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COMPLIANCE STACK EMISSION TEST REPORT

COATING OPERATIONS (EUCOATINGLINE)

Determination of Volatile Organic Compound Capture Efficiency and Total Gaseous Nonmethane Organic Destruction Efficiency

Utilizing US EPA Methods 1, 2, 3, 4, 18, 25A, and 204A

Test Date(s): August 15, 2019
Facility ID: N7413
Source Location: Fowlerville, Michigan
Permit: EGLE ROP No. MI-ROP-N7413-2014a

Prepared For:

Ventra Fowlerville
8887 W. Grand River Avenue • Fowlerville, MI 48836

Prepared By:

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Document Number: M011AS-597999-RT-118R0
Document Date: October 24, 2019
Scope ID / Project: 11912 / 190805

ACCREDITED
TO ASTM D7036 ONLY

MONTROSE

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AIR QUALITY SERVICES

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TEST RESULTS SUMMARY

Source Name:	**Coating Operations**
Source ID Number:	**EUCOATINGLINE**
Control Device:	**Regenerative Thermal Oxidizer**
Source ID Number:	**SV-RTO**
Test Date:	**August 15, 2019**
Sampling Location(s):	**Inlet Duct and Exhaust Stack**
TGNMO Destruction Efficiency (%) (on a mass basis)	**96.7**
Permit Limit - VOC DE (%) (on a mass basis)	*95*
Compliance Acceptability Criteria Met (YES/NO)	*YES*
VOC Capture Efficiency (%)	**68.9**
Permit Limit - VOC CE (%)	*90*
Compliance Acceptability Criteria Met (YES/NO)	*NO*
Permit No.	**EGLE ROP No. MI-ROP-N7413-2014a**

REVIEW AND CERTIFICATION

The results of the Compliance Test conducted on August 15, 2019 are a product of the application of the United States Environmental Protection Agency (US EPA) Stationary Source Sampling Methods listed in 40 CFR Part 60, Appendix A, and 40 CFR Part 51, Appendix M, that were in effect at the time of this test.

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature: John Hoard Date: 10-16-19

Name: Jack Hoard Title: Field Project Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature: robert j lisy jr Date: 10/24/2019

Name: Robert J. Lisy, Jr. Title: District Manager

1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

The Ventra Fowlerville (State Registration No.: N7413), located in Fowlerville, Michigan, contracted Montrose Air Quality Services, LLC (Montrose) of Cleveland, Ohio, to conduct compliance stack emission testing for their Coating Operations (EUCOATINGLINE). Testing was performed to satisfy the emissions testing requirements pursuant to Michigan Department of Environment, Great Lakes, and Energy (EGLE) Renewable Operating Permit (ROP) No. MI-ROP-N7413-2014a. The testing was performed on August 15, 2019.

Simultaneous sampling was performed at the EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack to determine the total gaseous nonmethane organic (TGNMO) destruction efficiency (DE) of the RTO associated with the EUCOATINGLINE. In addition, the sampling at the EUCOATINGLINE SV-RTO Inlet Duct was used, in conjunction with US EPA Method 204A, to determine the Volatile Organic Compound (VOC) capture efficiency (CE) (as propane) of the EUCOATINGLINE. Testing was conducted at or near maximum routine operating conditions. During this test, emissions from EUCOATINGLINE were controlled by an RTO.

The test methods that were conducted during this test were US EPA Methods 1, 2, 3, 4, 18, 25A, and 204A.

The key personnel who coordinated this test program (and their phone numbers) were:

- Kaylyn Cox, EHS Specialist, Ventra Fowlerville, LLC, 517-223-4504
- Mark Dziadosz, Environmental Quality Analyst, Michigan Department of Environment, Great Lakes and Energy, 586-753-3745
- John Hoard QI, Field Project Manager, Montrose, 800-372-2471

2.0 SUMMARY AND DISCUSSION OF TEST RESULTS

2.1 OBJECTIVES AND TEST MATRIX

The purpose of this test was to determine the TGNMO DE of the RTO associated with the EUCOATINGLINE and the VOC CE (as propane) of the EUCOATINGLINE at or near maximum routine operating conditions. Testing was performed to satisfy the emissions testing requirements pursuant to EGLE ROP No. MI-ROP-N7413-2014a.

The specific test objectives for this test are as follows:

- Simultaneously measure the concentrations of total gaseous organics (TGO) and methane (CH_4) at the EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack.
- Simultaneously measure the actual and dry standard volumetric flowrate of the gas streams at the EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack.
- Utilize the above variables to determine the TGNMO DE of the RTO associated with the EUCOATINGLINE at or near maximum routine operating conditions.
- Utilize US EPA Method 204A to determine the average VOC content (% by weight as propane) of the coating samples collected.
- Utilize the above variables and recorded coating usage rates to determine the VOC CE (as propane) of the EUCOATINGLINE at or near maximum routine operating conditions.

Table 2.1 presents the sampling matrix log for this test.

2.2 FIELD TEST CHANGES AND PROBLEMS

No field test changes or problems occurred during the performance of this test that would bias the accuracy of the results of this test.

2.3 PRESENTATION OF RESULTS

Two sampling trains were utilized during each run at the EUCOATINGLINE SV-RTO Inlet Duct and at the EUCOATINGLINE SV-RTO Exhaust Stack to determine the TGNMO DE of the RTO associated with the EUCOATINGLINE and the overall VOC CE of the EUCOATINGLINE. At each location, one sampling train measured the gas stream dry molecular weight and moisture content while the second sampling train measured the gas stream concentrations of TGO and CH_4. Gas stream volumetric flowrates were measured at the inlet and exhaust prior to or during each concentration run.

Table 2.2 displays the TGNMO DE of the RTO associated with the EUCOATINGLINE during maximum production operations.

The VOC CE (as propane) of the EUCOATINGLINE and total weight rates of VOCs applied during each run are summarized in Table 2.3. The resulting CE displayed in Table 2.3 was calculated utilizing the lower confidence limit (LCL) approach as described in Section 3.2 of US EPA document, "Guidelines for Determining Capture Efficiency," dated January 9, 1995. The LCL is utilized when the data quality objective (DQO) indicator statistic (P) is >5% and the average measured CE is less than 100%.

Table 2.3 also displays the calculated LCL VOC CE utilizing only Runs 2 to 6.

The graphs that present the raw, uncorrected concentration data measured in the field by the US EPA Method 25A sampling systems at the EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack are located in the Field Data section of the Appendix.

TABLE 2.1
SAMPLING MATRIX OF TEST METHODS UTILIZED

Date	Run No.	Sampling Location	US EPA METHODS 1/2 (Flow) Sampling Time / Duration (min)	US EPA METHOD 3 (Dry Molecular Wt.) Sampling Time / Duration (min)	US EPA METHOD 4 (%H_2O) Sampling Time / Duration (min)	US EPA METHOD 18 (CH_4) Sampling Time / Duration (min)	US EPA METHOD 25A (TGO) Sampling Time / Duration (min)
8/15/2019	1	EUCOATINGLINE SV-RTO Inlet Duct	8:25 - 8:33 / 8	8:23 - 9:23 / 60	8:23 - 9:23 / 60	8:23 - 9:23 / 60	8:23 - 9:23 / 60
8/15/2019	2	EUCOATINGLINE SV-RTO Inlet Duct	10:08 - 10:14 / 6	10:05 - 11:05 / 60	10:05 - 11:05 / 60	10:05 - 11:05 / 60	10:05 - 11:05 / 60
8/15/2019	3	EUCOATINGLINE SV-RTO Inlet Duct	12:10 - 12:17 / 7	12:00 - 13:00 / 60	12:00 - 13:00 / 60	12:00 - 13:00 / 60	12:00 - 13:00 / 60
8/15/2019	4	EUCOATINGLINE SV-RTO Inlet Duct	13:25 - 13:32 / 7	13:14 - 13:59 / 45	13:14 - 13:59 / 45	-	13:14 - 13:59 / 45
8/15/2019	5	EUCOATINGLINE SV-RTO Inlet Duct	14:28 - 14:37 / 9	14:15 - 15:00 / 45	14:15 - 15:00 / 45	-	14:15 - 15:00 / 45
8/15/2019	6	EUCOATINGLINE SV-RTO Inlet Duct	15:20 - 15:25 / 5	15:14 - 15:59 / 45	15:14 - 15:59 / 45	-	15:14 - 15:59 / 45
8/15/2019	1	EUCOATINGLINE SV-RTO Exhaust Stack	8:25 - 8:32 / 7	8:32 - 9:32 / 60	8:32 - 9:32 / 60	8:32 - 9:32 / 60	8:23 - 9:23 / 60
8/15/2019	2	EUCOATINGLINE SV-RTO Exhaust Stack	10:34 - 10:39 / 5	10:05 - 11:05 / 60	10:05 - 11:05 / 60	10:05 - 11:05 / 60	10:05 - 11:05 / 60
8/15/2019	3	EUCOATINGLINE SV-RTO Exhaust Stack	12:10 - 12:17 / 7	12:00 - 13:00 / 60	12:00 - 13:00 / 60	12:00 - 13:00 / 60	12:00 - 13:00 / 60

All times are Eastern Daylight Time.

TABLE 2.2
EMISSION RESULTS

Parameter	EUCOATINGLINE SV-RTO Inlet Duct				EUCOATINGLINE SV-RTO Exhaust Stack			
	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average
TGNMO Destruction Efficiency (%) (on a mass basis)	-	-	-	-	**96.7**	**96.7**	**96.7**	**96.7**
TGNMO Emissions (lb/hr as carbon)	174.4	172.2	136.8	161.1	5.52	5.57	4.29	5.13
TGNMO Concentration (ppmvw as carbon)	4,442	4,396	3,488	4,109	148.0	144.7	114.3	135.6
Methane Concentration (ppmvw as carbon)	10.6	11.6	12.2	11.5	1.3	1.1	1.2	1.2
TGO Concentration (ppmvw as carbon)	4,452	4,407	3,500	4,120	149.2	145.7	115.4	136.8
Stack Gas Average Flow Rate (acfm)	23,994	23,837	23,944	23925	29,046	30,431	29,323	29,600
Stack Gas Average Flow Rate (scfm)	20,989	20,945	20,972	20969	19,944	20,580	20,059	20,194
Stack Gas Average Flow Rate (dscfm)	20,158	20,003	20,115	20092	19,071	19,647	19,079	19,266
Stack Gas Average Velocity (fpm)	3,055	3,035	3,048	3046	2,341	2,452	2,363	2,385
Stack Gas Average Static Pressure (in-H_2O)	-1.50	-1.50	-1.50	-1.50	-0.40	-0.40	-0.30	-0.37
Stack Gas Average Temperature (°F)	122	120	123	122	283	295	288	289
Stack Gas Percent by Volume Moisture (%H_2O)	3.96	4.50	4.09	4.18	4.38	4.54	4.89	4.60
Measured Stack Inner Diameter (in)		38.2 X 37.7				47.8 X 47.6		
Percent by Volume Carbon Dioxide in Stack Gas (%-dry)	0.08	0.00	0.00	0.03	0.00	0.00	0.00	0.00
Percent by Volume Oxygen in Stack Gas (%-dry)	20.50	20.50	20.00	20.33	19.67	19.33	19.33	19.44
Percent by Volume Nitrogen in Stack Gas (%-dry)	79.42	79.50	80.00	79.64	80.33	80.67	80.67	80.56

* The EUCOATINGLINE SV-RTO Inlet Duct and Exhaust Stack were elliptical in shape.

TABLE 2.3
EMISSION RESULTS

Parameter	EUCOATINGLINE SV-RTO Inlet Duct					
	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
VOC Capture Efficiency (%)			**68.9**			
Rolling Value - Calculated Lower Confidence Limit (LCL) VOC Capture Efficiency (%)	-	**67.4**	**59.1**	**61.7**	**65.6**	**68.9**
Measured VOC Capture Efficiency (%)	69.7	68.6	58.8	84.5	85.8	91.3
Coating Usage Rate (lb/hr)	653.5	645.6	608.1	515.3	528.9	432.3
Weight Rate of VOC Applied During Test Run (lb/hr as propane)	306.7	308.0	285.9	230.1	222.5	183.3
TGO Emissions (lb/hr as propane)	213.9	211.3	168.0	194.4	191.0	167.3
TGO Concentration (ppmvd as propane)	1,545	1,538	1,217	1,390	1,368	1,231
Stack Gas Average Flow Rate (acfm)	23,994	23,837	23,944	24,265	24,247	23,965
Stack Gas Average Flow Rate (scfm)	20,989	20,945	20,972	21,288	21,235	20,930
Stack Gas Average Flow Rate (dscfm)	20,158	20,003	20,115	20,367	20,324	19,779
Stack Gas Average Velocity (fpm)	3,055	3,035	3,048	3,089	3,087	3,051
Stack Gas Average Static Pressure (in-H_2O)	-1.50	-1.50	-1.50	-1.50	-1.50	-1.50
Stack Gas Average Temperature (°F)	122	120	123	122	123	125
Stack Gas Percent by Volume Moisture (%H_2O)	3.96	4.50	4.09	4.32	4.29	5.50
Measured Stack Inner Diameter (in)*			38.2 X 37.7			
Percent by Volume Carbon Dioxide in Stack Gas (%-dry)	0.08	0.00	0.00	0.00	0.00	0.00
Percent by Volume Oxygen in Stack Gas (%-dry)	20.50	20.50	20.00	19.50	19.50	20.00
Percent by Volume Nitrogen in Stack Gas (%-dry)	79.42	79.50	80.00	80.50	80.50	80.00

* The EUCOATINGLINE SV-RTO Inlet Duct was elliptical in shape.

MONTROSE AIR QUALITY SERVICES

3.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

3.1 PROCESS DESCRIPTION AND OPERATION

Ventra Fowlerville operates an automotive plastic parts coating line (EUCOATINGLINE). The EUCOATINGLINE is an automated conveyorized system consisting of a 5-stage aqueous wash line, three down-draft water-wash spray booths (adhesive promoter (Ad-Pro), basecoat, and clearcoat), an Ad-Pro drying oven, and a final cure oven. The Ad-Pro booth is equipped with three robots employing non-electrostatic applicators. The basecoat booth is equipped with eight robots, five employing electrostatic bell guns and three electrostatic gun applicators. The clearcoat booth is equipped with six robots, all employing electrostatis bell applicators.

Uncoated parts enter the wash line for a thorough cleaning and are oven dried prior to being conveyed to the spray booths where the Ad-Pro, basecoat, and clearcoat are applied. Coated parts are then conveyed to a second oven where the coating is cured. The EUCOATINGLINE is a fully enclosed system. Once parts enter the wash line, they are not exposed to the general plant environment until after they emerge from the final cure oven. the EUCOATINGLINE was in operation for this test event.

Tables 3.1 and 3.2 display the process data. Figure 3.1 depicts the process and sampling location schematic.

3.2 CONTROL EQUIPMENT DESCRIPTION

During this test, emissions from the EUCOATINGLINE were controlled by an RTO.

3.3 SAMPLING LOCATION(S)

3.3.1 EUCOATINGLINE SV-RTO Inlet Duct

The EUCOATINGLINE SV-RTO Inlet Duct was elliptical in shape with measured inner diameters of 38.2-inches and 37.7-inches. The duct was oriented in the vertical plane with downward flow and was accessed from a ladder. Two 2.8-inch I.D. sampling ports were located 90° apart from one another at a location that met US EPA Method 1, Section 11.1.1 criteria. Prior to emissions sampling, the duct was traversed to verify the absence of cyclonic flow. An average yaw angle of 9.19° was measured. Therefore, the sampling location also met US EPA Method 1, Section 11.4.2 criteria. During emissions sampling, the duct was traversed for duct gas volumetric flowrate. A single point was utilized for dry molecular weight and moisture content determination. A second point, located within the central 10% of the duct cross-sectional area, was utilized for TGO and CH_4 concentration determinations.

3.3.2 EUCOATINGLINE SV-RTO Exhaust Stack

The EUCOATINGLINE SV-RTO Exhaust Stack was elliptical in shape with measured inner diameters of 47.6-inches and 47.8-inches. The stack was oriented in the vertical plane with upward flow and was accessed from a permanent platform. Two 3.0-inch I.D. sampling ports were located 90° apart from one another at a location that met US EPA Method 1, Section 11.1.1 criteria. Prior to emissions sampling, the stack was traversed to verify the absence of cyclonic flow. An average yaw angle of 9.25° was measured. Therefore, the sampling location also met US EPA Method 1, Section 11.4.2 criteria. During emissions sampling, the stack was traversed for stack gas volumetric flowrate. A single point was utilized for dry molecular weight and moisture content determination. A second point, located within the central 10% of the stack cross-sectional area, was utilized for TGO and CH_4 concentration determinations.

Figures 3.2 and 3.3 schematically illustrate the traverse point and sample port locations utilized.

3.4 PROCESS SAMPLING LOCATION(S)

Process samples of coatings were obtained by Montrose personnel from the coating vats associated with the EUCOATINGLINE at the beginning of each CE test period. These samples were later analyzed utilizing US EPA Method 204A to determine the VOC content (%-by weight as propane).

The total weight rate of VOCs applied during each run is displayed in Table 2.3. Tables 3.1 and 3.2 detail the process data recorded during the CE test runs and the Method 204A analytical data for each coating. The weight of the coatings applied during the CE test runs was recorded by Ventra Fowlerville personnel utilizing their typical record keeping procedures. The US EPA Method 204A Material Balance data and operating conditions of the RTO are included in the Process Data section of the appendix.

TABLE 3.1
EUCOATINGLINE PROCESS DATA

Parameter	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Coating Line	**CLEAR COAT 1 (CC1)**					
Net Coating Used (lb)	259.5	194.6	308.1	113.5	129.7	162.2
Total Process Run Time (hr)	1.00	1.00	1.00	0.75	0.75	0.75
Total Weight Rate of Coating Applied During Test Run (lb/hr)	259.5	194.6	308.1	151.3	172.9	216.3
VOC Fraction of Liquid Samples (V)	0.409	0.433	0.431	0.436	0.426	0.430
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	106.24	84.21	132.68	66.04	73.60	93.06
Coating Line	**GRAY AD PRO (AP2)**					
Net Coating Used (lb)	57.0	60.0	50.0	41.0	45.0	27.0
Total Process Run Time (hr)	1.00	1.00	1.00	0.75	0.75	0.75
Total Weight Rate of Coating Applied During Test Run (lb/hr)	57.0	60.0	50.0	54.7	60.0	36.0
VOC Fraction of Liquid Samples (V)	0.889	0.889	0.869	0.836	0.937	0.837
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	50.67	53.32	43.43	45.69	56.20	30.14
Coating Line	**STAR WHITE BC (10)**					
Net Coating Used (lb)	119.0	271.0	-	119.0	-	65.0
Total Process Run Time (hr)	1.00	1.00	-	0.75	-	0.75
Total Weight Rate of Coating Applied During Test Run (lb/hr)	119.0	271.0	-	158.7	-	86.7
VOC Fraction of Liquid Samples (V)	0.439	0.436	-	0.334	-	0.335
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	52.20	118.26	-	53.02	-	29.01

TABLE 3.2
EUCOATINGLINE PROCESS DATA

Parameter	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Coating Line			**STAR WHITE MC (14)**			
Net Coating Used (lb)	43.0	95.0	-	45.0	-	20.0
Total Process Run Time (hr)	1.00	1.00	-	0.75	-	0.75
Total Weight Rate of Coating Applied During Test Run (lb/hr)	43.0	95.0	-	60.0	-	26.7
VOC Fraction of Liquid Samples (V)	0.435	0.433	-	0.424	-	0.417
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	18.70	41.10	-	25.45	-	11.13
Coating Line			**BRIGHT WHITE (11)**			
Net Coating Used (lb)	175.0	-	250.0	-	184.0	50.0
Total Process Run Time (hr)	1.00	-	1.00	-	0.75	0.75
Total Weight Rate of Coating Applied During Test Run (lb/hr)	175.0	-	250.0	-	245.3	66.7
VOC Fraction of Liquid Samples (V)	0.451	-	0.439	-	0.302	0.299
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	78.92	-	109.80	-	73.98	19.94
Coating Line			**OXFORD WHITE (13)**			
Net Coating Used (lb)	-	25.0	-	68.0	38.0	-
Total Process Run Time (hr)	-	1.00	-	0.75	0.75	-
Total Weight Rate of Coating Applied During Test Run (lb/hr)	-	25.0	-	90.7	50.7	-
VOC Fraction of Liquid Samples (V)	-	0.444	-	0.440	0.370	-
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	-	11.09	-	39.89	18.76	-

FIGURE 3.1
EUCOATINGLINE PROCESS AND SAMPLING LOCATION SCHEMATIC

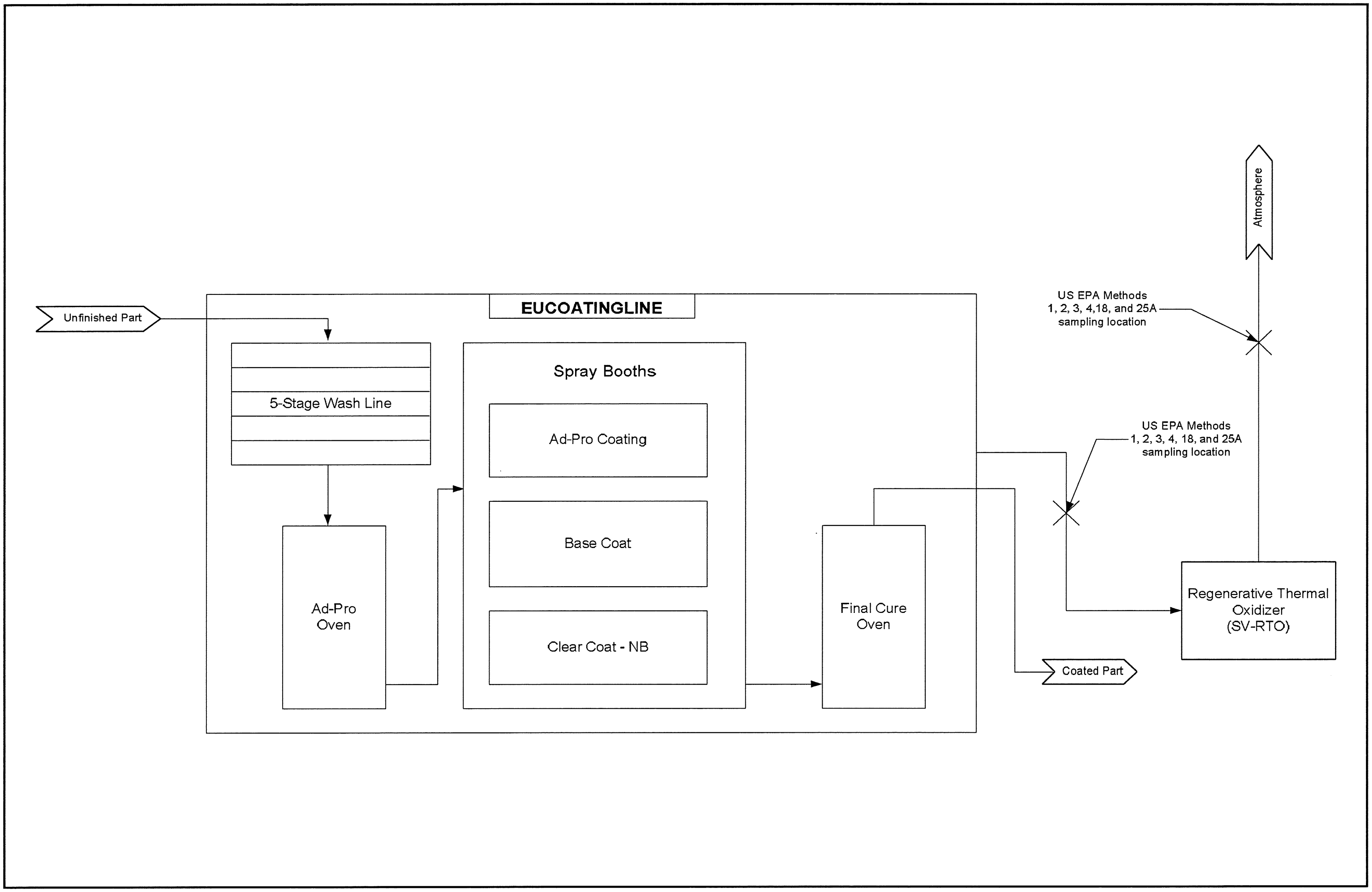
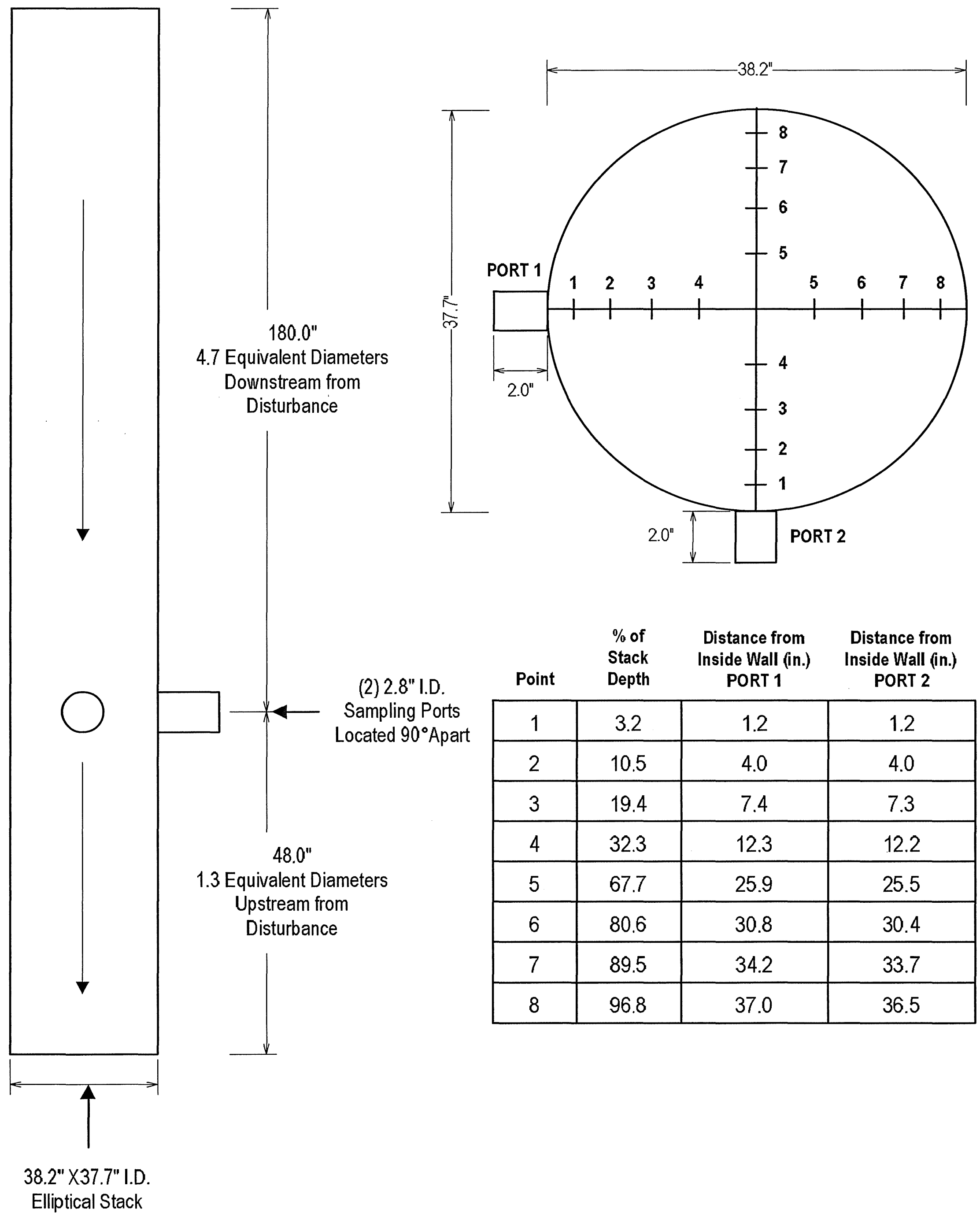
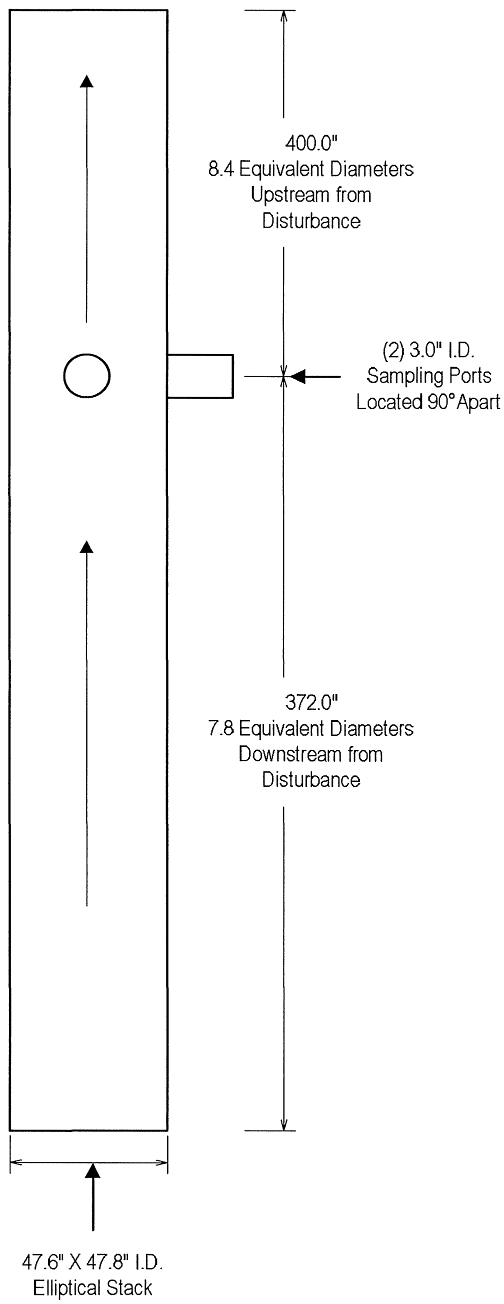


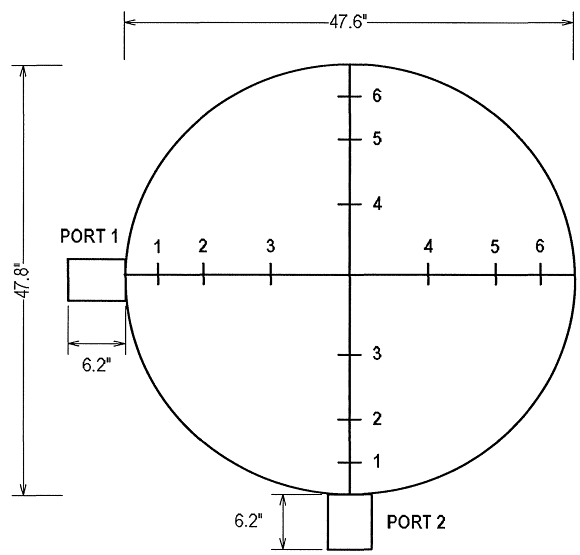
FIGURE 3.2
EUCOATINGLINE SV-RTO INLET TRAVERSE POINT LOCATION DRAWING



Point	% of Stack Depth	Distance from Inside Wall (in.) PORT 1	Distance from Inside Wall (in.) PORT 2
1	3.2	1.2	1.2
2	10.5	4.0	4.0
3	19.4	7.4	7.3
4	32.3	12.3	12.2
5	67.7	25.9	25.5
6	80.6	30.8	30.4
7	89.5	34.2	33.7
8	96.8	37.0	36.5

FIGURE 3.3
EUCOATINGLINE SV-RTO EXHAUST TRAVERSE POINT LOCATION DRAWING





Point	% of Stack Depth	Distance from Inside Wall (in.) PORT 1	Distance from Inside Wall (in.) PORT 2
1	4.4	2.1	2.1
2	14.6	6.9	7.0
3	29.6	14.1	14.1
4	70.4	33.5	33.7
5	85.4	40.7	40.8
6	95.6	45.5	45.7

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 TEST METHODS

4.1.1 US EPA Method 1: "Sample and Velocity Traverses for Stationary Sources"

Principle: To aid in the representative measurement of pollutant emissions and/or total volumetric flow rate from a stationary source, a measurement site where the effluent stream is flowing in a known direction is selected, and the cross-section of the stack is divided into a number of equal areas. A traverse point is then located within each of these equal areas. This method was utilized in its entirety as per the procedures outlined in 40 CFR Part 60, Appendix A.

4.1.2 US EPA Method 2: "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"

Principle: The average gas velocity in a stack is determined from the gas density and from measurement of the average velocity head with a Type S (Stausscheibe or reverse type) pitot tube. This method was utilized in its entirety as per the procedures outlined in 40 CFR Part 60, Appendix A.

4.1.3 US EPA Method 3: "Gas Analysis for the Determination of Dry Molecular Weight"

Principle: A gas sample is extracted from a stack by one of the following methods: (1) single-point, grab sampling; (2) single-point, integrated sampling; or (3) multi-point, integrated sampling. The gas sample is analyzed for percent CO_2, percent O_2, and if necessary, for percent CO. For dry molecular weight determination, either an Orsat or a Fyrite analyzer may be used for the analysis. This method was utilized in its entirety as per the procedures outlined in 40 CFR Part 60, Appendix A.

4.1.4 US EPA Method 4: "Determination of Moisture Content in Stack Gases"

Principle: A gas sample is extracted at a constant rate from the source; moisture is removed from the sample stream and determined either volumetrically or gravimetrically. This method was utilized in its entirety as per the procedures outlined in 40 CFR Part 60, Appendix A.

4.1.5 US EPA Method 18: "Determination of Gaseous Organic Compound Emissions Chromatography"

Principle: This method is based on separating the major components of a gas mixture with a gas chromatograph (GC) and measuring the separated components with a suitable detector. The retention times of each separated component are compared with those of known compounds under identical conditions. Therefore, the analyst confirms the identity and approximate concentrations of the organic emission components beforehand.

With this information, the analyst then prepares or purchases commercially available standard mixtures to calibrate the GC under conditions identical to those of the samples. The analyst also determines the need for sample dilution to avoid detector saturation, gas stream filtration to eliminate particulate matter, and prevention of moisture condensation. This method was utilized in its entirety as per the procedures outlined in 40 CFR Part 60, Appendix A.

4.1.6 US EPA Method 25A: "Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer"

Principle: A gas sample is extracted from the source through a heated sample line, if necessary, and glass fiber filter to a flame ionization analyzer (FIA). Results are reported as volume concentration equivalents of the calibration gas or as carbon equivalents. Performance specifications and test procedures are provided to ensure reliable data. This method was utilized in its entirety as per the procedures outlined in 40 CFR Part 60, Appendix A.

4.1.7 US EPA Method 204A: "Volatile Organic Compounds Content in Liquid Input Stream"

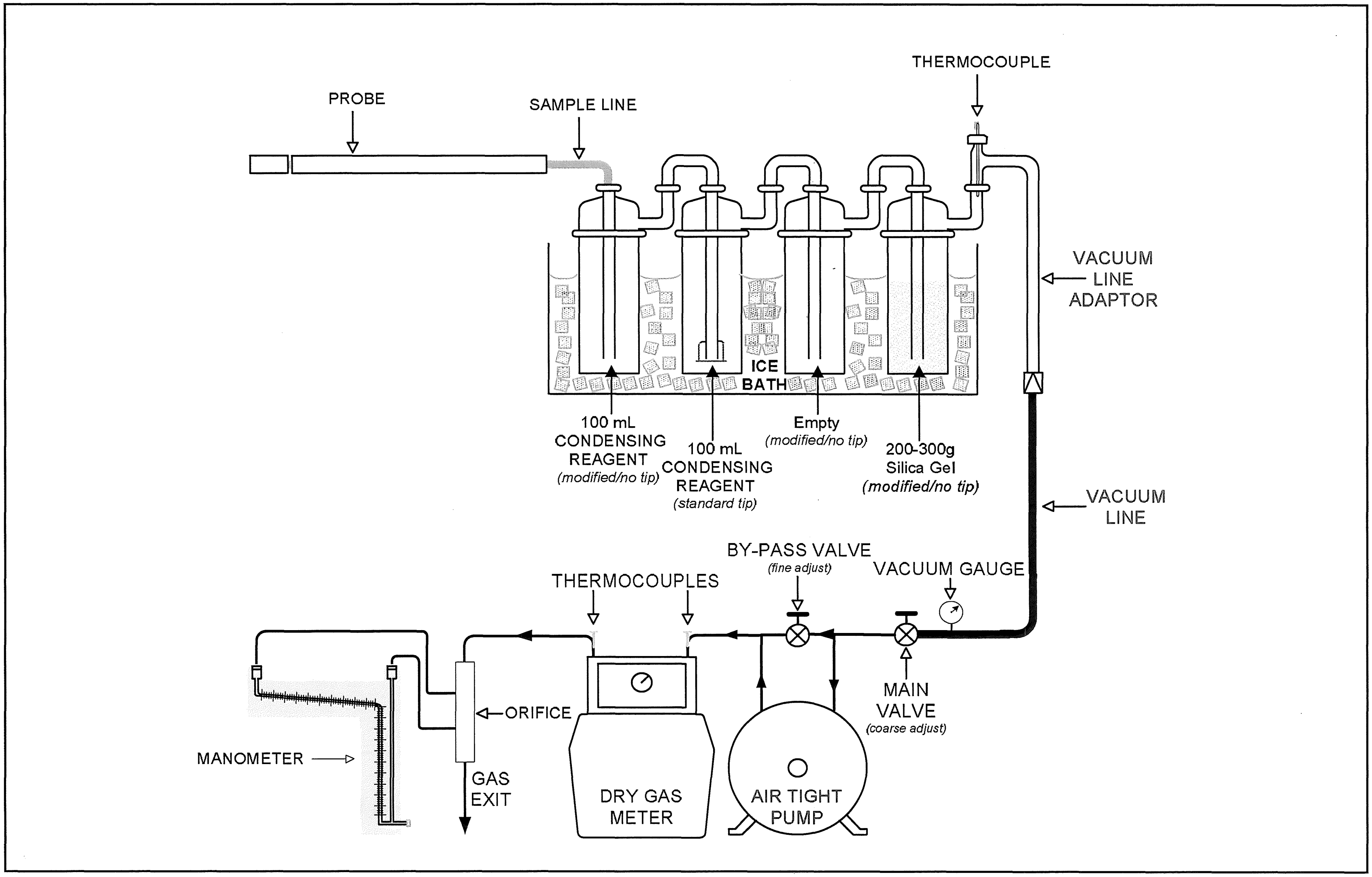
Principle: The amount of VOC containing liquid introduced to the process is determined as the weight difference of the feed material before and after each sampling run. The VOC content of the liquid input material is determined by volatilizing a small aliquot of the material and analyzing the volatile material using a flame ionization analyzer (FIA). A sample of each VOC containing liquid is analyzed with a FIA to determine V. This method was utilized in its entirety as per the procedures outlined in 40 CFR Part 51, Appendix M.

The sampling trains utilized during this testing project are depicted in Figures 4.1 and 4.2.

4.2 PROCEDURES FOR OBTAINING PROCESS DATA

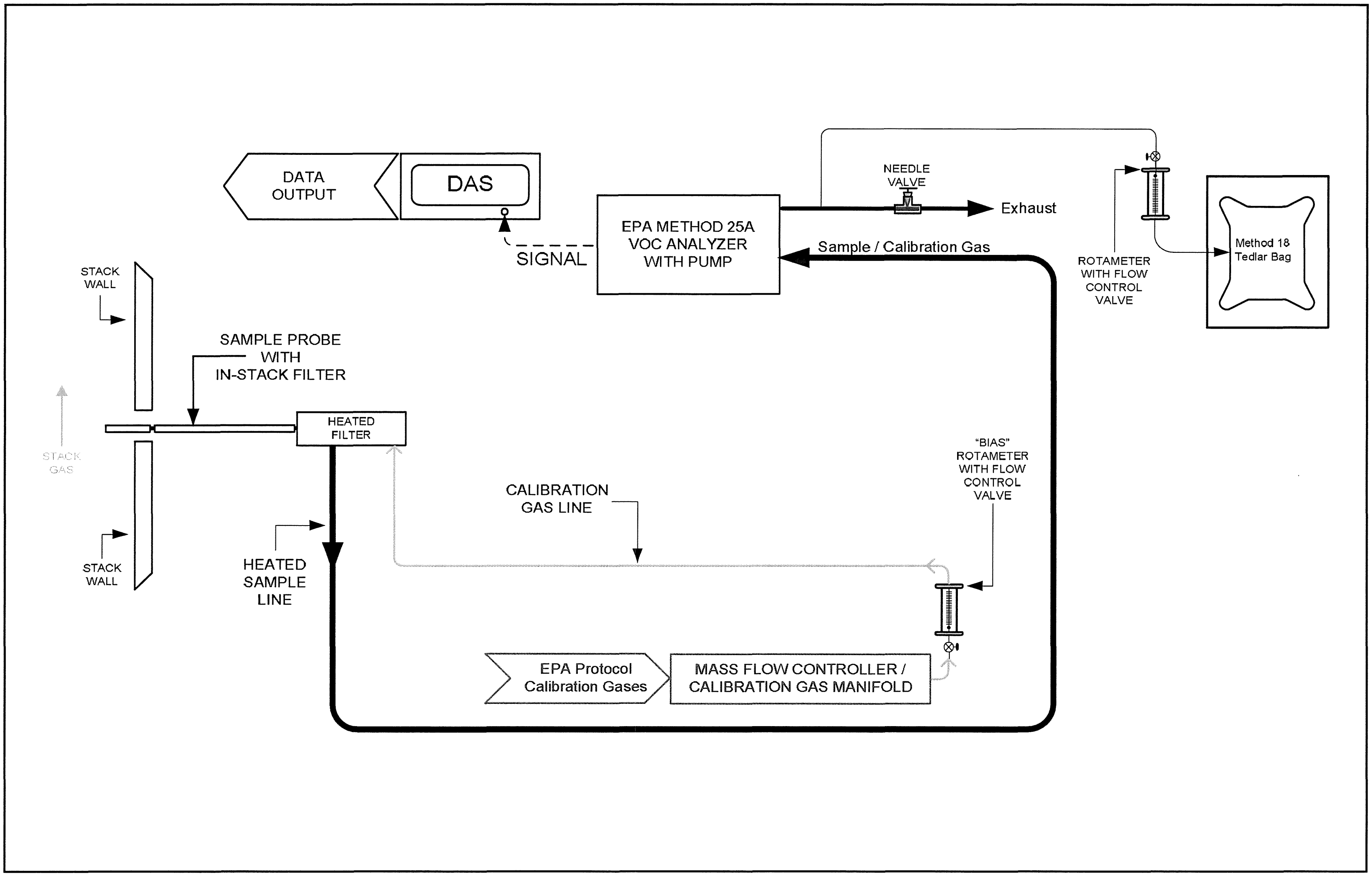
Process data was recorded by Ventra Fowlerville personnel utilizing their typical record keeping procedures. Recorded process data was provided to Montrose personnel at the conclusion of this test event. The process data is located in Tables 3.1 and 3.2 and in the Appendix.

FIGURE 4.1
US EPA METHOD 4 SAMPLING TRAIN SCHEMATIC



MONTROSE

FIGURE 4.2
US EPA METHODS 18 AND 25A SAMPLING TRAIN SCHEMATIC



5.0 INTERNAL QA/QC ACTIVITIES

5.1 QA AUDITS

Tables 5.1 to 5.6 illustrate the QA audits that were performed during this test.

All meter boxes and sampling trains used during sampling performed within the requirements of their respective methods as is shown in Tables 5.1 and 5.2. All post-test leak checks were well below the applicable limit. Minimum metered volumes were also met where applicable.

Table 5.3 displays the US EPA Method 3 Fyrite Audits which were performed during this test in accordance with US EPA Method 3, Section 10.1 requirements. As shown, all Fyrite analyzer results were within ±0.5% of the respective Audit Gas concentrations.

Table 5.4 illustrates the FIA calibration audits which were performed during this test (and integral to performing US EPA Method 25A correctly) were, except where noted, within the Measurement System Performance Specifications of ±3% of span for the Zero and Calibration Drift Checks, and ±5% of the respective cylinder concentrations for the Calibration Error Checks.

Table 5.5 displays the US EPA Method 205 field evaluation of the calibration gas dilution system utilized during this test event. As shown, the average concentration output at each dilution level was within ±2% of the predicted value. The average concentration output of the direct inject gas was also within ±2% of the certified concentration.

Table 5.6 displays the laboratory QA results for US EPA Method 18. The average spike recovery efficiencies for each location were within the acceptable range of 70% to 130%.

5.2 QA/QC PROBLEMS

No QA/QC problems occurred during this test event.

5.3 QUALITY STATEMENT

Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is presented in the report appendices.

TABLE 5.1
US EPA METHOD 4 SAMPLING TRAIN AUDIT RESULTS

Parameter	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Sampling Location	**EUCOATINGLINE SV-RTO Inlet Duct**					
Post-Test Leak Rate Observed (cfm)	0.000	0.001	0.000	0.001	0.002	0.000
Applicable Method Allowable Leak Rate (cfm)	0.020	0.020	0.020	0.020	0.020	0.020
Acceptable	Yes	Yes	Yes	Yes	Yes	Yes
Volume of Dry Gas Collected (dscf)	30.412	30.650	30.303	27.331	27.023	27.474
Recommended Volume of Dry Gas Collected (dscf)	21.000	21.000	21.000	21.000	21.000	21.000
Acceptable	YES	YES	YES	YES	YES	YES
Sampling Location	**EUCOATINGLINE SV-RTO Exhaust Stack**					
Post-Test Leak Rate Observed (cfm)	0.001	0.003	0.000			
Applicable Method Allowable Leak Rate (cfm)	0.020	0.020	0.020			
Acceptable	Yes	Yes	Yes			
Volume of Dry Gas Collected (dscf)	32.041	32.157	31.856			
Recommended Volume of Dry Gas Collected (dscf)	21.000	21.000	21.000			
Acceptable	YES	YES	YES			

TABLE 5.2
US EPA METHOD 4 DRY GAS METER AUDIT RESULTS

Sampling Location	Pre-Test Dry Gas Meter Calibration Factor (Y)	Average Post-Test Dry Gas Meter Calibration Check Value (Yqa)	Post Test Dry Gas Meter Calibration Check Value Difference From Pre-Test Calibration Factor (%)	Applicable Method Allowable Difference (%)	Acceptable
EUCOATINGLINE SV-RTO Inlet Duct	1.0106	1.0193	-0.86%	5.00%	YES
EUCOATINGLINE SV-RTO Exhaust Stack	0.9959	0.9938	0.21%	5.00%	YES

TABLE 5.3
US EPA METHOD 3 FYRITE AUDIT

Audit Date	August 15, 2019	
Audit Gas	**$\%CO_2$**	**$\%O_2$**
Audit Gas Concentration (%)	**6.1**	**6.1**
Fyrite Response 1 (%)	6.0	6.0
Fyrite Response 2 (%)	6.0	6.0
Fyrite Response 3 (%)	6.0	6.0
Average (%)	6.0	6.0
Average Within ±0.5%	YES	YES

Audit Gas Cylinder Number: XC021270B

TABLE 5.4
US EPA METHOD 25A ANALYZER CALIBRATION AND QA

	EUCOATINGLINE SV-RTO Inlet Duct					
FIA ANALYZER	**RUN 1**	**Acceptable**	**RUN 2**	**Acceptable**	**RUN 3**	**Acceptable**
Analyzer Span During Test Run (ppmv as propane)	3,000.0	YES	3,000.0	YES	3,000.0	YES
Average Stack Gas Concentration (ppmv as propane)	1,484.1	YES	1,469.2	YES	1,166.8	YES
Zero Drift (% of Span)	0.67	YES	1.07	YES	1.03	YES
Calibration Drift for Mid-Level Gas (% of Span)	0.13	YES	0.87	YES	0.50	YES
Calibration Error for Low-Level Gas (% of Cal. Gas Tag Value)	-4.44	YES	-4.44	YES	-4.44	YES
Calibration Error for Mid-Level Gas (% of Cal. Gas Tag Value)	1.73	YES	1.73	YES	1.73	YES

	EUCOATINGLINE SV-RTO Inlet Duct					
FIA ANALYZER	**RUN 4**	**Acceptable**	**RUN 5**	**Acceptable**	**RUN 6**	**Acceptable**
Analyzer Span During Test Run (ppmv as propane)	3,000.0	YES	3,000.0	YES	3,000.0	YES
Average Stack Gas Concentration (ppmv as propane)	1,329.5	YES	1,309.8	YES	1,163.7	YES
Zero Drift (% of Span)	0.87	YES	0.90	YES	1.07	YES
Calibration Drift for Mid-Level Gas (% of Span)	-0.07	YES	-0.03	YES	0.97	YES
Calibration Error for Low-Level Gas (% of Cal. Gas Tag Value)	-4.44	YES	-4.44	YES	-4.44	YES
Calibration Error for Mid-Level Gas (% of Cal. Gas Tag Value)	1.73	YES	1.73	YES	1.73	YES

	EUCOATINGLINE SV-RTO Exhaust Stack					
FIA ANALYZER	**RUN 1**	**Acceptable**	**RUN 2**	**Acceptable**	**RUN 3**	**Acceptable**
Analyzer Span During Test Run (ppmv as propane)	550.0	YES	550.0	YES	550.0	YES
Average Stack Gas Concentration (ppmv as propane)	49.7	YES	48.6	YES	38.5	YES
Zero Drift (% of Span)	0.01	YES	0.06	YES	-0.21	YES
Calibration Drift for Mid-Level Gas (% of Span)	0.00	YES	-0.01	YES	-0.02	YES
Calibration Error for Low-Level Gas (% of Cal. Gas Tag Value)	1.58	YES	1.98	YES	1.98	YES
Calibration Error for Mid-Level Gas (% of Cal. Gas Tag Value)	0.24	YES	0.05	YES	0.05	YES

TABLE 5.5
US EPA METHOD 205 GAS DILUTION SYSTEM QA

Analyzer Serial Number: 1810033
Dilution System Serial Number: 4918
CGD Mass Flow Controllers Used: 1 and 2

	Dilution Level 1	Dilution Level 2	Direct Inject Gas
Calibration Tag Value (ppm):	7855	7855	3995
Dilution Ratio:	2.91	1.97	-
Predicted Diluted Value (ppm):	2700	3995	3995
Injection 1 Response (ppm):	2685	4000	4052
Injection 2 Response (ppm):	2661	3954	3998
Injection 3 Response (ppm):	2646	3949	3995
Average Response (ppm):	2664	3968	4015
Difference From Predicted (%):	1.33	0.68	-0.50
Acceptable (YES/NO):	YES	YES	YES

TABLE 5.6
EMISSION RESULTS

	Methane
Initial Sample Concentration (ppmv)	9.53
Theoretical Spike Concentration (ppmv)	5.06
Final Sample Concentration (ppmv)	14.3
Recovery (%)	**95.0**
Acceptable per U.S. EPA Method 18 (YES/NO) (Expected Range 70%-130%)	YES

APPENDIX