COMPLIANCE TEST REPORT
ANR PIPELINE
CENTRAL CHARLTON COMPRESSOR STATION
UNITS EUCTCOMPENG0001 & EUCTCOMPENG0002

July 2, 2021

Prepared for:

TC Energy

TC Energy's ANR Pipeline Company
Johannesburg, MI

Prepared by:

EQM

AN ASRC INDUSTRIAL COMPANY

Environmental Quality Management, Inc.
1280 Arrowhead Court
Suite 2
Crown Point, IN 46307
(219) 661-9900
www.eqm.co
m

PN: 050614.0099.014

August 2021

PREFACE

I, Karl Mast, do hereby certify that the source emissions testing conducted at TC Energy in Johannesburg, MI was performed in accordance with the procedures set forth by the United States Environmental Protection Agency, and that the data and results submitted within this report are an exact representation of the testing.

Karl Mast
Test Supervisor

I, Karl Mast, do hereby attest that all work on this project was performed under my direct supervision, and that this report accurately and authentically presents the source emissions testing conducted at ANR's Johannesburg Compressor Station in Johannesburg, MI.

Karl Mast
Test Supervisor

SUMMARY

The compliance emissions testing was performed on Units No. EUCTCOMPENG001 (Unit 1) and No. EUCTCOMPENG002 (Unit 2) in accordance with the requirements of Michigan Department of Environment, Great lakes, and Energy (MEGLE), Permit No. MI-ROP-B7390-2021. The testing was performed utilizing USEPA Methods 3A and 7E at the Exhaust Stack sampling location. The results of the testing are detailed in the following tables.

Unit No. 1 Emission Test Results		
Run No.	**NOx Emissions (g/bhp/hr)**	**NOx (lb/hr)**
1	2.3516	19.4616
2	2.9674	24.4011
3	2.6602	22.1096
Average	2.6597	21.9907
Emission Limit	6 at 100 % Speed and Torque	53

Unit No. 2 Emission Test Results		
Run No.	**NOx Emissions (g/bhp/hr)**	**NOx (lb/hr)**
1	3.1517	23.7143
2	2.6111	19.8540
3	2.3580	18.0387
Average	2.7070	20.5357
Emission Limit	6 at 100 % Speed and Torque	53

CONTENTS

Preface.......... ii

Summary.......... iii

1 Introduction.......... 1
2 Test Results Summary.......... 2
3 Facility and Process Conditions.......... 7
4 Test Procedures.......... 11
5 Quality Assurance Procedures.......... 15
6 Conclusions.......... 16

TABLES

1 Unit 1 Test Results Summary.......... 2
2 Unit 2 Test Results Summary.......... 2
3 Unit 1 Operating & Ambient Conditions, Concentrations, & Emissions.......... 3
4 Unit 1 Emissions Concentrations/Calculated Emissions & Concentrations, Flows.......... 4
5 Unit 2 Operating & Ambient Conditions, Concentrations, & Emissions.......... 5
6 Unit 2 Emissions Concentrations/Calculated Emissions & Concentrations, Flows.......... 6
7 Unit 1 Production Data.......... 7
8 Unit 2 Production Data.......... 7
9 Unit 1 Engine Rating & General Information.......... 8
10 Unit 2 Engine Rating & General Information.......... 9

FIGURES

1 Flow Schematic.......... 10
2 Stack Configuration.......... 11

APPENDICES

A – Field Test Data
B – Process Operating Data
C – Gas Certifications
D – Correspondence
E – Sample Calculations

1. INTRODUCTION

This report presents the results of the source emissions testing conducted by Environmental Quality Management, Inc. (EQM) for TC Energy's ANR (ANR) Central Charlton Compressor Station near Johannesburg, MI. The Air Compliance Team of TC Energy's ANR Pipeline Company, contracted EQM which conducted the source emissions testing at the ANR Central Charlton Compressor Station in fulfillment of the Michigan Department of Environment, Great lakes, and Energy (MEGLE), permit no. MI-ROP-B7390-2021.

The primary purpose of this testing program was to conduct emissions testing of the internal combustion reciprocating engines Unit No. EUCTCOMPENG001 (Unit 2) and Unit No. EUCTCOMPENG002 (Unit 2), with each having an emission limit of 6 G/BHP-HR at 100 % Speed and Torque NO_x and 53 lb/hr of NO_x. EQM's responsibility was to conduct the compliance testing for the NOx and O2 emissions rates and perform data reduction for conformance evaluation. ANR's responsibility was to maintain process operating parameters and to assist in providing process operating data per compliance test requirements.

The following report provides information pertaining to TC Energy's process operations, and compliance testing. The compliance testing conducted on the Unit No. 1 and Unit No. 2 was performed on July 2, 2021 from 10:15 A.M. to 1:54 P.M.

The following requirements were specific for the testing program:

1. Equipment calibrations performed and calibration data provided.
2. Three (3) one (1) -hour, minimum, NOx and O2 test runs performed at the Unit 1 and Unit 2 pursuant to EPA Reference methods as described in 40 CFR, Part 60, Appendix A.
3. Process manufacturing operations maintained at 100% of capacities based on pipeline conditions.
4. Production and fuel consumption rates recorded during the emissions testing periods.
5. All testing and analyses performed in accordance with current EPA test methodologies and analytical procedures for NO_x and O_2 emissions determinations.
6. The analyzer's calibration was checked offsite at the higher concentration to ensure linearity at the concentrations during the test runs per MEGLE approval.

The testing program was approved by and/or coordinated with Tyrah Lydia, TC Energy's ANR Pipeline Company. The emission testing program was performed by Karl Mast, Manager, Emission Measurement and Project Manager, EQM and Zach Hill, Field Activities Lead, and Greg Tress, Test Technician, EQM. The emission testing was observed by Jeremy Howe, Environmental Quality Analysts, Air Quality Division, MEGLE.

2. TEST RESULTS SUMMARY

The compliance testing was performed on Unit No. 2 and Unit No. 2 in accordance with the requirements of permit MIROP-B7390-2021 issued by MEGLE. A summary of the test results is given below in Tables 1 and 2:

Table 1. Unit No. 1 Emission Test Results		
Run No.	**NOx Emissions (g/bhp/hr)**	**NOx (lb/hr)**
1	2.3516	19.4616
2	2.9674	24.4011
3	2.6602	22.1096
Average	2.6597	21.9907
Emission Limit	6 at 100 % Speed and Torque	53

Table 2. Unit No. 2 Emission Test Results		
Run No.	**NOx Emissions (g/bhp/hr)**	**NOx (lb/hr)**
1	3.1517	23.7143
2	2.6111	19.8540
3	2.3580	18.0387
Average	2.7070	20.5357
Emission Limit	6 at 100 % Speed and Torque	53

Based on the information provided above, the Unit No. 1 and Unit No. 2 met the acceptance criteria during the course of the testing. A complete list of performance parameters for each test run that was performed at the stack sampling locations can be found in Table 3 through 6.

Additional testing information may be found in Appendix A.

Table 3. Unit No. 1 Operating & Ambient Conditions

Run	1	2	3	
Date	07/02/21	07/02/21	07/02/21	
Time	10:15	11:40	12:55	
Engine Operating Conditions	HS-HT	HS-HT	HS-HT	Averages
Unit Horsepower from Control Panel	3,754.0	3,730.0	3,770.0	3,751.3
Unit Speed (rpm)	447.0	451.0	451.0	449.7
Compressor Suction Pressure (PSIG)	869.0	873.0	867.0	869.7
Compressor Suction Temperature (°F)	58.1	58.3	58.2	58.2
Compressor Discharge Pressure (PSIG)	1321.0	1301.0	1298.0	1,306.7
Compressor Discharge Temperature (°F)	131.5	129.9	130.3	130.6
Compressor Flow (MMSCF/D)	73.5	71.6	71.6	72.2
% Load	93.9	93.3	94.3	93.8
% Torque	97.6	96.1	97.2	97.0
Heat Rate (BTU/HP-hr)	6,503.8	6,533.1	6,389.5	6,475.5
Ambient Conditions				
Ambient Temperature (°F)	82.60	81.70	83.40	82.57
Barometric Pressure (psi)	14.02	14.02	14.01	14.02
Ambient Relative Humidity (%)	48.00	44.00	42.00	44.67
Absolute Humidity (grains/LB)	174.34	154.64	156.03	161.67

Table 4. Unit 1 Emissions Concentrations/Calculated Mass Emissions & Concentrations, Calculated Flows & Fuel Flow Measurements

Run	1	2	3	
Date	07/02/21	07/02/21	07/02/21	
Time	10:15	11:40	12:55	
Emissions Concentrations & Calculated Mass Emissions				
NO_x ppm (BIAS Corrected)	207.300	240.830	228.390	**225.507**
NO_X g/BHP-HR	2.3516	2.9674	2.6602	**2.6597**
NO_X LB/HR	19.4616	24.4011	22.1096	**21.9907**
% O_2 (BIAS Corrected)	14.65	15.12	14.92	**14.90**
Calculated Emissions Concentrations				
% CO_2 (Wet) *	3.19722	3.00022	3.08904	**3.09549**
%CO_2 (Dry) *	3.55212	3.30542	3.41073	**3.42276**
% H_2O *	9.99110	9.23323	9.43185	**9.55206**
% O_2 (Wet) *	13.18630	13.72394	13.51277	**13.47434**
% N_2 + CO (Wet) *	73.62538	74.04261	73.96635	**73.87811**
Calculated Flows				
Fuel Flow - (SCFM)	435.6667	434.8333	429.8333	**433.4444**
Fuel Flow - (SCFH)	26140.0	26090.0	25790.0	**26006.6667**
Fuel Flow (LB/HR)	1165.5910	1163.3615	1149.9844	**1159.6456**
Fuel Flow (MMcf/hr)	2.6140E-02	2.6090E-02	2.5790E-02	**2.6007E-02**
Exhaust Flow (LB/HR)	48,894.8	52,399.7	50,245.8	**50,513**
Exhaust Flow (WSCFM)	13,538.1	14,455.1	13,874.5	**13,956**
Air Flow (WSCFM)	12,608.7855	13,598.6447	12,996.6663	**13,068.0322**
Exhaust Flow Method 19 (wscfm)	13,078.3461	14,114.7601	13,485.8219	**13,559.6427**
Exhaust Flow Method 19 (lbm/min)	591.8526	637.7987	609.4457	**613.0324**
Exhaust Flow Carbon Balance (lbm/min)	1,009.9823	1,086.5787	1,039.5737	**1,045.3782**
Air flow Beshouri (scfm)	13,140.8444	14,137.4376	13,525.8572	**13,601.3797**
BSAC, #/BHP-hr	15.3075	16.6155	15.7115	**15.8782**
Fuel Flow Measurements				
Fuel Flow From Screen(MSCFH)	26.14	26.09	25.79	26.01
** BASED ON FUEL SPECIFIC DRY F-FACTOR CALCULATION	Run 1	Run 2	Run 3	
* BASED ON CARBON BALANCE (STOICH. + O2)				
- A/F IS TOTAL MASS RATIO				

RECEIVED
AUG 30 2021
AIR QUALITY DIVISION

Table 5. Unit No. 2 Operating & Ambient Conditions

Run	1	2	3	
Date	07/02/21	07/02/21	07/02/21	
Time	10:15	11:40	12:55	
Engine Operating Conditions	HS-HT	HS-HT	HS-HT	Averages
Unit Horsepower from Control Panel	3,413.0	3,449.0	3,470.0	3,444.0
Unit Speed (rpm)	450.0	450.0	450.0	450.0
Compressor Suction Pressure (PSIG)	870.0	874.0	867.0	870.3
Compressor Suction Temperature (°F)	61.7	62.0	61.8	61.8
Compressor Discharge Pressure (PSIG)	1006.0	1012.0	1008.0	1,008.7
Compressor Discharge Temperature (°F)	100.7	101.6	102.2	101.5
Compressor Flow (MMSCF/D)	53.0	53.0	52.6	52.9
% Load	85.3	86.2	86.8	86.1
% Torque	88.2	89.1	89.6	89.0
Heat Rate (BTU/HP-hr)	7,208.3	7,211.6	7,165.3	7,195.1
Ambient Conditions				
Ambient Temperature (°F)	82.40	81.30	83.30	82.33
Barometric Pressure (psi)	14.02	14.02	14.01	14.02
Ambient Relative Humidity (%)	48.00	44.00	42.00	44.67
Absolute Humidity (grains/LB)	173.17	152.58	155.51	160.42

Table 6. Unit 2 Emissions Concentrations/Calculated Mass Emissions & Concentrations, Calculated Flows & Fuel Flow Measurements

Run	1	2	3	
Date	07/02/21	07/02/21	07/02/21	
Time	10:15	11:40	12:55	
Emissions Concentrations & Calculated Mass Emissions				
NO_x ppm (BIAS Corrected)	224.61	192.31	193.51	**203.4767**
NO_X g/BHP-HR	3.1517	2.6111	2.3580	**2.7070**
NO_X LB/HR	23.7143	19.8540	18.0387	**20.5357**
% O_2 (BIAS Corrected)	15.30	15.11	14.49	**14.9667**
Calculated Emissions Concentrations				
% CO_2 (Wet) *	2.8872	2.9837	3.2530	**3.0413**
%CO_2 (Dry) *	3.1857	3.2846	3.6041	**3.3581**
% H_2O *	9.3713	9.1628	9.7402	**9.4248**
% O_2 (Wet) *	13.8662	13.7255	13.0786	**13.5568**
% N_2 + CO (Wet) *	73.8754	74.1280	73.9281	**73.9772**
Calculated Flows				
Fuel Flow - (SCFM)	439.0000	443.8333	443.6667	**442.1667**
Fuel Flow - (SCFH)	26340.0	26630.0	26620.0	**26530.0**
Fuel Flow (LB/HR)	1174.5091	1187.4403	1186.9943	**1182.9812**
Fuel Flow (MMcf/hr)	2.6340E-02	2.6630E-02	2.6620E-02	**2.6530E-02**
Exhaust Flow (LB/HR)	54,145.0495	53,482.4558	48,916.1942	**52,181.2332**
Exhaust Flow (WSCFM)	15,108.6842	14,841.9645	13,600.8572	**14,517.1686**
Air Flow (WSCFM)	14,166.0965	13,856.3491	12,522.4615	**13,514.9690**
Exhaust Flow Method 19 (wscfm)	14,708.0469	14,382.0192	12,986.0564	**14,025.3741**
Exhaust Flow Method 19 (lbm/min)	665.5400	649.7764	586.8439	**634.0534**
Exhaust Flow Carbon Balance (lbm/min)	1,130.8457	1,107.2285	1,003.9117	**1,080.6620**
Air flow Beshouri (scfm)	14,713.3941	14,406.1122	13,061.8605	**14,060.4556**
BSAC, #/BHP-hr	18.9165	18.3097	16.4470	**17.8911**
Fuel Flow Measurements				
Fuel Flow From Screen(MSCFH)	**26.34**	**26.63**	**26.62**	**26.53**
**** BASED ON FUEL SPECIFIC DRY F-FACTOR CALCULATION**	Run 1	Run 2	Run 3	
*** BASED ON CARBON BALANCE (STOICH. + O2)**				
- A/F IS TOTAL MASS RATIO				

3. PROCESS DESCRIPTION

TC Energy's ANR Pipeline Company Central Charlton Compressor Station (ANR) is located in Johannesburg, MI and operates a natural gas fired compressor station. The plant is located at 14490 Beckett Road, Johannesburg, MI. The facility has two Cooper Bessemer model 12Q145-HM natural gas fired internal combustion reciprocating engines labeled EUCTCOMPENG001 (Unit 1) and EUCTCOMPENG002 (Unit 2).

Unit No. 1 and Unit 2 are two-stroke lean-burn natural gas fired internal combustion reciprocating engine driving gas compressors. The energy released during the combustion process drives integral reciprocating gas compressors, thus raising the pressure of the incoming natural gas to inject or withdraw natural gas from a natural gas storage field.

The following tables provide a summary of the production rates and general information for the Unit No. 1 and Unit No. 2 during the test:

Table 7. Unit 1 Horsepower (HP)

Run No.	HP	RPM
1	3,754.0	447.0
2	3,730.0	451.0
3	3,770.0	451.0
Average	3,751.3	449.7
Rated	4,000	465

Table 8. Unit 2 Horsepower (HP)

Run No.	HP	RPM
1	3,413.0	450.0
2	3,449.0	450.0
3	3,470.0	450.0
Average	3,444.0	450.0
Rated	4,000	465

Table 9. Unit 1 Engine Rating and General Information

General Information

Date:	2-Jul-21
Company:	TC Energy
Station:	Central Charlton
Unit:	1
Engine Type:	Cooper Bessemer
Model No.	12Q145-HM
Rated RPM:	465 RPM
Rated BHP:	4000 BHP

Permit Limits

	ppm@15%	g/Bhp-Hr	lb/hr	TPY
NOx:		6	53	
CO:				
VOC:				
H2CO:				

Limits are actuallly listed as average values

Fuel Gas Analysis

Constituent	Mole Percent
Nitrogen	0.502
Carbon Dioxide	0.621
Methane	94.678
Ethane	4.080
Propane	0.113
I-Butane	0.004
N-Butane	0.003
I-Pentane	0.000
N-Pentane	0.000
Hexane +	0.000
Total	100.000

Fuel Meter Type

Enter Type from List Below: 2

Orifice Meter (upstream pressure tap):	1
Orifice Meter (downstream pressure tap):	2
Electronic Flow Meter (EFM):	3
Venturi (Nozzle) Meter:	4
Roots Meter w/ Accumulator:	5

Pipe I.D.: 3.068

Orifice I.D.: 1.5

Table 10. Unit 2 Engine Rating and General Information

General Information

Date:	2-Jul-21
Company:	Tc Energy
Station:	Central Chatrlton
Unit:	2
Engine Type:	Cooper Bessemer
Model No.	12Q145-HM
Rated RPM:	465 RPM
Rated BHP:	4000 BHP

Permit Limits

	ppm@15%	g/Bhp-Hr	lb/hr	TPY
NOx:		6	53	
CO:				
VOC:				
H2CO:				

Limits are actuallly listed as average values

Fuel Gas Analysis

Constituent	Mole Percent
Nitrogen	0.502
Carbon Dioxide	0.621
Methane	94.678
Ethane	4.080
Propane	0.113
I-Butane	0.004
N-Butane	0.003
I-Pentane	0.000
N-Pentane	0.000
Hexane +	0.000
Total	100.000

Fuel Meter Type

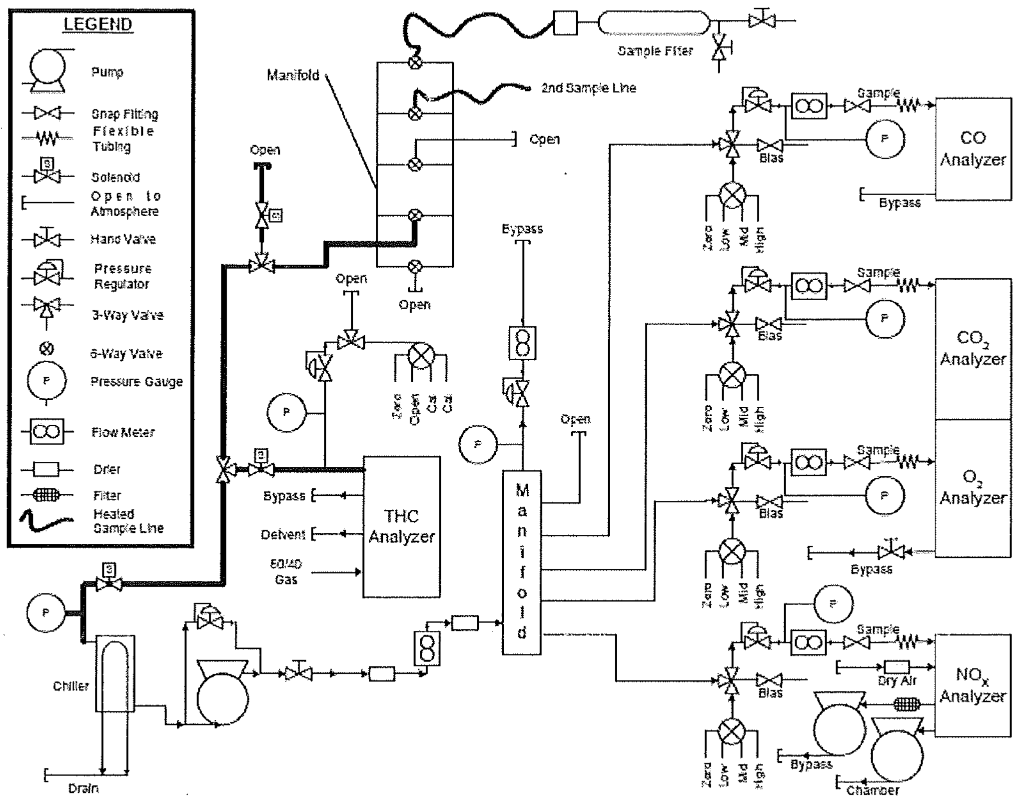
Enter Type from List Below: 2

Orifice Meter (upstream pressure tap):	1
Orifice Meter (downstream pressure tap):	2
Electronic Flow Meter (EFM):	3
Venturi (Nozzle) Meter:	4
Roots Meter w/ Accumulator:	5

Pipe I.D.: 3.068

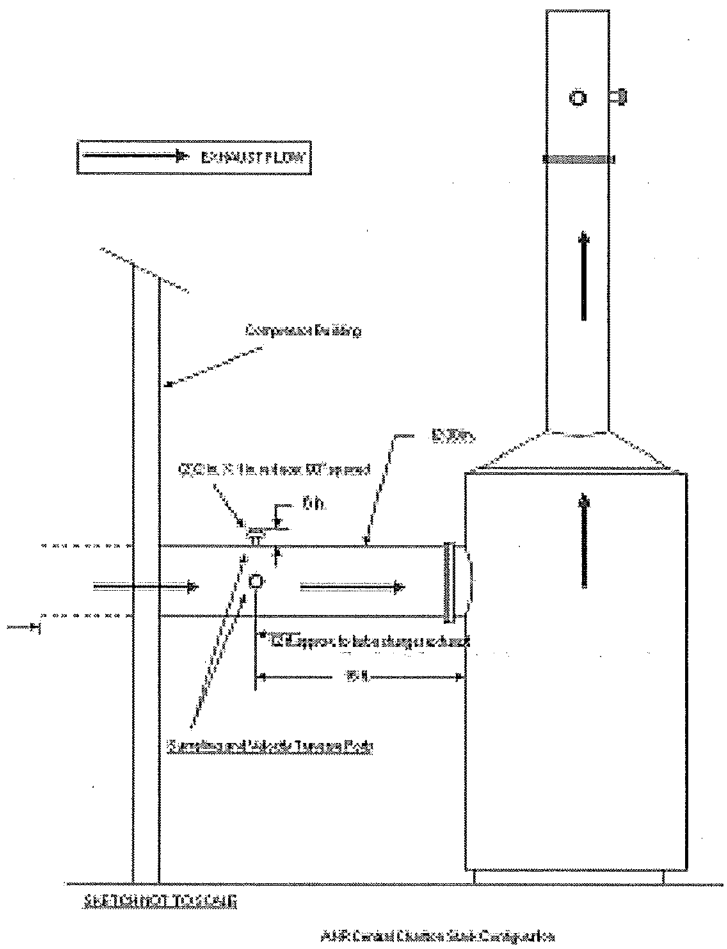
Orifice I.D.: 1.5

Figure 1. Flow Schematic



Additional Information pertaining to the Fuel Flows may be found in Appendix B.

Figure 2. Stack Configuration



4. TEST PROCEDURES

EQM and EQM's affiliates and subcontractors use current U.S. EPA accepted testing methodologies in their Air Quality Programs as listed in the U.S. Code of Federal Regulations, Title 40, Part 60, Appendix A. For this testing program, the following specific methodologies were utilized:

- U.S. EPA Method 3A – Determination of Oxygen and Carbon Dioxide Concentrations in Emissions From Stationary Sources (Instrumental Analyzer Procedure)
- U.S. EPA Method 7E – Determination of Nitrogen Oxides Emissions From Stationary Sources (Instrumental Analyzer Procedure)
- U.S. EPA Method 19– Determination of Stack Gas Volumetric Flow Rate by Fuel "F" Factor and Heat Input

USEPA Methods 3A and 7E were performed at the Exhaust Stack sampling location by continuously extracting a gas sample from the stack through a single point stainless steel sample probe. The extracted sample was pulled through a series of filters to remove any particulate matter. Directly after the probe, the sample was conditioned by a series of refrigeration dryers to remove moisture from the gas stream. After the refrigeration dryers, the sample was transported through a Teflon® line to the analyzers. The flow of the stack gas sample was regulated at a constant rate to minimize drift.

At the start of the day, each monitor was checked for calibration error by introducing zero, mid-range and high-range EPA Protocol 1 gases to the measurement system at a point upstream of the analyzers. In this report, the calibration error test is referred to as instrument calibration. The gas was injected into the sampling valve located at the outlet of the sampling probe. The bias test was conducted before and after each consecutive test run by introducing zero and upscale calibration gases for each monitor. The upscale calibration gases used for each monitor were the high calibration gases.

Measurement System Performance Specifications were as follows:

- Analyzer Calibration Error - Less than +/- 2% of the span of the zero, mid-range and high-range calibration gases.
- Sampling System Bias - Less than +/-5% of the span for the zero, mid-range and high-range calibration gases.
- Zero Drift - Less than +/-3% of the span over the period of each test run.
- Calibration Drift - Less than +/-3% of the span over the period of each set of runs.

Calculations that were used in this testing event are as follows:

Calibration Correction

$$C_{GAS} = (C_R - C_O)\frac{C_{MA}}{C_M - C_O}$$

Where:

C_{GAS}:	Corrected flue gas concentration (ppmvd)
C_R:	Flue gas concentration (ppmvd)
C_O:	Average of initial and final zero checks (ppmvd)
C_M:	Average of initial and final span checks (ppmvd)
C_{MA}:	Actual concentration of span gas (ppmvd)

EPA F-Factor

$$F_d = \frac{\left[(3.64 \cdot H_{Wt\%} \cdot 100) + (1.53 \cdot C_{Wt\%} \cdot 100)\right]}{\frac{GCV}{\rho_{FuelGas}}} \cdot 10^6 + \frac{\left[(0.14 \cdot N_{2Wt\%} \cdot 100) - (0.46 \cdot O_{2Wt\%} \cdot 100)\right]}{\frac{GCV}{\rho_{FuelGas}}} \cdot 10^6$$

Where:

F_d:	Fuel specific F-factor, dscf/MMBtu
$H_{Wt\%}$:	Hydrogen weight percent
$C_{Wt\%}$:	Carbon weight percent
$N_{2Wt\%}$:	Nitrogen weight percent
$O_{2Wt\%}$:	Oxygen weight percent
GCV:	Heating value of the fuel, BTU/dscf
$\rho_{Fuel\ Gas}$:	Density of the fuel gas, lb/scf

Mass Emissions g/bhp-hr)

$$Em = Cd \times Fd \times \frac{20.9}{(20.9 - \%O_2)} \times Qh \times \frac{GCV}{10^6} \times \frac{453.6}{BHP}$$

Where:

Cd:	Pollutant concentration, NOx lb/scf
$\%O_2$:	Oxygen concentration in percent, measured on a dry basis
Fd:	Fuel specific F-factor, dscf/MMBtu
Qh:	Fuel rate, scf/hr
GCV:	Heating value fuel, Btu/scf

Mass Emission Calculations lb/hr

$$NOx_{\frac{lb}{hr}} = C_d \times F_d \times \frac{20.9}{20.9 - \%O_2} \times Q_h \times \frac{GCV}{10^6}$$

Where:

C_d:	Pollutant concentration, lb/scf
F_d:	Fuel specific F-factor, dscf/MMBtu
Q_h:	Fuel flow, scf/hr
$\%O_2$:	Oxygen concentration in percent, measured on a dry basis
GCV:	Upper dry heating value of fuel, Btu/dscf

5. QUALITY ASSURANCE PROCEDURES

Each reference method presented in the U.S. Code of Federal Regulations details the instrument calibration requirements, sample recovery and analysis, data reduction and verification, types of equipment required, and the appropriate sampling and analytical procedures to ensure maximum performance and accuracy. EQM and EQM's affiliates and subcontractors adhere to the guidelines for quality control set forth by the United States Environmental Protection Agency. These procedures are outlined in the following documents:

- Code of Federal Regulations, Title 40, Part 51
- Code of Federal Regulations, Title 40, Part 60
- Quality Assurance Handbook, Volume 1, EPA 600/9-76-005
- Quality Assurance Handbook, Volume 2, EPA 600/4-77-027a
- Quality Assurance Handbook, Volume 3, EPA 600/4-77-027b

6. CONCLUSIONS

An emissions testing program was conducted on the Unit No.1 and Unit No. 2 at TC Energy's ANR Pipeline Company's Central Charlton Compressor Station located in Johannesburg, Michigan. The testing was conducted on July 2, 2021.

During the testing, the Engine Unit No. 1 and Unit No. 2 conformed to the requirements of Code Of Federal Regulations, Title 40, Part 60, Appendix A, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

The usefulness and/or significance of the emissions values presented in this document as they relate to the compliance status of the Unit No. 1 and Unit No. 2 emissions shall be determined by others.

For additional information pertaining to the testing program see Appendix E of this report.

A. FIELD TEST DATA