EMISSION TEST REPORT

Title	EMISSION TEST REPORT FOR THE VERIFICATION OF AIR POLLUTANT EMISSIONS FROM NATURAL GAS-FIRED BOILERS
Report Date	January 15, 2019
Test Dates	January 8 – 10, 2019

Facility Information	
Name	Nexteer Automotive Corporation
Street Address	3900 Holland Rd.
City, County	Saginaw, Saginaw, Michigan

Facility Permit Information			
State Registration No.:	A6175	Permit No. :	MI-ROP-A6175-2014b

Testing Contractor	
Company	Derenzo Environmental Services
Mailing Address	39395 Schoolcraft Road Livonia, MI 48150
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Project No.	1808014

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EMISSION TEST REPORT
FOR THE
VERIFICATION OF AIR POLLUTANT EMISSIONS
FROM NATURAL GAS FIRED BOILERS

NEXTEER AUTOMOTIVE CORPORATION

1.0 INTRODUCTION

Nexteer Automotive Corporation (Nexteer), State Registration No.: A6175, operates four (4) natural gas fired boilers at its facility in Saginaw, Saginaw County, Michigan. The boilers are fueled by pipeline natural gas and used to provide steam to various processes located at the facility.

The Michigan Department of Environmental Quality-Air Quality Division (MDEQ-AQD) has issued a Renewable Operating Permit (MI-ROP-A6175-2014b) to Nexteer. The steam generation equipment owned and operated by Nexteer and specified in the ROP consists of:

- One (1) 77 MMBtu/hr natural gas fired boiler (EUBR02);
- One (1) 150 MMBtu/hr natural gas fired boiler (EUBR03); and
- Two (2) 180 MMBtu/hr natural gas fired boilers (EUBR05 and EUBR06).

Air emission compliance testing was performed pursuant to ROP No. MI-ROP-A6175-2014b which specifies:

Within 3 years of the most recent stack test, and thereafter every three years (34 – 38 months), permittee shall verify the NOx emission rate from EUBR02 by testing at permittee's expense in accordance with Department requirements.; and

Within 3 years of the most recent stack test, and thereafter every three years (34 – 38 months), the permittee shall verify CO and NOx emission rates from [EUBR03, EUBR05, EUBR06] *by testing at owner's expense, in accordance with Department requirements.*

The testing consisted of triplicate, one-hour sampling periods for nitrogen oxides (NOx) and carbon monoxide (CO), as required, on each boiler.

The compliance testing was performed by Derenzo Environmental Services (DES) representatives Andy Rusnak and Clay Gaffey. The exhaust gas sampling and analysis was performed using procedures specified in the Test Plan dated November 30, 2018 that was submitted to and approved by the Michigan Department of Environmental Quality (MDEQ). Mr. Mark Dziadosz and Mr. Ben Witkopp from the MDEQ-AQD were on-site to observe portions of the test event.

Questions regarding this emission test report should be directed to:

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Report Certification

This test report was prepared by Derenzo Environmental Services based on field sampling data collected by DES personnel. Facility process data were collected by DES personnel. This test report has been reviewed by Nexteer representatives and approved for submittal to the MDEQ.

I certify that the testing was conducted in accordance with the approved test plan unless otherwise specified in this report. I believe the information provided in this report and its attachments are true, accurate, and complete.

Report Prepared By:

Andy Rusnak, QSTI
Technical Manager
Derenzo Environmental Services

2.0 SOURCE AND SAMPLING LOCATION DESCRIPTION

2.1 General Process Description

Nexteer operates four (4) natural gas fired steam boilers at its Saginaw facility. The units are identified in ROP No.: MI-ROP-A6175-2014b as EUBR02, EUBR03, EUBR05 and EUBR06.

The boilers are fired exclusively on natural gas and provide steam to the facility for process and building heat. The boilers are typically operated at the required load to meet the steam demand of the facility. Therefore, the actual natural gas use rate is dependent on the steam requirement of the facility and is variable depending on season and processes in operation.

2.2 Rated Capacities and Air Emission Controls

Each boiler has the following maximum design steam production capacity:

- EUBR02 – 60,000 lb steam/hr;
- EUBR03 – 125,000 lb steam/hr;
- EUBR05 – 150,000 lb steam/hr; and
- EUBR06 – 150,000 lb steam/hr.

EUBR03, EUBR05 and EUBR06 are equipped with low NO_x burners. Low NO_x burners control air and fuel mixing to create staged combustion flames in an oxygen deficient atmosphere with lower combustion temperatures. The lower combustion temperature and oxygen deficient atmosphere reduces the amount of NO_x that is formed. Exhaust gas is exhausted directly to atmosphere through a vertical exhaust stack.

2.3 Sampling Locations

Each boiler exhaust gas stream is released to the atmosphere through a dedicated exhaust stack with a vertical release point.

The sampling port for EUBR02 is located in the vertical exhaust stack with an inner diameter of 48 inches. The sample ports provide a sampling location greater than 180 inches (>3.75 duct diameter) upstream and 156 inches (3.25 duct diameters) downstream from any flow disturbance and satisfies the USEPA Method 1 criteria for a representative sample location.

The sampling port for EUBR03 is located in the vertical exhaust stack with an inner diameter of 66 inches. The sample ports provide a sampling location 150 inches (2.27 duct diameter) upstream and 228 inches (3.45 duct diameters) downstream from any flow disturbance and satisfies the USEPA Method 1 criteria for a representative sample location.

The sampling port for EUBR05 is located in the vertical exhaust stack with an inner diameter of 60 inches. The sample ports provide a sampling location 112 inches (1.87 duct diameter) upstream and 264 inches (4.40 duct diameters) downstream from any flow disturbance and satisfies the USEPA Method 1 criteria for a representative sample location.

The sampling port for EUBR06 is located in the vertical exhaust stack with an inner diameter of 60 inches. The sample ports provide a sampling location 112 inches (1.87 duct diameter) upstream and 264 inches (4.40 duct diameters) downstream from any flow disturbance and satisfies the USEPA Method 1 criteria for a representative sample location.

Appendix 1 provides a diagram of the emission test sampling locations.

3.0 SUMMARY OF TEST RESULTS AND OPERATING CONDITIONS

3.1 Purpose and Objective of the Tests

The conditions for EUBR02 in ROP No. MI-ROP-A6175-2014b state:

> *Within 3 years of the most recent stack test, and thereafter every three years (34 – 38 months), permittee shall verify the NOx emission rate from EUBR02 by testing at permittee's expense in accordance with Department requirements.*

The conditions for EUBR03, EUBR05 and EUBR06 in ROP No. MI-ROP-A6175-2014b state:

> *Within 3 years of the most recent stack test, and thereafter every three years (34 – 38 months), the permittee shall verify CO and NOx emission rates from* [EUBR03, EUBR05, EUBR06] *by testing at owner's expense, in accordance with Department requirements.*

Prior emission testing was most recently completed on November 30 – December 2, 2015.

3.2 Operating Conditions During the Compliance Tests

The testing was performed while EUBR03, EUBR05 and EUBR06 were operated at maximum operating conditions (within +/- 10% of maximum rated steam output). EUBR02 was not able to be operated within 10% of maximum rated steam output. EUBR02 was operated at the maximum achievable load. DES representatives recorded steam output data at 15-minute intervals for each test period.

Fuel flowrate (cubic feet per hour) and total fuel flow (cubic feet) was also recorded by DES representatives at 15-minute intervals for each test period.

Appendix 2 provides operating records recorded by DES representatives for the test periods.

Table 3.1 presents a summary of the average boiler operating conditions during the test periods.

The heat input (MMBtu/hr) of the boiler was calculated using the measured natural gas use rate (scf/hr) and the higher heat content (HHV) of the fuel. The fuel used in the boilers is pipeline-quality natural gas which has a published heating value (e.g., 40 CFR Part 98 Table C-1). The default heating value for natural gas is 1.028E-03 MMBtu/scf.

Boiler Heat Input (MMBtu/hr) = fuel use (scf/hr) * (1.028E-3 MMBtu/scf)

3.3 Summary of Air Pollutant Sampling Results

The gases exhausted from each boiler were sampled for three (3) one-hour test periods during the compliance testing performed January 8 – 10, 2019.

Tables 3.2 – 3.4 present the average measured CO and NOx exhaust gas concentrations and emission rates for each boiler (average of the three test periods) and applicable emission limits.

Results of the boiler performance tests demonstrate compliance with emission limits specified in ROP No. MI-ROP-A6175-2014b.

Results and data for each one-hour sampling period are presented in Section 6.0 of this report.

Table 3.1 Average boiler operating conditions during the test periods

Emission Unit	Fuel Use (scfh)	Heat Input (MMBtu/hr)	Steam Output (lb/hr)
EUBR02	55,895	57.5	40,638
EUBR03	119,417	122.8	116,107
EUBR05	154,500	158.8	137,833
EUBR06	161,666	166.2	138,720

Table 3.2 Average measured exhaust gas concentrations for EUBR02 (three-test average)

Emission Unit	NOx Emissions (lb/MMscf)	NOx Emissions (TpY)
EUBR02	125	30.6
Permit Limit	*210*	*39.4*

Table 3.3 Average measured exhaust gas concentrations for EUBR03 (three-test average)

Emission Unit	NOx Emissions (lb/MMBtu)	NOx Emissions (lb/hr)	CO Emissions (lb/MMBtu)	CO Emissions (lb/hr)
EUBR03	0.10	12.2	0.00	0.04
Permit Limit	*0.12*	*18.0*	*0.10*	*15.0*

Table 3.4 Average measured exhaust gas concentrations for EUBR05 and EUBR06 (three-test average)

Emission Unit	NOx Emissions (lb/MMBtu)	NOx Emissions (lb/hr)	CO Emissions (lb/MMBtu)	CO Emissions (lb/hr)
EUBR05	0.09	14.2	0.00	0.05
EUBR06	0.10	17.3	0.00	0.01
Permit Limit	*0.12*	*21.6*	*0.10*	*18.0*

4.0 SAMPLING AND ANALYTICAL PROCEDURES

A test protocol for the air emission testing was provided to MDEQ prior to performing the field sampling and testing. This section provides a summary of the sampling and analytical procedures that were used during the testing periods.

4.1 Summary of Sampling Methods

USEPA Method 3A	Exhaust gas O_2 content was determined using a paramagnetic instrumental analyzer.
USEPA Method 7E	Exhaust gas NOx concentration was determined using chemiluminescence instrumental analyzers.
USEPA Method 10	Exhaust gas CO concentration was measured using NDIR instrumental analyzers.
USEPA Method 19	Mass emission rate calculation based on fuel F-factor

4.2 Exhaust Gas Molecular Weight Determination (USEPA Method 3A)

O_2 and CO_2 content in the boiler exhaust gas stream was measured continuously throughout each test period in accordance with USEPA Method 3A. The O_2 content of the exhaust was monitored using a Servomex Model 1440D gas analyzer that uses a paramagnetic sensor. The CO_2 content of the exhaust gas was monitored using a Servomex Model 1440D gas analyzer that uses an infrared sensor.

During each sampling period, a continuous sample of the boiler exhaust gas stream was extracted from the stack using a stainless-steel probe connected to a Teflon® heated sample line. The sampled gas was conditioned by removing moisture prior to being introduced to the analyzers; therefore, O_2 and CO_2 content measurements corresponds to standard dry gas conditions. Instrument response data were recorded using an ESC Model 8816 data acquisition system that monitored the analog output of the instrumental analyzer continuously and logged data as one-minute averages.

Prior to, and at the conclusion of each test, the instrument was calibrated using upscale calibration and zero gas to determine analyzer calibration error and system bias (described in Section 5.0 of this document). Sampling times were recorded on field data sheets.

Appendix 3 provides a summary of exhaust gas O_2 and CO_2 content measurements. Raw instrument response data are provided in Appendix 4.

4.3 NOx and CO Concentration Measurements (USEPA Methods 7E and 10)

NOx and CO pollutant concentrations in the boiler exhaust gas streams were determined using a Thermo Environmental Instruments, Inc. (TEI) Model 42c High Level chemiluminescence NOx analyzer and a TEI Model 48i infrared CO analyzer.

A continuous sample of the boiler exhaust gas was delivered to the instrumental analyzers using the sampling and conditioning system described previously in this section. Prior to, and at the conclusion of each test, the instruments were calibrated using appropriate upscale calibration and zero gas to determine analyzer calibration error and system bias.

Appendix 3 provides CO and NOx calculation sheets. Raw instrument response data are provided in Appendix 4.

4.4 Mass Emission Rate Calculations (USEPA Method 19)

The NOx and CO mass emission rate (lb/MMBtu, lb/MMscf and lb/hr) were calculated using the measured concentrations and natural gas fuel F factor (ratio of combustion gas volume to heat input) as described in USEPA Method 19.

The fuel used in the boilers is pipeline natural gas, which has a published default F-factor in USEPA Method 19, Table 19-2. Exhaust gas oxygen content, NOx and CO concentrations were each measured on a dry gas basis. Therefore, the NOx and CO emission factor, E (lb/MMBtu) were calculated using Equation 19-1:

$$E = (C_d) \times (F_d) \times (20.9) / (20.9 - \%O_2)$$

E	=	Calculated emission factor, lb/MMBtu
C_d	=	Measured concentration, dry basis, lb/scf
F_d	=	8,710 dscf/MMBtu for natural gas
$\%O_2$	=	Measured oxygen content, dry basis, %vol.

The boiler exhaust gas flowrate was be calculated using the calculated boiler heat input (as described in Section 3.2) in conjunction with USEPA Method 19 Equation 19-1:

$$Q_d = F_d * H * 20.9 / (20.9 - \%O_2) / 60 \text{ min/hr}$$

Q_d	=	Calculated flowrate, dscfm
H	=	Boiler heat input, MMBtu/hr
F_d	=	8,710 dscf/MMBtu for natural gas
$\%O_2$	=	Measured oxygen content, dry basis, %vol.

The hourly NOx and CO mass emission rate (lb/hr and lb/MMscf) for each test period were calculated using the measured CO and NOx concentrations and the calculated exhaust gas flowrate (and measured hourly natural gas use rate, MMscf/hr).

5.0 QA/QC ACTIVITIES

5.1 NOx Converter Efficiency Test

The NO_2 – NO conversion efficiency of the Model 42c analyzer was verified prior to the testing program. A USEPA Protocol 1 certified concentration of NO_2 was injected directly into the analyzer, following the initial three-point calibration, to verify the analyzer's conversion efficiency. The analyzer's NO_2 – NO converter uses a catalyst at high temperatures to convert the NO_2 to NO for measurement. The conversion efficiency of the analyzer is deemed acceptable if the measured NO_x concentration is greater than 90% of the expected value.

The NO_2 – NO conversion efficiency test satisfied the USEPA Method 7E criteria (the measured NO_x concentration was 103% of the expected value).

5.2 Sampling System Response Time Determination

The response time of the sampling system was determined prior to the compliance test program by introducing upscale gas and zero gas, in series, into the sampling system using a tee connection at the base of the sample probe. The elapsed time for the analyzer to display a reading of 95% of the expected concentration was determined using a stopwatch.

The TEI Model 42c analyzer exhibited the longest system response time at 127 seconds. Results of the response time determinations were recorded on field data sheets. For each test period, test data were collected once the sample probe was in position for at least twice the maximum system response time.

5.3 Gas Divider Certification (USEPA Method 205)

A STEC Model SGD-710C 10-step gas divider was used to obtain appropriate calibration span gases. The ten-step STEC gas divider was NIST certified within the previous 12 months with a primary flow standard in accordance with Method 205. When cut with an appropriate zero gas, the ten-step STEC gas divider delivered calibration gas values ranging from 0% to 100% (in 10% step increments) of the USEPA Protocol 1 calibration gas that was introduced into the system. The field evaluation procedures presented in Section 3.2 of Method 205 were followed prior to use of gas divider. The field evaluation yielded no errors greater than 2% of the triplicate measured average and no errors greater than 2% from the expected values.

5.4 Instrumental Analyzer Interference Check

The instrumental analyzers used to measure NOx, CO, O_2 and CO_2 have had an interference response test preformed prior to their use in the field, pursuant to the interference response test procedures specified in USEPA Method 7E. The appropriate interference test gases (i.e., gases that would be encountered in the exhaust gas stream) were introduced into each analyzer, separately and as a mixture with the analyte that each analyzer is designed to measure. All of analyzers exhibited a composite deviation of less than 2.5% of the span for all measured interferent gases. No major

analytical components of the analyzers have been replaced since performing the original interference tests.

5.5 Instrument Calibration and System Bias Checks

At the beginning of each day of the testing program, initial three-point instrument calibrations were performed for the NOx, CO, O_2 and CO_2 analyzers by injecting calibration gas directly into the inlet sample port for each instrument. System bias checks were performed prior to and at the conclusion of each sampling period by introducing the upscale calibration gas and zero gas into the sampling system (at the base of the stainless-steel sampling probe prior to the particulate filter and Teflon® heated sample line) and determining the instrument response against the initial instrument calibration readings.

The instruments were calibrated with USEPA Protocol 1 certified concentrations of CO_2, O_2, NOx, and CO in nitrogen and zeroed using hydrocarbon free nitrogen. A STEC Model SGD-710C ten-step gas divider was used to obtain intermediate calibration gas concentrations as needed.

5.6 Determination of Exhaust Gas Stratification

A stratification test for each boiler exhaust stack was performed during the first performance test sampling period. The stainless steel sample probe was positioned at sample points correlating to 16.7, 50.0 (centroid) and 83.3% of the stack diameter. Pollutant concentration data were recorded at each sample point for a minimum of twice the maximum system response time.

The recorded data for each boiler exhaust stack gas indicate that the measured CO_2, O_2 and NOx concentrations did not vary by more than 5% of the mean across the stack diameter. Therefore, the boiler stack gas was considered to be non-stratified and the compliance test sampling was performed at a single sampling location within the boiler exhaust stack.

Appendix 5 presents test equipment quality assurance data (NO_2 – NO conversion efficiency test data, instrument calibration and system bias check records, calibration gas and gas divider certifications, interference test results and stratification checks).

6.0 RESULTS

6.1 Test Results and Allowable Emission Limits

Boiler operating data and air pollutant emission measurement results for each one-hour test period are presented in Tables 6.1 – 6.4.

Testing was performed to demonstrate compliance with the following air pollutant emission limits specified in MI-ROP-A6175-2014b for the boilers:

	CO		NOx	
Emission Unit	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr
EUBR02	-	-	210 lb/MMscf	39.4 TpY
EUBR03	0.10	15.0	0.12	18.0
EUBR05	0.10	18.0	0.12	21.6
EUBR06	0.10	18.0	0.12	21.6

The measured CO and NOx exhaust gas concentrations and emission rates for each boiler demonstrate compliance with and are less than the limits specified in MI-ROP-A6175-2014b.

6.2 Variations from Normal Sampling Procedures or Operating Conditions

The testing for all pollutants was performed in accordance with USEPA methods and the approved test protocol.

Approximately 20 minutes into the second test period for EUBR03 the main steam header pressure increased to a level that tripped an alarm which shut down the boiler. This test period was discarded and a new test period was started after the boiler was brought back to maximum operating conditions. The test results for EUBR03 are based on data recorded during Test Run Nos. 1, 3 and 4. Data for the discarded run is present in Appendix 4.

Table 6.1 Measured exhaust gas conditions and NOx air pollutant emission rates for EUBR02

Test Number: Test Date: Test Period Begin:	1 01/09/19 1204-1304	2 01/09/19 1329-1429	3 01/09/19 1455-1555	Three Test Average
Boiler operating parameters				
Steam Output (lb/hr)	40,364	40,926	40,624	40,638
Fuel Use Rate (scfh)	56,312	55,687	55,687	55,895
Heat Input (MMBtu/hr)	57.9	57.2	57.2	57.5
Exhaust gas parameters				
O_2 content (% vol)	4.82	5.00	5.01	4.94
CO_2 content (% vol)	9.39	9.26	9.28	9.31
Flowrate (dscfm)	10,925	10,926	10,928	10,926
NOx emission rates				
NOx concentration (ppmvd)	88.9	89.2	89.3	89.1
NOx emission rate (lb/MMscf)	124	126	126	125
Permit emission limit (lb/MMscf)	-	-	-	*210*
NOx emission rate (TpY)	30.5	30.6	30.6	30.6
Permit emission limit (TpY)	-	-	-	*39.4*

Table 6.2 Measured exhaust gas conditions and NOx and CO air pollutant emission rates for EUBR03

Test Number: Test Date: Test Period Begin:	1 01/08/19 0905-1005	3 01/08/19 1450-1550	4 01/08/19 1608-1708	Three Test Average
Boiler operating parameters				
Steam Output (lb/hr)	118,140	114,580	115,600	116,107
Fuel Use Rate (scfh)	115,250	121,500	121,500	119,417
Heat Input (MMBtu/hr)	118.5	124.9	124.9	122.8
Exhaust gas parameters				
O_2 content (% vol)	2.73	2.78	2.89	2.80
CO_2 content (% vol)	10.6	10.6	10.6	10.6
Flowrate (dscfm)	19,779	20,910	21,040	20,576
NOx emission rates				
NOx concentration (ppmvd)	83.4	82.9	82.9	83.0
NOx emission rate (lb/MMBtu)	0.10	0.10	0.10	0.10
Permit emission limit (lb/MMBtu)	-	-	-	*0.12*
NOx emission rate (lb/hr)	11.8	12.4	12.5	12.2
Permit emission limit (lb/hr)	-	-	-	*18.0*
CO emission rates				
CO concentration (ppmvd)	0.55	0.42	0.37	0.45
CO emission rate (lb/MMBtu)	0.00	0.00	0.00	0.00
Permit emission limit (lb/MMBtu)	-	-	-	*0.10*
CO emission rate (lb/hr)	0.05	0.04	0.03	0.04
Permit emission limit (lb/hr)	-	-	-	*15.0*

Table 6.3 Measured exhaust gas conditions and NOx and CO air pollutant emission rates for EUBR05

Test Number: Test Date: Test Period Begin:	1 01/10/19 0721-0821	3 01/10/19 0849-0949	4 01/10/19 1030-1130	Three Test Average
Boiler operating parameters				
Steam Output (lb/hr)	137,650	137,517	138,331	137,833
Fuel Use Rate (scfh)	154,313	158,688	150,500	154,500
Heat Input (MMBtu/hr)	158.6	163.1	154.7	158.8
Exhaust gas parameters				
O_2 content (% vol)	4.10	3.99	4.11	4.07
CO_2 content (% vol)	9.84	9.94	9.89	9.89
Flowrate (dscfm)	28,654	29,266	27,950	28,623
NOx emission rates				
NOx concentration (ppmvd)	69.5	69.1	68.8	69.1
NOx emission rate (lb/MMBtu)	0.09	0.09	0.09	0.09
Permit emission limit (lb/MMBtu)	-	-	-	*0.12*
NOx emission rate (lb/hr)	14.3	14.5	13.8	14.2
Permit emission limit (lb/hr)	-	-	-	*21.6*
CO emission rates				
CO concentration (ppmvd)	0.31	0.48	0.40	0.40
CO emission rate (lb/MMBtu)	0.00	0.00	0.00	0.00
Permit emission limit (lb/MMBtu)	-	-	-	*0.10*
CO emission rate (lb/hr)	0.04	0.06	0.05	0.05
Permit emission limit (lb/hr)	-	-	-	*18.0*

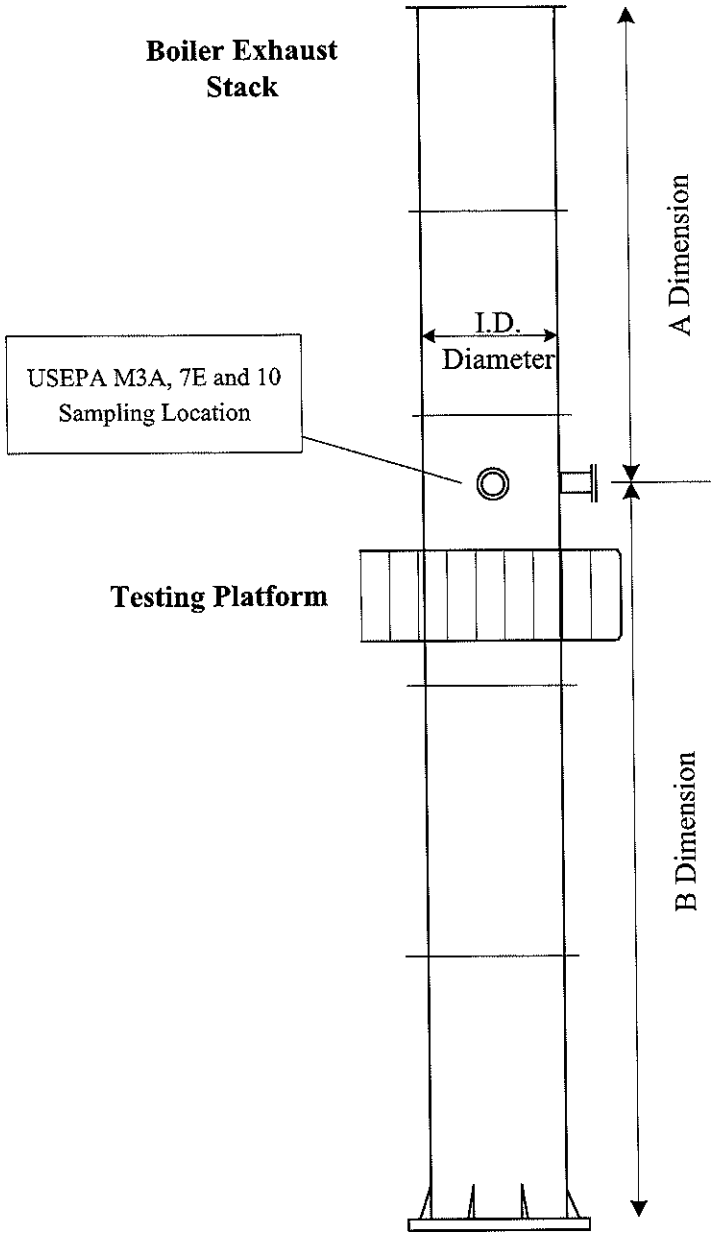
Table 6.4 Measured exhaust gas conditions and NOx and CO air pollutant emission rates for EUBR06

Test Number: Test Date: Test Period Begin:	1 01/09/19 0714-0814	3 01/09/19 0838-0938	4 01/09/19 0959-1059	Three Test Average
Boiler operating parameters				
Steam Output (lb/hr)	137,857	140,240	138,064	138,720
Fuel Use Rate (scfh)	161,812	161,625	161,562	161,666
Heat Input (MMBtu/hr)	166.3	166.2	166.1	166.2
Exhaust gas parameters				
O_2 content (% vol)	5.52	5.62	5.72	5.62
CO_2 content (% vol)	9.06	9.04	9.02	9.04
Flowrate (dscfm)	32,810	32,990	33,202	33,001
NOx emission rates				
NOx concentration (ppmvd)	73.1	72.8	73.1	73.0
NOx emission rate (lb/MMBtu)	0.10	0.10	0.10	0.10
Permit emission limit (lb/MMBtu)	-	-	-	*0.12*
NOx emission rate (lb/hr)	17.2	17.2	17.4	17.3
Permit emission limit (lb/hr)	-	-	-	*21.6*
CO emission rates				
CO concentration (ppmvd)	0.15	0.09	0.03	0.09
CO emission rate (lb/MMBtu)	0.00	0.00	0.00	0.00
Permit emission limit (lb/MMBtu)	-	-	-	*0.10*
CO emission rate (lb/hr)	0.02	0.01	0.00	0.01
Permit emission limit (lb/hr)	-	-	-	*18.0*

APPENDIX 1

Sampling Location Drawings

Derenzo Environmental Services

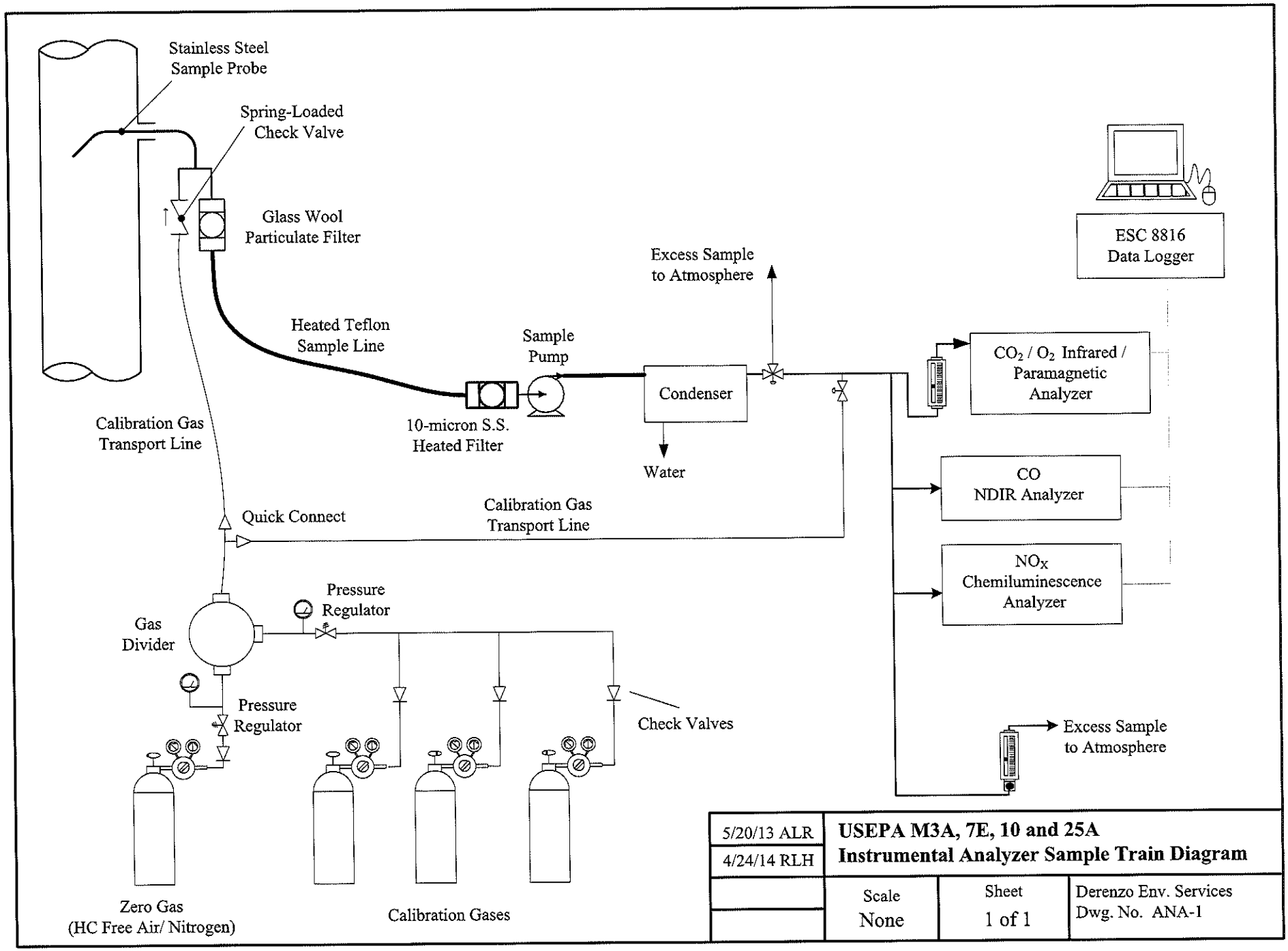


Dimensions of Sampling Locations

Emission Unit	Diameter (in.)	A (ft.)	B (ft.)
EUBR02	48.0	>15.0	13.0
EUBR03	66.0	12.5	19.0
EUBR05	60.0	9.3	22.0
EUBR06	60.0	9.3	22.0

1/15/19 ALR	**Nexteer Automotive Corporation** **Boiler Exhaust Stack Diagram**		
	Scale None	Sheet 1 of 1	Derenzo Env. Services Dwg. No. NEXT-1

Derenzo Environmental Services



5/20/13 ALR 4/24/14 RLH	**USEPA M3A, 7E, 10 and 25A** **Instrumental Analyzer Sample Train Diagram**		
	Scale None	Sheet 1 of 1	Derenzo Env. Services Dwg. No. ANA-1

APPENDIX 2

Facility Operating Records

Natural Gas Fueled Boiler
Process Operating Data

Facility: Nexteer
Location: Saginaw, MI
Date: 1/8/19
Unit ID: Boiler No. 3

Date	Boiler No. 3	Test #	Steam Load (kpph)	Fuel Use Rate (kscfh)	Total Fuel Use (kscf)
1/8/2019	9:05	1	115.9	124.9	1084817.1
	9:20	1	119.5	124.9	1084838.8
	9:35	1	119.7	124.5	1084869.9
	9:50	1	118.7	124.6	1084901.3
	10:05	1	116.9	124.8	1084932.4

1/8/2019	Boiler No. 3	Test #	Steam Load (kpph)	Fuel Use Rate (kscfh)	Total Fuel Use (kscf)
	14:50	3	113.7	122.7	1085245.3
	15:05	3	115.7	122.7	1085274.6
	15:20	3	115.6	122.6	1085305.4
	15:35	3	112.6	123.1	1085336.0
	15:50	3	115.3	122.8	1085366.8

1/8/2019	Boiler No. 3	Test #	Steam Load (kpph)	Fuel Use Rate (kscfh)	Total Fuel Use (kscf)
	16:08	4	117.9	122.6	1085245.3
	16:23	4	112.8	122.7	1085274.6
	16:38	4	115.7	122.9	1085305.4
	16:53	4	115.7	122.9	1085336.0
	17:08	4	115.9	122.9	1085366.8

Natural Gas Fueled Boiler
Process Operating Data

Facility: Nexteer
Location: Saginaw, MI
Date: 1/9/19
Unit ID: Boiler No. 6

Date	Boiler No. 6	Test #	Steam Load (pph)	Fuel Use Rate (scfh)	Total Fuel Use (kscf)
1/9/2019	7:14	1	135941	161388	239088.1
	7:29	1	136936	162750	239128.5
	7:44	1	138728	161938	239169.0
	7:59	1	142483	161588	239209.4
	8:14	1	135196	161838	239249.9

1/9/2019	Boiler No. 6	Test #	Steam Load (pph)	Fuel Use Rate (scfh)	Total Fuel Use (kscf)
	8:38	2	138839	161838	239314.7
	8:53	2	135117	162100	239355.1
	9:08	2	142940	162125	239395.4
	9:23	2	140477	161838	239435.8
	9:38	2	143825	161300	239476.3

1/9/2019	Boiler No. 6	Test #	Steam Load (pph)	Fuel Use Rate (scfh)	Total Fuel Use (kscf)
	9:59	3	139227	162075	239533.2
	10:14	3	135017	162750	239573.4
	10:29	3	140689	162125	239611.1
	10:44	3	140080	161413	239654.3
	10:59	3	135308	162113	239694.8

Natural Gas Fueled Boiler
Process Operating Data

Facility: Nexteer
Location: Saginaw, MI
Date: 1/9/19
Unit ID: Boiler No. 2

Date	Boiler No. 2	Test #	Steam Load (pph)	Fuel Use Rate (kscfh)	Total Fuel Use (kscf)
1/9/2019	12:04	1	40658	58.2	574889.3
	12:19	1	40321	55.9	574903.6
	12:34	1	40451	57.1	574917.7
	12:49	1	40150	56.6	574931.7
	13:04	1	40239	55.3	574945.6

1/9/2019	Boiler No. 2	Test #	Steam Load (pph)	Fuel Use Rate (kscfh)	Total Fuel Use (kscf)
	13:29	2	41002	56.7	574968.9
	13:44	2	40932	56.5	574982.9
	13:59	2	41107	56.1	574996.8
	14:14	2	40850	56.0	575010.7
	14:29	2	40738	55.1	575024.6

1/9/2019	Boiler No. 2	Test #	Steam Load (pph)	Fuel Use Rate (kscfh)	Total Fuel Use (kscf)
	14:55	3	41292	56.1	575048.7
	15:10	3	40829	55.3	575062.6
	15:25	3	40101	55.5	575076.6
	15:40	3	40392	56.7	575090.4
	15:55	3	40506	54.6	575104.4

Natural Gas Fueled Boiler
Process Operating Data

Facility: Nexteer
Location: Saginaw, MI
Date: 1/10/19
Unit ID: Boiler No. 5

Date	Boiler No. 5	Test #	Steam Load (pph)	Fuel Use Rate (scfh)	Total Fuel Use (kscf)
1/10/2019	7:21	1	136081	149788	965834.9
	7:36	1	139225	155050	965973.9
	7:51	1	135432	152675	965913.3
	8:06	1	141502	160088	965951.7
	8:21	1	136011	147400	965989.2

1/10/2019	Boiler No. 5	Test #	Steam Load (pph)	Fuel Use Rate (scfh)	Total Fuel Use (kscf)
	8:49	2	137029	153263	966059.0
	9:04	2	136288	152200	966097.4
	9:19	2	147422	160463	966134.1
	9:34	2	138722	161688	966177.2
	9:49	2	128126	161550	966217.7

1/10/2019	Boiler No. 5	Test #	Steam Load (pph)	Fuel Use Rate (scfh)	Total Fuel Use (kscf)
	10:30	3	135024	146350	966324.4
	10:45	3	137110	147920	966361.3
	11:00	3	143904	157800	966398.6
	11:15	3	139523	153000	966436.9
	11:30	3	136092	150013	966474.9