01 %	G1	+/- 0.6% NIST Traceable	08/01/2022
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	190604-14	6162723Y	11.105 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Dec 04, 2025
NTRM	09060203	CC261244	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 05, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO2-1 HORIBA VIA-510 V1E3H7P5	NDIR	Jul 26, 2022
O2-1 HORIBA MPA-510 3VUYL9NR	Paramagnetic	Jul 13, 2022

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
12722 S. Wentworth Ave.
Chicago, IL 60628
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI62E80A0014	Reference Number:	54-401150341-1
Cylinder Number:	LL13939	Cylinder Volume:	92.2 CF
Laboratory:	124 - Chicago (SAP) - IL	Cylinder Pressure:	2214 PSIG
PGVP Number:	B12018	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Mar 19, 2018

Expiration Date: Mar 19, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	19.00 %	18.65 %	G1	+/- 0.8% NIST Traceable	03/19/2018
OXYGEN	19.00 %	19.54 %	G1	+/- 0.5% NIST Traceable	03/19/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060709	CC413602	16.939 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 08, 2019
NTRM	09061418	CC273593	22.53 % OXYGEN/NITROGEN	+/- 0.4%	Mar 08, 2019

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO2-1 HORIBA VIA-510 V1E3H7P5	NDIR	Feb 20, 2018
O2-1 HORIBA MPA-510 3VUYL9NR	Paramagnetic	Mar 19, 2018

Triad Data Available Upon Request

Approved for Release

Appendix G – Plant Operating Data

EUCTGHRSG3 Bypass Stack Process Data, Run1							
Date/Time	CTGHRSG3 LOADCTMW (MW) Value	CTGHRSG3 B_HEATIN (MMBTU/HR) Value	CTGHRSG3 B_GASFLW (HSCFH) Value	CTGHRSG3 B_NOXPPM (PPM) Value	CTGHRSG3 B_O2 (PERCENT) Value	CTGHRSG3 B_NXC (15PCTO2) Value	CTGHRSG3 B_NOX#/MM (LB/MMBTU) Value
09/01/2022 15:05	51	493.3	4697.9	21.8	13.9	18.3	0.068
09/01/2022 15:06	51	495.2	4715.8	21.7	13.9	18.2	0.067
09/01/2022 15:07	51	494.7	4711.6	21.8	13.9	18.3	0.068
09/01/2022 15:08	51	494.1	4705.6	22	13.9	18.5	0.068
09/01/2022 15:09	51	493.3	4697.8	21.8	13.9	18.2	0.068
09/01/2022 15:10	51	493	4695.3	22	13.8	18.4	0.067
09/01/2022 15:11	51	493.2	4697	21.9	13.8	18.3	0.067
09/01/2022 15:12	51	493.5	4700.4	21.4	13.9	17.9	0.066
09/01/2022 15:13	51	493.8	4703.1	21.6	13.9	18.2	0.067
09/01/2022 15:14	51	496.6	4729.8	22.1	13.9	18.5	0.069
09/01/2022 15:15	51	494.2	4706.5	22.3	13.8	18.7	0.068
09/01/2022 15:16	51	493.5	4699.7	22.2	13.8	18.5	0.068
09/01/2022 15:17	51	493.3	4698.4	21.9	13.8	18.3	0.067
09/01/2022 15:18	51	491.8	4684	21.9	13.8	18.3	0.067
09/01/2022 15:19	51	494.5	4709.8	21.6	13.8	18.1	0.066
09/01/2022 15:20	51	491.3	4678.9	21.5	13.8	18	0.066
09/01/2022 15:21	51	493.4	4698.9	21.3	13.9	17.9	0.066
09/01/2022 15:22	51	494.1	4705.8	21.7	13.9	18.2	0.067
09/01/2022 15:23	51	494.7	4711.3	21.8	13.9	18.3	0.068
09/01/2022 15:24	51	494.1	4706.1	22	13.9	18.5	0.068
09/01/2022 15:25	51	494.6	4710.1	22.4	13.8	18.7	0.069
09/01/2022 15:26	51	494.3	4707.7	21.8	13.8	18.3	0.067
09/01/2022 15:27	51	493	4695.1	21.7	13.9	18.2	0.067
09/01/2022 15:28	51	492.7	4692.3	22.1	13.9	18.5	0.069
09/01/2022 15:29	51	494.4	4708.4	22	13.9	18.4	0.068
09/01/2022 15:30	51	495.9	4722.4	22	13.9	18.4	0.068
09/01/2022 15:31	51	493.6	4701.2	22.3	13.8	18.6	0.068
09/01/2022 15:32	51	494.2	4707.1	21.7	13.9	18.2	0.067
09/01/2022 15:33	51	494.3	4707.5	21.9	13.9	18.4	0.068
09/01/2022 15:34	51	495.8	4722	22.2	13.8	18.6	0.068
09/01/2022 15:35	51	494.7	4711.8	22.1	13.8	18.4	0.068
09/01/2022 15:36	51	494.5	4709.4	21.7	13.9	18.2	0.067
09/01/2022 15:37	51	495	4714.7	21.8	13.9	18.3	0.068
09/01/2022 15:38	51	493.2	4697	22.1	13.8	18.4	0.068
09/01/2022 15:39	51	493.1	4696.5	21.9	13.8	18.3	0.067
09/01/2022 15:40	51	493.4	4698.9	21.8	13.9	18.2	0.068
09/01/2022 15:41	51	493.7	4701.7	21.8	13.9	18.3	0.068
09/01/2022 15:42	51	494.6	4710.2	21.9	13.8	18.3	0.067
09/01/2022 15:43	51	493.3	4698.3	21.9	13.8	18.3	0.067
09/01/2022 15:44	51	493.8	4703.3	21.8	13.8	18.2	0.067
09/01/2022 15:45	51	494.7	4711.5	21.9	13.8	18.3	0.067
09/01/2022 15:46	51	493.6	4701.3	22	13.6	18	0.066
09/01/2022 15:47	51	495	4714	21.8	13.9	18.2	0.068
09/01/2022 15:48	51	494.2	4706.5	21.9	13.9	18.4	0.068
09/01/2022 15:49	51	494	4704.4	22.3	13.8	18.6	0.068
09/01/2022 15:50	51	493.9	4703.8	22.1	13.8	18.5	0.068
09/01/2022 15:51	51	495.5	4719	21.9	13.8	18.3	0.067
09/01/2022 15:52	51	494.6	4710.2	22	13.8	18.4	0.067
09/01/2022 15:53	51	495.6	4719.7	21.9	13.9	18.3	0.068
09/01/2022 15:54	51	496.2	4725.7	22.1	13.8	18.5	0.068
09/01/2022 15:55	51	494.6	4710.9	22.2	13.9	18.6	0.069
09/01/2022 15:56	51	495.6	4720.4	22.1	13.8	18.5	0.068
09/01/2022 15:57	51	496	4724.2	22.1	13.8	18.5	0.068
09/01/2022 15:58	51	496.3	4726.7	22	13.8	18.3	0.067
09/01/2022 15:59	51	494.1	4705.4	21.7	13.9	18.2	0.067
09/01/2022 16:00	51	495.7	4721.2	22	13.8	18.4	0.067
09/01/2022 16:01	51	494.3	4707.6	22	13.8	18.4	0.067
09/01/2022 16:02	51	495.2	4716.4	22	13.8	18.4	0.067
09/01/2022 16:03	51	495.8	4721.6	22	13.8	18.4	0.067
09/01/2022 16:04	51	494.3	4708	21.9	13.9	18.3	0.068
Average:	51.0	494.3	4707.5	21.9	13.8	18.3	0.068

EUCTGHRSG3 Bypass Stack Process Data, Run2							
Date/Time	CTGHRSG3 LOADCTMW (MW) Value	CTGHRSG3 B_HEATIN (MMBTU/HR) Value	CTGHRSG3 B_GASFLW (HSCFH) Value	CTGHRSG3 B_NOXPPM (PPM) Value	CTGHRSG3 B_O2 (PERCENT) Value	CTGHRSG3 B_NXC (15PCTO2) Value	CTGHRSG3 B_NOX#MM (LB/MMBTU) Value
09/01/2022 16:45	51	493.1	4695.8	21.8	13.8	18.2	0.067
09/01/2022 16:46	51	495.3	4717.3	21.8	13.8	18.2	0.067
09/01/2022 16:47	51	496.1	4724.8	21.9	13.8	18.3	0.067
09/01/2022 16:48	51	494.6	4710.2	21.7	13.8	18.1	0.066
09/01/2022 16:49	51	493.8	4703.2	21.6	13.8	18.1	0.066
09/01/2022 16:50	51	494.5	4709.3	21.6	13.8	18	0.066
09/01/2022 16:51	51	492.9	4694.5	21.7	13.8	18.1	0.066
09/01/2022 16:52	51	494.5	4709.7	21.6	13.8	18	0.066
09/01/2022 16:53	51	495.1	4715.7	21.5	13.8	17.9	0.066
09/01/2022 16:54	51	493.6	4700.8	21.8	13.8	18.2	0.067
09/01/2022 16:55	51	495.3	4716.9	21.8	13.8	18.2	0.067
09/01/2022 16:56	51	495.6	4720.3	21.8	13.8	18.2	0.067
09/01/2022 16:57	51	492.3	4688.6	21.7	13.8	18.1	0.066
09/01/2022 16:58	51	492.5	4690.4	21.5	13.8	18	0.066
09/01/2022 16:59	51	492.6	4691	21.3	13.8	17.8	0.065
09/01/2022 17:00	51	494.6	4710.4	21.3	13.9	17.9	0.066
09/01/2022 17:01	51	494.8	4712.8	21.7	13.8	18.2	0.066
09/01/2022 17:02	51	496.9	4732.1	21.9	13.8	18.3	0.067
09/01/2022 17:03	51	494.8	4712.1	22	13.8	18.4	0.067
09/01/2022 17:04	51	495.1	4715.7	21.9	13.8	18.2	0.067
09/01/2022 17:05	51	494.2	4707.1	21.6	13.8	18	0.066
09/01/2022 17:06	51	493.3	4697.9	21.5	13.8	17.9	0.066
09/01/2022 17:07	51	492.8	4693.7	21.6	13.8	18	0.066
09/01/2022 17:08	51	492.6	4691	21.6	13.8	18.1	0.066
09/01/2022 17:09	51	493.1	4695.8	21.6	13.8	18.1	0.066
09/01/2022 17:10	51	494.7	4711.9	21.7	13.8	18.2	0.066
09/01/2022 17:11	51	493.5	4700.4	21.9	13.8	18.3	0.067
09/01/2022 17:12	51	494.8	4712.5	21.7	13.8	18.1	0.066
09/01/2022 17:13	51	494.7	4711.4	21.7	13.8	18.1	0.066
09/01/2022 17:14	51	494.5	4709.7	21.7	13.8	18.1	0.066
09/01/2022 17:15	51	492.8	4693.6	21.4	13.8	17.9	0.066
09/01/2022 17:16	51	493.1	4695.9	21.4	13.8	17.9	0.066
09/01/2022 17:17	51	493.5	4699.8	21.6	13.8	18.1	0.066
09/01/2022 17:18	51	493.6	4701.1	21.7	13.8	18.1	0.066
09/01/2022 17:19	51	493.3	4698.3	21.7	13.8	18.1	0.066
09/01/2022 17:20	51	494.9	4713.2	21.8	13.8	18.2	0.067
09/01/2022 17:21	51	494.3	4707.5	21.7	13.8	18.1	0.066
09/01/2022 17:22	51	494.2	4706.6	21.7	13.8	18.1	0.066
09/01/2022 17:23	51	494.9	4713.6	21.7	13.8	18.2	0.066
09/01/2022 17:24	51	494.9	4713	21.8	13.8	18.3	0.067
09/01/2022 17:25	51	493.3	4698.3	21.8	13.8	18.2	0.067
09/01/2022 17:26	51	494.4	4708.2	21.8	13.8	18.2	0.067
09/01/2022 17:27	51	494.7	4711.4	21.8	13.8	18.2	0.067
09/01/2022 17:28	51	495.5	4719.5	21.6	13.9	18.1	0.067
09/01/2022 17:29	51	495.7	4720.6	21.8	13.8	18.2	0.067
09/01/2022 17:30	51	493.2	4697.2	22.1	13.8	18.4	0.068
09/01/2022 17:31	51	495.3	4717	21.6	13.8	18	0.066
09/01/2022 17:32	51	494.2	4706.3	21.9	13.8	18.3	0.067
09/01/2022 17:33	51	493.4	4698.6	21.8	13.8	18.1	0.067
09/01/2022 17:34	51	494.6	4710.1	21.6	13.8	18	0.066
09/01/2022 17:35	51	492.5	4690.9	21.8	13.8	18.2	0.067
09/01/2022 17:36	51	494	4705.1	21.6	13.8	18.1	0.066
09/01/2022 17:37	51	493.8	4702.8	21.6	13.8	18	0.066
09/01/2022 17:38	51	494.2	4706.3	21.4	13.8	17.9	0.066
09/01/2022 17:39	51	493.6	4700.9	21.7	13.8	18.1	0.066
09/01/2022 17:40	51	494	4705.1	21.5	13.8	17.9	0.066
09/01/2022 17:41	51	493.9	4703.8	21.7	13.8	18	0.066
09/01/2022 17:42	51	493.4	4699.4	21.5	13.8	17.9	0.066
09/01/2022 17:43	51	493.3	4697.8	21.3	13.8	17.8	0.065
09/01/2022 17:44	51	493.9	4703.8	21.5	13.8	17.9	0.066
Average:	51.0	494.1	4705.8	21.7	13.8	18.1	0.066

EUCTGHRSG3 Bypass Stack Process Data, Run3							
Date/Time	CTGHRSG3 LOADCTMW (MW) Value	CTGHRSG3 B_HEATIN (MMBTU/HR) Value	CTGHRSG3 B_GASFLW (HSCFH) Value	CTGHRSG3 B_NOXPPM (PPM) Value	CTGHRSG3 B_O2 (PERCENT) Value	CTGHRSG3 B_NXC (15PCTO2) Value	CTGHRSG3 B_NOX#MM (LB/MMBTU) Value
09/01/2022 18:03	51	494.6	4710	21.4	13.8	17.8	0.066
09/01/2022 18:04	51	493.7	4702.1	21.2	13.8	17.7	0.065
09/01/2022 18:05	51	493.6	4700.9	21.4	13.8	17.8	0.066
09/01/2022 18:06	51	494.2	4706.2	21.4	13.8	17.8	0.066
09/01/2022 18:07	51	495.1	4715.7	21.5	13.8	18	0.066
09/01/2022 18:08	51	494.3	4708	21.5	13.8	17.9	0.066
09/01/2022 18:09	51	495	4714.6	21.4	13.8	17.8	0.066
09/01/2022 18:10	51	496.4	4727.5	21.2	13.8	17.7	0.065
09/01/2022 18:11	51	496.2	4726	21.4	13.8	17.9	0.066
09/01/2022 18:12	51	495.1	4715.4	21.4	13.8	17.9	0.066
09/01/2022 18:13	51	495.7	4720.7	21.5	13.8	18	0.066
09/01/2022 18:14	51	496.6	4729.9	21.5	13.8	17.9	0.066
09/01/2022 18:15	51	495.5	4719	21.5	13.8	17.9	0.066
09/01/2022 18:16	51	497.3	4735.9	21.5	13.8	17.9	0.066
09/01/2022 18:17	51	496.4	4727.2	21.7	13.8	18.1	0.066
09/01/2022 18:18	51	495.2	4716.4	21.4	13.8	17.9	0.066
09/01/2022 18:19	51	494.2	4706.7	21.5	13.8	17.9	0.066
09/01/2022 18:20	51	496.3	4726.6	21.4	13.8	17.9	0.066
09/01/2022 18:21	51	494.2	4706.7	21.6	13.8	18	0.066
09/01/2022 18:22	51	494.5	4709.7	21.5	13.8	18	0.066
09/01/2022 18:23	51	496.7	4730.6	21.6	13.8	18	0.066
09/01/2022 18:24	51	495.2	4716.1	21.7	13.8	18.1	0.066
09/01/2022 18:25	51	496	4724.1	21.6	13.8	18	0.066
09/01/2022 18:26	51	495.8	4721.5	21.4	13.8	17.8	0.066
09/01/2022 18:27	51	496.1	4725	21.7	13.8	18.1	0.066
09/01/2022 18:28	51	495.7	4720.6	21.7	13.8	18.1	0.066
09/01/2022 18:29	51	496.3	4726.4	21.5	13.8	17.9	0.066
09/01/2022 18:30	51	494.2	4706.6	21.6	13.8	18.1	0.066
09/01/2022 18:31	51	495.3	4717.4	21.6	13.8	18	0.066
09/01/2022 18:32	51	495.4	4718.5	21.6	13.8	18	0.066
09/01/2022 18:33	51	496.3	4726.9	21.6	13.8	18	0.066
09/01/2022 18:34	51	495.5	4719.1	21.5	13.8	18	0.066
09/01/2022 18:35	51	497.5	4738.4	21.7	13.8	18.1	0.066
09/01/2022 18:36	51	496.2	4725.6	21.5	13.8	17.9	0.066
09/01/2022 18:37	51	497.1	4734	21.4	13.8	17.8	0.066
09/01/2022 18:38	51	498.1	4743.9	21.3	13.8	17.8	0.065
09/01/2022 18:39	51	498.4	4747	21.4	13.8	17.9	0.066
09/01/2022 18:40	51	498	4742.9	21.4	13.8	17.9	0.066
09/01/2022 18:41	51	496.6	4729.6	21.4	13.8	17.8	0.066
09/01/2022 18:42	51	495.8	4722	21.4	13.8	17.8	0.066
09/01/2022 18:43	51	498.2	4744.4	21.5	13.8	17.9	0.066
09/01/2022 18:44	51	496	4723.5	21.5	13.8	17.9	0.066
09/01/2022 18:45	51	495.9	4723	21.5	13.8	17.9	0.066
09/01/2022 18:46	51	496.3	4727.1	21.5	13.8	17.9	0.066
09/01/2022 18:47	51	496.1	4724.8	21.5	13.8	17.9	0.066
09/01/2022 18:48	51	497.1	4734.1	21.4	13.8	17.9	0.066
09/01/2022 18:49	51	496.3	4726.4	21.5	13.8	17.9	0.066
09/01/2022 18:50	51	496.6	4729.6	21.4	13.8	17.8	0.066
09/01/2022 18:51	51	496.5	4728.1	21.2	13.8	17.6	0.065
09/01/2022 18:52	51	496.9	4732.5	21.2	13.8	17.7	0.065
09/01/2022 18:53	51	496.5	4728.3	21.4	13.8	17.8	0.066
09/01/2022 18:54	51	498	4742.5	21.5	13.8	17.9	0.066
09/01/2022 18:55	51	495.7	4721.3	21.3	13.8	17.7	0.065
09/01/2022 18:56	51	495.7	4721.2	21.4	13.8	17.8	0.066
09/01/2022 18:57	51	498.6	4748.7	21.3	13.8	17.7	0.065
09/01/2022 18:58	51	494.6	4710.6	21.2	13.8	17.6	0.065
09/01/2022 18:59	51	496.9	4732	21.1	13.8	17.6	0.065
09/01/2022 19:00	51	497.8	4740.8	21.3	13.8	17.7	0.065
09/01/2022 19:01	51	496.7	4730.3	21.4	13.8	17.8	0.066
09/01/2022 19:02	51	495.1	4715.6	21.2	13.8	17.7	0.065
Average:	51.0	496.0	4724.1	21.4	13.8	17.9	0.066

END OF THE REPORT