BTEC Inc.

VOC, CO, NOx, and CH_2O Emissions Test Report

Prepared for:

North American Natural Resources, Inc.

Okemos, Michigan

Autumn Hills Generating Station
5615 Adams Street
Zeeland, Michigan 49464

Project No. 15-4670.00
April 3, 2015

BT Environmental Consulting, Inc.
4949 Fernlee Avenue
Royal Oak, Michigan 48073
(248) 548-8070

EXECUTIVE SUMMARY

BT Environmental Consulting, Inc. (BTEC) was retained by North American Natural Resources (NANR) to evaluate oxides of nitrogen (NOx), carbon monoxide (CO), and volatile organic compound (VOC) emission rates from three reciprocating engines and formaldehyde (CH_2O) from one of the three engines. The three engines are located at the NANR Autumn Hills Generating Station in Zeeland Michigan. Field sampling for this emission test program was conducted on February 17 and February 18, 2015. The purpose of this report is to document the results of the emission compliance test program.

Testing consisted of triplicate 60-minute test runs for NOx, CO, formaldehyde, and VOC. The results of the emissions test program are summarized by Table E-I.

Table E-I
North American Natural Resources
Autumn Hills Generating Station
Landfill Gas-Fired Reciprocating Engines 1, 2, and 4
Compliance Test Program Results Summary

Source	Pollutant	Test Result	Emission Limitation
EUENGINE 1	NOx	0.90 g/bhp-hr	2.0 g/bhp-hr
	CO	2.21 g/bhp-hr	3.1 g/bhp-hr
	VOC*	0.00 g/bhp-hr	0.41 g/bhp-hr
EUENGINE 2	NOx	0.90 g/bhp-hr	2.0 g/bhp-hr
	CO	2.39 g/bhp-hr	3.1 g/bhp-hr
	VOC	0.04 g/bhp-hr	0.41 g/bhp-hr
EUENGINE 4	NOx	0.30 g/bhp-hr	0.5 g/bhp-hr
		1.5 lb/hr	2.46 lb/hr
	CO	2.04 g/bhp-hr	5.0 g/bhp-hr
		10.1 lb/hr	20.7 lb/hr
	VOC	0.04 g/bhp-hr	1.0g/bhp-hr
		0.4 lb/hr	3.20 lb/hr
	CH_2O	1.6 lb/hr	2.20 lb/hr

* All VOC emissions were determined to be Methane (CH_4)

1. Introduction

BT Environmental Consulting, Inc. (BTEC) was retained by North American Natural Resources (NANR) to evaluate oxides of nitrogen (NOx), carbon monoxide (CO), and volatile organic compound (VOC) emission rates from three reciprocating engines, and formaldehyde from one of the three engines. The three engines are located at the NANR Autumn Hills Generating Station in Zeeland Michigan. Field sampling for this emission test program was conducted on February 17 and February 18, 2015. The purpose of this report is to document the results of the emission compliance test program.

The Air Quality Division (AQD) of Michigan's Department of Natural Resources and Environment has published a guidance document entitled "Format for Submittal of Source Emission Test Plans and Reports" (December 2013). The following is a summary of the emissions test program and results in the format outlined by the AQD document.

1.a Identification, Location, and Dates of Test

Field-sampling for this emission test program was conducted on February 17 and February 18, 2015 at the North American Natural Resources facility located at the Autumn Hills Generating Station in Zeeland Michigan. The purpose of this report is to document the results of the compliance test program.

The emission test program included the evaluation of NOx, CO, and VOC emission rates from three reciprocating engines, and formaldehyde from one of the three engines

1.b Purpose of Testing

ROP No. MI-ROP-P0264-2012 includes the emission limitations listed in Table 1.

Table 1
ROP No. MI-ROP-P0264-2012 Emission Limitations

Source	Pollutant	Emission Limitation	Emission Limitation Units
EUENGINE 1 and EUENGINE 2	NOx	2.0	g/bhp*Hr
	CO	3.1	g/bhp*Hr
	VOC	0.41	g/bhp*Hr
	CH_2O	1.71	lb/hr
EUENGINE 4	NOx	0.5	g/bhp*Hr
		2.46	lb/hr
	CO	5.0	g/bhp*Hr
		20.7	lb/hr
	VOC	1.0	g/bhp*Hr
		3.20	lb/hr
	CH_2O	2.20	lb/hr

The purpose of the testing was to quantify NOx, CO, VOC, formaldehyde emission rates in terms of lb/hr and/or g/bhp-hr. These emission rates will be utilized to demonstrate compliance with ROP No. MI-ROP-P0264-2012 as well as the requirements of Title 40, Part 60, Subpart JJJJ of the Code of Federal Regulations (40 CFR 60, Subpart JJJJ).

1.c Source Description

All engines are landfill gas-fired, spark-ignition, lean-burn reciprocating engines. Engines 1 and 2 are rated at 1148 bhp each, Engine 4 is rated at 2242 bhp.

1.d Test Program Contact

The contact for the source and test plan is:

Mr. Richard Spranger
Environmental Manager
North American Natural Resources
4516 Rathburn Road
Birch Run, Michigan 48415
(517) 719-1322

1.e Test Personnel

Names and affiliations for personnel who were present during the testing program are summarized by Table 2.

Table 2
Test Personnel

Name and Title	Affiliation	Telephone
Mr. Richard Spranger Environmental Manager	North American Natural Resources - Lennon, Michigan	(517) 719-1322
Mr. Matthew Young Project Manager	BTEC 4949 Fernlee Avenue Royal Oak, MI 48073	(248) 548-8070
Mr. Kenny Felder Environmental Technician	BTEC 4949 Fernlee Avenue Royal Oak, MI 48073	(248) 548-8070
Mr. Paul Diven Environmental technician	BTEC 4949 Fernlee Avenue Royal Oak, MI 48073	(248) 548-8070
Mr. Tom Gasloli Technical Programs Unit	MDEQ Technical Programs Unit Air Quality Division	(517) 335-4861

2. Summary of Results

Sections 2.a through 2.d summarize the results of the emission compliance test program.

2.a Operating Data

Operating data measured during the emissions test program includes landfill gas fuel use, landfill gas methane concentration, engine kilowatts, engine horsepower or brake horsepower, and exhaust temperature.

2.b Applicable Permit

The applicable permits for this emissions test program are AQD Renewable Operating Permit No. MI-ROP-P0264-2012.

2.c Results

The overall results of the emission compliance test program are summarized by Table 3 (see Section 5.a).

2.d Emission Regulation Comparison

Emission limitations and corresponding test program results are summarized by Table 3.

3. Source Description

Sections 3.a through 3.e provide a detailed description of the process.

3.a Process Description

Landfill Gas is compressed, filtered, and chilled to 50 degrees Fahrenheit. Gas enters a main header where flow, temperature, and methane content are measured. The engines burn the landfill gas to produce electricity. As methane content fluctuates throughout the day, the engines gas jets are adjusted to minimize emissions.

3.b Raw and Finished Materials

The raw material supplied to the engine includes landfill gas. The finished material is electricity.

3.c Process Capacity

Engines 1 and 2 are rated at 1148 bhp each, Engine 4 is rated at 2,233 bhp.

3.d Process Instrumentation

Engine performance is determined by methane input and kW output.

4. Sampling and Analytical Procedures

Sections 4.a through 4.d provide a summary of the sampling and analytical procedures used to verify emission rates from the landfill gas engines.

4.a Sampling Train and Field Procedures

Sampling and analysis procedures utilized the following test methods codified at Title 40, Part 60, Appendix A of the Code of Federal Regulations (40 CFR 60, Appendix A):

- Method 1 - "Sample and Velocity Traverses for Stationary Sources"
- Method 2 - "Determination of Stack Gas Velocity and Volumetric Flowrate"
- Method 3A - "Determination of Molecular Weight of Dry Stack Gas"
- Method 4 - "Determination of Moisture Content in Stack Gases"
- Method 7E - "Determination of Nitrogen Oxide Emissions from Stationary Sources"
- Method 10 - "Determination of Carbon Monoxide Emissions from Stationary Sources"
- Method 25A - "Determination of Total Gaseous Organic Concentration Using a Flame Ionization analyzer"
- Method 320 - "Vapor Phase Organic & Inorganic Emissions by Extractive FTIR"

Moisture, NOx, CO, and VOC was measured on Engine 1 and Engine 2 using Methods 4, 7E, 10, and 25A.

Moisture, NOx, CO, VOC, and CH_2O was measured using Method 320 on Engine 4.

The NO_x content of the exhaust gas was measured using a TECO 42C NO_x gas analyzer and the O_2, CO, and CO_2 contents were measured using API Teledyne analyzers. A sample of the gas stream was drawn through an insulated stainless-steel probe with an in-line glass fiber filter to remove any particulate, a heated Teflon® sample line, and through a Universal Analyzers 3080PV electronic sample conditioner to remove the moisture from the sample before it entered the analyzer. Data was recorded at 4-second intervals on a PC equipped with data acquisition software.

BTEC conducted a NO_2 to NO conversion efficiency test, as specified in U.S. EPA Method 7E on the analyzer. The results of the NO_2 to NO conversion efficiency test can be found on the enclosed compact disc.

The VOC content of the exhaust was measured using a J.U.M. Model 109A analyzer. A sample of the gas stream was drawn through an insulated stainless-steel probe with an in-line glass fiber filter to remove any particulate and a heated Teflon® sample line to prevent the condensation of any moisture from the sample before it enters the analyzer. Data was recorded at 4-second intervals on a PC equipped with data acquisition software.

For analyzer calibrations, calibration gases were mixed to desired concentrations using an Environics Series 3737 Computerized Gas Dilution System. The Series 3737 consisting of a single chassis with four mass flow controllers. The mass flow controllers are factory-calibrated using a primary flow standard traceable to the United States' National Institute of Standards and Technology (NIST). Each flow controller utilizes an 11 point calibration table with linear interpolation, to increase accuracy and reduce flow controller nonlinearity. Schematic drawings of the continuous emission monitoring system are provided as Figures 3 and 4.

USEPA Method 205, Verification of Gas Dilution Systems for Field Instrument Calibrations, was performed on February 16, 2016. The results of this verification can be found in Appendix B and electronically in Appendix D.

FTIR data were collected using a MKS MultiGas 2030 FTIR spectrometer, serial number 016252291. The sampling system consisted of: 2 ft., 1/4 inch diameter, stainless steel probe; 150 ft. (combination of 100 ft. and 50 ft. lines), 3/8 inch diameter, Teflon heated transfer lines, maintained at 191°C; and a 0.01µ glass filter for particulate matter removal.

The FTIR was equipped with a temperature-controlled, 5.11 meter multipass gas cell maintained at 191°C. Gas flows and sampling system pressures were monitored using a rotometer and pressure transducer. All data were collected at 0.5 cm^{-1} resolution. Each spectrum was derived from the coaddition of 64 scans, with a new data point generated approximately every one minute.

Direct FTIR measurements of N_2, acetaldehyde, SF_6, and ethylene gas standards were made at each test location to confirm concentrations.

A calibration transfer standard (CTS), 100.4 ppm ethylene standard (Airgas Cylinder # SG881831BAL), was analyzed before and after testing at each test location. The concentration determined for all CTS runs were within ± 5% of the certified value of the standard. The ethylene was passed through the entire system (system purge) to determine the sampling system response time and to ensure that the sampling system was leak-free at the stack location.

See the FTIR Report by Prism included in Appendix F for a more detailed explanation of the FTIR sampling train. See Figure 6 for a schematic of the sampling train

4.b Recovery and Analytical Procedures

Recovery and analytical procedures were described in Section 4.a.

4.c Sampling Ports

All sampling was completed at the engine exhaust ducts located outside the building. Two sampling ports positioned 90° apart were installed along the horizontal portion of the ductwork.

5. Test Results and Discussion

Sections 5.a through 5.k provide a summary of the test results.

5.a Results Tabulation

The results of the emissions test program are summarized by Table 3.

Table 3
North American Natural Resources
Autumn Hills Generating Station
Landfill Gas-Fired Reciprocating Engines 1, 2 and 4
Compliance Test Program Results Summary

Source	Pollutant	Test Result	Emission Limitation
EUENGINE 1	NOx	0.90 g/bhp-hr	2.0 g/bhp-hr
	CO	2.21 g/bhp-hr	3.1 g/bhp-hr
	VOC*	0.00 g/bhp-hr	0.41 g/bhp-hr
EUENGINE 2	NOx	0.90 g/bhp-hr	2.0 g/bhp-hr
	CO	2.39 g/bhp-hr	3.1 g/bhp-hr
	VOC	0.04 g/bhp-hr	0.41 g/bhp-hr
EUENGINE 4	NOx	0.30 g/bhp-hr	0.5 g/bhp-hr
		1.5 lb/hr	2.46 lb/hr
	CO	2.04 g/bhp-hr	5.0 g/bhp-hr
		10.1 lb/hr	20.7 lb/hr
	VOC	0.04 g/bhp-hr	1.0g/bhp-hr
		0.4 lb/hr	3.20 lb/hr
	CH_2O	1.6 lb/hr	2.20 lb/hr

* All VOC emissions were determined to be Methane (CH_4)

Detailed data for each test run can be found in Tables 4-6.

5.b Discussion of Results

Emission limitations for Michigan ROP No. MI-ROP-P0264-2012 along with results of the emissions test program are summarized by Table 3.

5.c Sampling Procedure Variations

When reducing the VOC and Methane data it was noted that when methane was subtracted the results would be less than zero. This demonstrates that all of the VOC in the exhaust was comprised of methane which is excluded from the definition of VOC.

5.d Process or Control Device Upsets

No upset conditions occurred during testing.

5.e Control Device Maintenance

No control device maintenance was performed.

5.f Audit Sample Analyses

No audit samples were collected as part of the test program.

5.g Calibration Sheets

All relevant equipment calibration documents are provided as Appendix B.

5.h Sample Calculations

Sample calculations are provided in Appendix C.

5.i Field Data Sheets

Field documents relevant to the emissions test program are presented in Appendix A.

5.j Laboratory Data

There are no laboratory results for this test program. FTIR results can are presented in Appendix E.

Table 4
Engine 1 NOx, CO, and VOC Emissions Rates
North American Natural Resources
Zeeland, MI
BTEC Project No. 14-4572.00
Sampling Date: February 18, 2015

kW	800	800	800	
Parameter	**Run 1**	**Run 2**	**Run 3**	**Average**
Test Run Date	2/18/2015	2/18/2015	2/18/2015	
Test Run Time	8:47-9:47	10:38-11:38	11:58-12:58	
Outlet Flowrate (dscfm)	2,339	2,342	2,301	**2,327**
Outlet Flowrate (scfm)	2,631	2,652	2,618	**2,634**
bhp	1,121	1,121	1,121	**1,121**
Outlet Oxides of Nitrogen Concentration (ppmv)	128.3	144.5	146.6	**139.8**
Outlet NOx Concentration (ppmv, corrected as per USEPA 7E)	121.0	138.6	141.3	**133.6**
NOx Emission Rate (lb/hr)	**2.1**	**2.4**	**2.4**	**2.3**
NOx Emission Rate (lb/hr) (corrected as per USEPA 7E)	**2.0**	**2.3**	**2.3**	**2.2**
Outlet Carbon Monoxide Concentration (ppmv)	527.4	542.9	529.5	**533.3**
Outlet CO Concentration (ppmv, corrected as per USEPA 7E)	533.3	550.0	535.9	**539.7**
CO Emission Rate (lb/hr)	**5.4**	**5.5**	**5.3**	**5.4**
CO Emission Rate (lb/hr) (corrected as per USEPA 7E)	**5.4**	**5.6**	**5.4**	**5.5**
Outlet VOC Concentration (ppmv as propane)	601.8	651.7	651.8	**635.1**
Outlet Methane Concentration (ppmv as methane)	1390.3	1449.3	1430.8	**1423.5**
Outlet VOC Concentration (ppmv, corrected as per USEPA 7E)	600.9	642.3	633.6	**625.6**
Outlet Methane Concentration (ppmv, corrected as per USEPA 7E)	1464.4	1449.7	1491.8	**1468.7**
Outlet VOC Concentration (-Methane)	7.7	0.0	0.0	**2.6**
Outlet VOC Concentration (-Methane, corrected as per USEPA 7E) *	*0.0*	*0.0*	*0.0*	**0.0**
VOC Emission Rate as Propane (lb/hr)	**0.1**	**0.0**	**0.0**	**0.0**
VOC Emission Rate as Propane(lb/hr) (corrected as per USEPA 7E)	**0.0**	**0.0**	**0.0**	**0.0**
NOX (g/bhp-hr)	0.82	0.94	0.94	**0.90**
CO (g/bhp-hr)	2.19	2.27	2.17	**2.21**
VOC (g/bhp-hr)	0.00	0.00	0.00	**0.00**

Propane/Methane Response Factor:	**2.34**	**2.18**

VOC Correction			
Co	1.85	2.30	1.81
Cma	498	498	498
Cm	499.09	505.86	512.69

Methane Correction			
Co	2.93	2.76	2.91
Cma	1245	1245	1245
Cm	1182.39	1245.06	1194.56

*: Methane subtraction resulted in a negative value, which has been replaced with zero.
scfm = standard cubic feet per minute
dscfm = dry standard cubic feet per minute
ppmv = parts per million on a volume-to-volume basis
lb/hr = pounds per hour
MW = molecular weight (CO = 28.01, NOx = 46.01, C_3H_8 = 44.10)
24.14 = molar volume of air at standard conditions (70°F, 29.92" Hg)
35.31 = ft^3 per m^3
453.6 = g per lb
453600 = mg per lb
g/bhp-hr = grams per brake horse power hour

Equations
lb/hr = ppmv * MW/24.14 * 1/35.31 * 1/453,600 * *scfm* * 60 *for* VOC
lb/hr = ppmv * MW/24.14 * 1/35.31 * 1/453,600 * *dcfm* * 60
g/bhp-hr = (lb/hr * 453.6) / bhp

Table 5
Engine 2 NOx, CO, and VOC Emissions Rates
North American Natural Resources
Zeeland, MI
BTEC Project No. 14-4572.00
Sampling Date: February 17, 2015

kW	800	800	800	
Parameter	**Run 1**	**Run 2**	**Run 3**	**Average**
Test Run Date	2/17/2015	2/17/2015	2/17/2015	
Test Run Time	12:05-13:05	13:27-14:27	14:48-15:48	
Outlet Flowrate (dscfm)	2,403	2,398	2,327	**2,376**
Outlet Flowrate (scfm)	2,697	2,721	2,636	**2,685**
bhp	1,121	1,121	1,121	**1,121**
Outlet Oxides of Nitrogen Concentration (ppmv)	127.7	128.4	129.1	**128.4**
Outlet NOx Concentration (ppmv, corrected as per USEPA 7E)	129.7	130.7	132.2	**130.9**
NOx Emission Rate (lb/hr)	**2.2**	**2.2**	**2.1**	**2.2**
NOx Emission Rate (lb/hr) (corrected as per USEPA 7E)	**2.2**	**2.2**	**2.2**	**2.2**
Outlet Carbon Monoxide Concentration (ppmv)	562.7	565.4	566.2	**564.8**
Outlet CO Concentration (ppmv, corrected as per USEPA 7E)	568.3	572.9	573.9	**571.7**
CO Emission Rate (lb/hr)	**5.9**	**5.9**	**5.7**	**5.8**
CO Emission Rate (lb/hr) (corrected as per USEPA 7E)	**5.9**	**6.0**	**5.8**	**5.9**
Outlet VOC Concentration (ppmv as propane)	499.4	501.2	504.3	**501.6**
Outlet Methane Concentration (ppmv as methane)	1161.8	1181.9	1189.3	**1177.7**
Outlet VOC Concentration (ppmv, corrected as per USEPA 7E)	505.1	511.2	516.7	**511.0**
Outlet Methane Concentration (ppmv, corrected as per USEPA 7E)	1160.4	1224.3	1231.4	**1205.4**
Outlet VOC Concentration (-Methane)	9.2	2.5	2.5	**4.7**
Outlet Methane Concentration (-Methane, corrected as per USEPA 7E) *	15.5	*0.0*	*0.0*	**5.2**
VOC Emission Rate as Propane (lb/hr)	**0.2**	**0.0**	**0.0**	**0.1**
VOC Emission Rate as Propane(lb/hr) (corrected as per USEPA 7E)	**0.3**	**0.0**	**0.0**	**0.1**
NOX (g/bhp-hr)	0.90	0.91	0.89	**0.90**
CO (g/bhp-hr)	2.40	2.42	2.35	**2.39**
VOC (g/bhp-hr)	0.12	0.00	0.00	**0.04**

VOC Correction			
Co	1.12	1.37	0.85
Cma	247	247	247
Cm	244.80	242.88	241.51

Methane Correction			
Co	1.28	1.81	1.55
Cma	1245	1245	1245
Cm	1246.38	1201.88	1202.37

Propane/Methane Response Factor: **2.37**

*: Methane subtraction resulted in a negative value, which has been replaced with zero.
scfm = standard cubic feet per minute
dscfm = dry standard cubic feet per minute
ppmv = parts per million on a volume-to-volume basis
lb/hr = pounds per hour
MW = molecular weight (CO = 28.01, NOx = 46.01, C_3H_8 = 44.10)
24.14 = molar volume of air at standard conditions (70°F, 29.92" Hg)
35.31 = ft^3 per m^3
453.6 = g per lb
453600 = mg per lb
g/bhp-hr = grams per brake horse power hour

Equations
lb/hr = ppmv * MW/24.14 * 1/35.31 * 1/453,600 * *scfm* * 60 *for* VOC
lb/hr = ppmv * MW/24.14 * 1/35.31 * 1/453,600 * *dcfm* * 60
g/bhp-hr = (lb/hr * 453.6) / bhp

Table 6
Engine 4 NOx, CO, VOC, and Formaldehyde Emissions Rates
North American Natural Resources
Zeeland, MI
BTEC Project No. 14-4572.00
Sampling Date: February 17, 2015

kW	1600	1600	1600	
Parameter	**Run 1**	**Run 2**	**Run 3**	**Average**
Test Run Date	2/17/2015	2/17/2015	2/17/2015	
Test Run Time	8:03-9:03	9:17-10:17	10:30-11:30	
Outlet Flowrate (dscfm)	4,181	4,173	4,357	**4,237**
Outlet Flowrate (scfm)	4,692	4,684	4,896	**4,757**
bhp	2,242	2,242	2,242	**2,242**
Outlet Oxides of Nitrogen Concentration (ppmv, wet)	43.2	43.2	43.1	43.2
NOx Emission Rate (lb/hr)	**1.4**	**1.4**	**1.5**	**1.5**
Outlet Carbon Monoxide Concentration (ppmv, wet)	489.3	487.5	487.2	488.0
CO Emission Rate (lb/hr)	**10.0**	**9.9**	**10.4**	**10.1**
Outlet VOC Concentration (ppmv as propane, dry)	11.3	10.8	10.6	**10.9**
VOC Emission Rate as Propane (lb/hr)	**0.4**	**0.3**	**0.4**	**0.4**
Outlet Formaldehyde (CH_2O) Concentration (ppmv, wet)	73.9	73.7	73.9	73.8
Outlet Formaldehyde (CH_2O) Emission Rate (lb/hr)	**1.62**	**1.61**	**1.69**	**1.6**
NOX (g/bhp-hr)	0.29	0.29	0.30	**0.30**
CO (g/bhp-hr)	2.02	2.01	2.10	**2.04**
VOC (g/bhp-hr)	0.04	0.04	0.04	**0.04**

scfm = standard cubic feet per minute
dscfm = dry standard cubic feet per minute
ppmv = parts per million on a volume-to-volume basis
lb/hr = pounds per hour
MW = molecular weight (CO = 28.01, NOx = 46.01, C_3H_8 = 44.10, CH_2O = 30.031)
24.14 = molar volume of air at standard conditions (70°F, 29.92" Hg)
35.31 = ft^3 per m^3
453.6 = g per lb
453600 = mg per lb
g/bhp-hr = grams per brake horse power hour

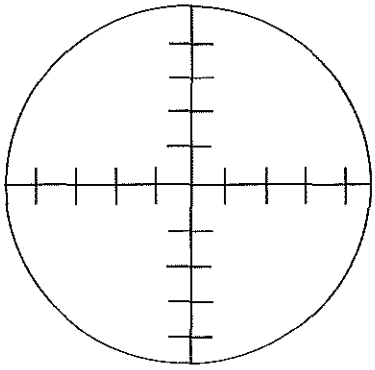
Equations
lb/hr = ppmv * MW/24.14 * 1/35.31 * 1/453,600 * ***scfm*** * 60
lb/hr = ppmv * MW/24.14 * 1/35.31 * 1/453,600 * ***dcfm*** * 60 for VOC
g/bhp-hr = (lb/hr * 453.6) / bhp

Figures

BTEC Inc.

diameter = 10 inches

Points	Distance "
1	0.3
2	1.1
3	1.9
4	3.2
5	6.8
6	8.1
7	9.0
8	9.7



Not to Scale

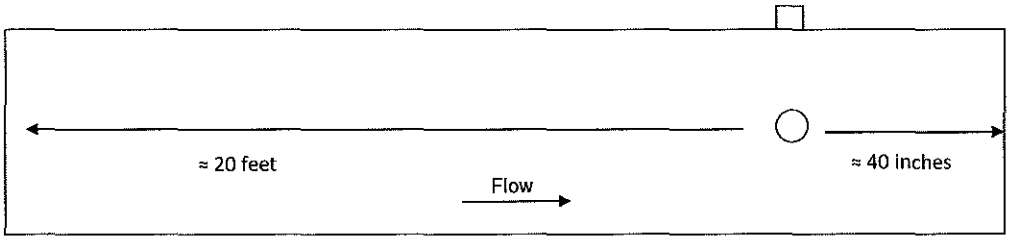


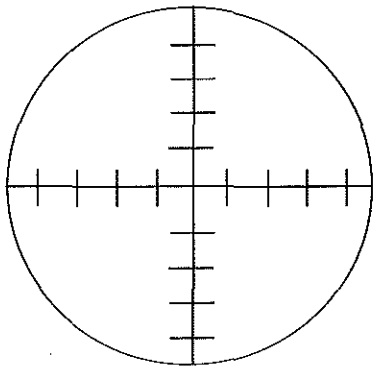
Figure 1

Site: **Engines #1, and #2 Exhaust** **North American Natural Resources** **Zeeland, Michigan**	**Sampling Dates:** **February 17-18, 2015**	**BT Environmental Consulting, Inc.** **4949 Fernlee Avenue** **Royal Oak, Michigan 48073**

BTEC Inc.

diameter = 13 inches

Points	Distance "
1	0.4
2	1.4
3	2.5
4	4.2
5	8.8
6	10.5
7	11.6
8	12.6



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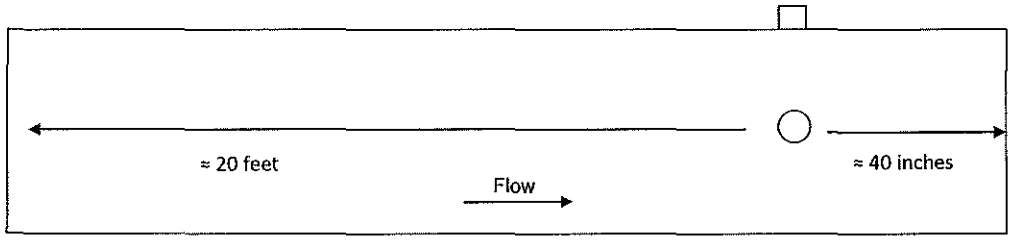

Figure 2

Engine #4 Exhaust **North American Natural Resources** **Zeeland, Michigan**	**Sampling Dates:** **February 17-18, 2015**	**BT Environmental Consulting, Inc.** **4949 Fernlee Avenue** **Royal Oak, Michigan 48073**

BTEC Inc.

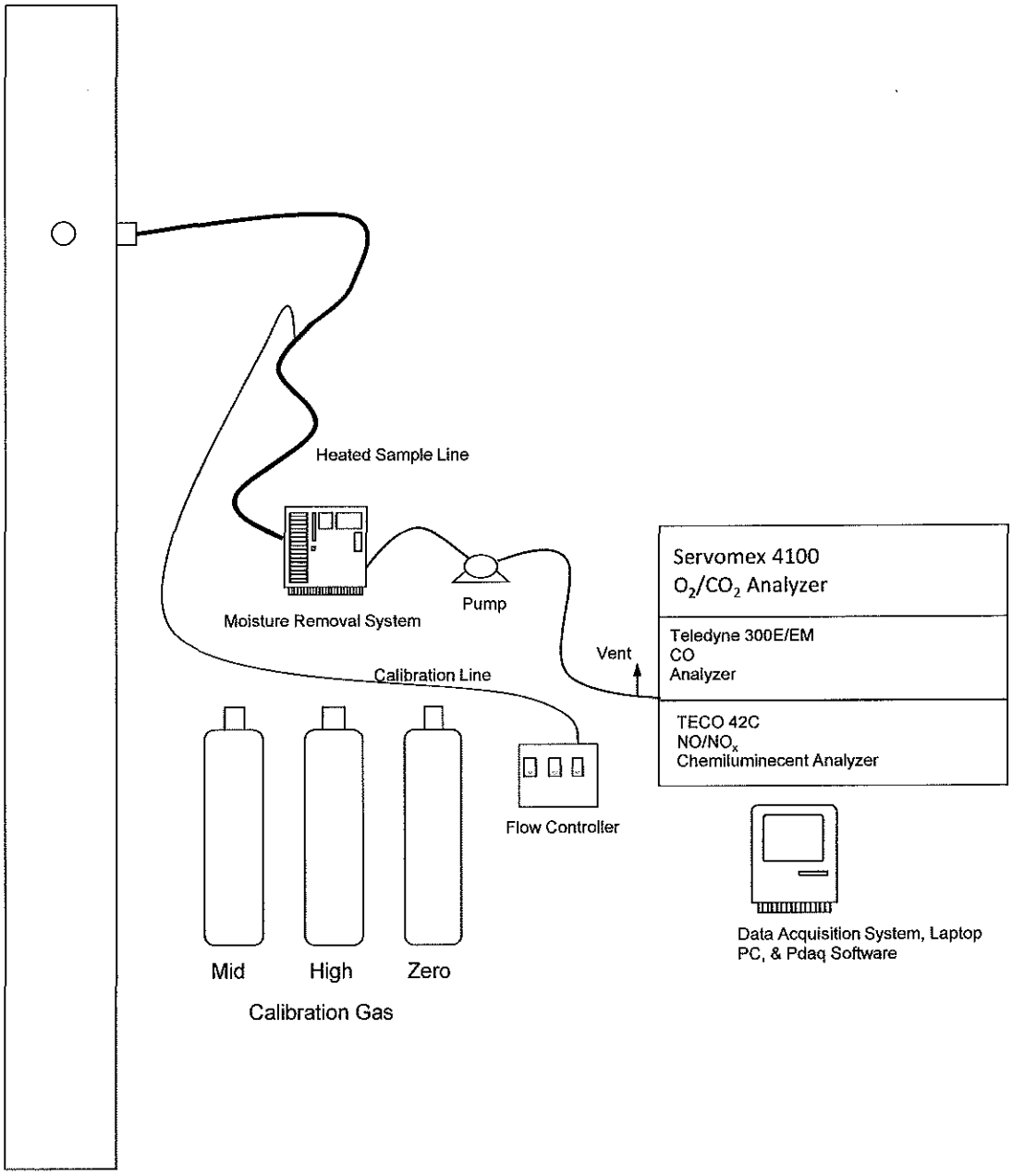

Figure 3

Site: **USEPA Method 3A/7E/10** **North American Natural Resources** **Zeeland, Michigan**	**Sampling Date:** **February 17-18, 2015**	**BT Environmental Consulting, Inc.** **4949 Fernlee Avenue** **Royal Oak, Michigan 48073**

BTEC Inc.

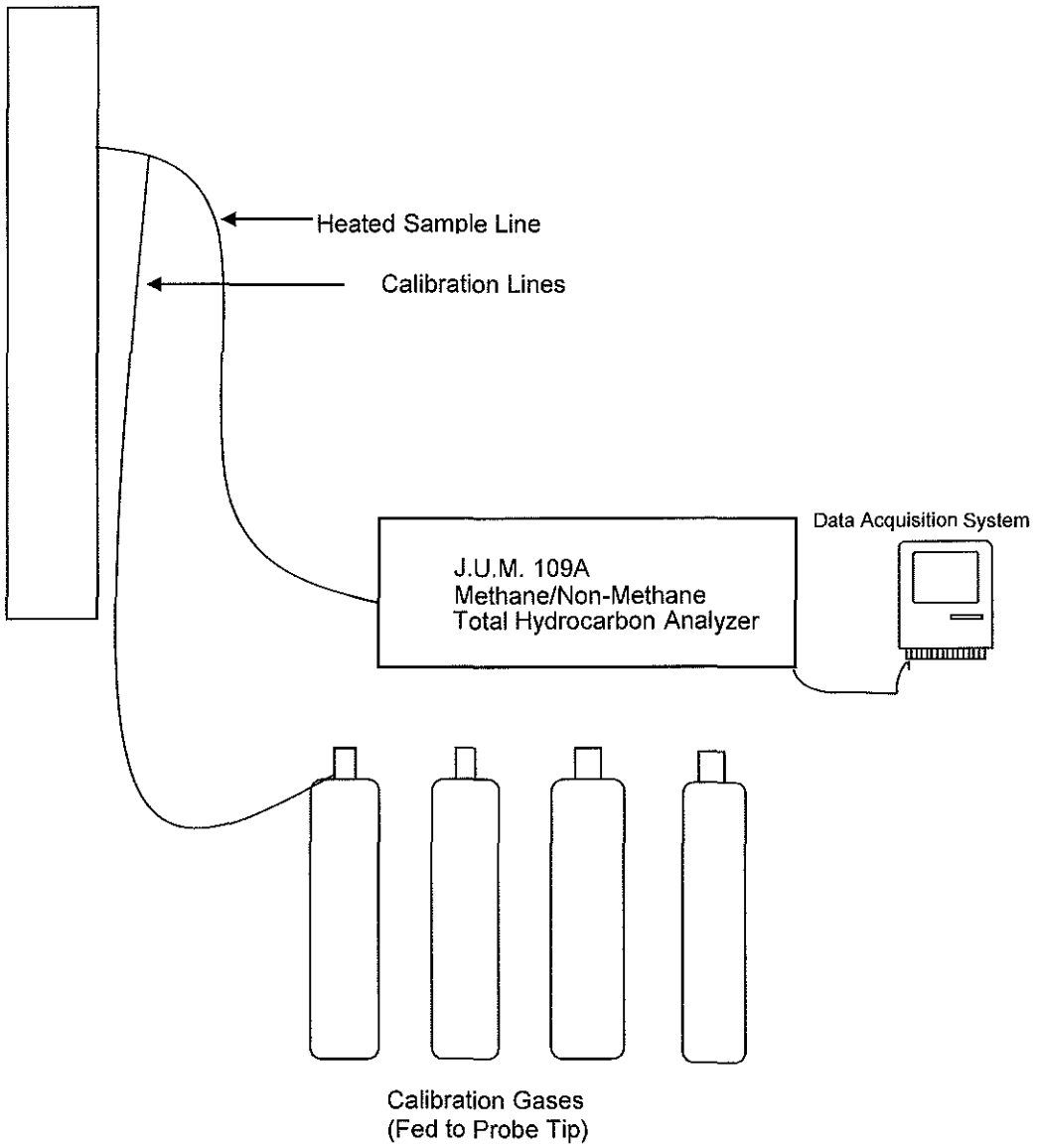

Figure 4

Site:	**Sampling Date:**
USEPA Method 25A	**February 17-18, 2015**
North American Natural Resources	
Zeeland, Michigan	

BT Environmental Consulting, Inc.
4949 Fernlee Avenue
Royal Oak, Michigan 48073

BTEC Inc.

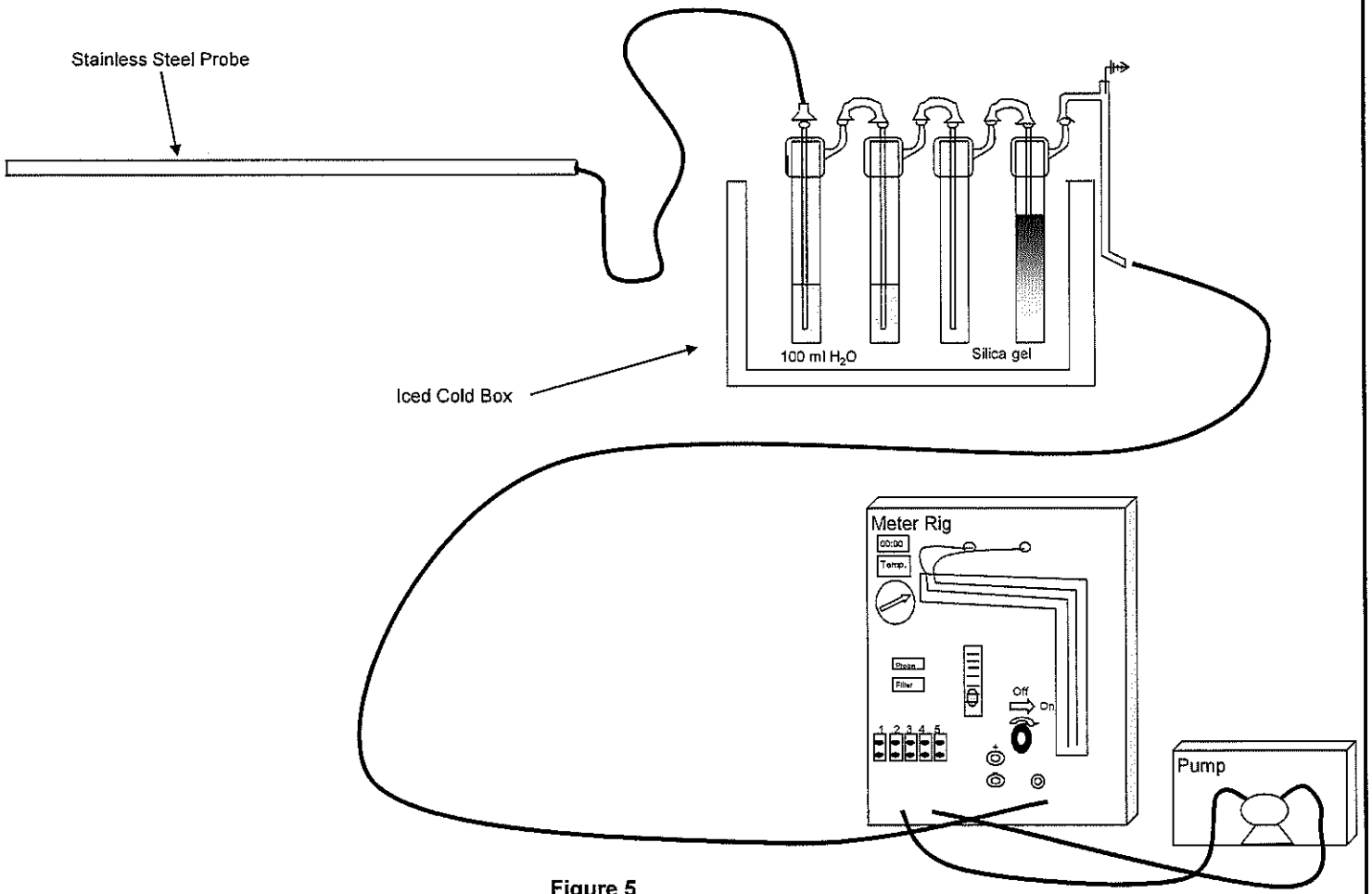

Figure 5

Site: **USEPA Method 4** **North American Natural Resources** **Zeeland, Michigan**	**Sampling Date:** **February 17-18, 2015**	**BT Environmental Consulting, Inc.** **4949 Fernlee Avenue** **Royal Oak, Michigan 48073**

BTEC Inc.

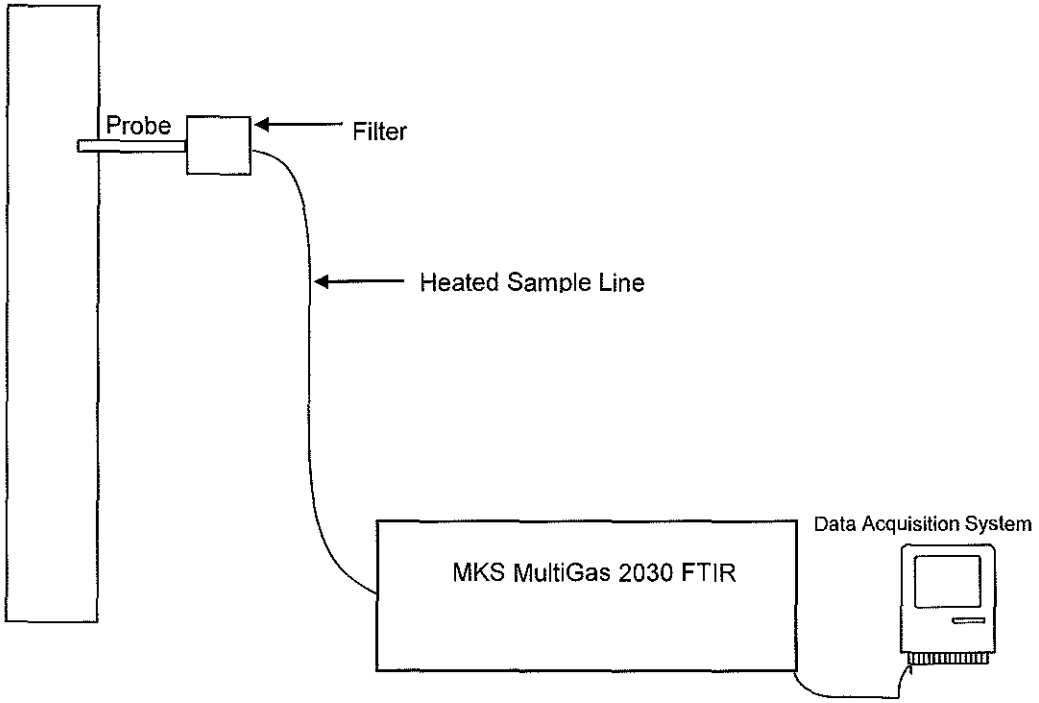

Figure No. 6

Site: **Sampling Date:** **USEPA Method 320** **February 17-18, 2015** **North American Natural Resources** **Zeeland, Michigan**	**BT Environmental Consulting, Inc.** **4949 Ferlee Avenue** **Royal Oak, Michigan 48073**