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Compliance Stack Emission Test Report

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

EUCOATINGLINE

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

Ventra Fowlerville, LLC
Fowlerville, Michigan

Date Conducted: November 6, 2014
Report Number: 141110.1.0

Prepared by:

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Report Date: December 29, 2014

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1.0 INTRODUCTION

1.1 Summary of Test Program

Ventra Fowlerville, LLC (State Registration No.: N7413), located in Fowlerville, Michigan, contracted Air Compliance Testing, Inc. of Cleveland, Ohio, to conduct compliance stack emission testing for their EUCOATINGLINE. Testing was performed to satisfy the emissions testing requirements pursuant to Michigan Department of Environmental Quality (MDEQ) Renewable Operating Permit No. MI-ROP-N7413. The testing was performed on November 6, 2014.

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 EUCOATINGLINE. In addition, the sampling at the EUCOATINGLINE SV-RTO Inlet Duct was used in conjunction with EPA Method 204A to determine the Volatile Organic Compound (VOC) capture efficiency (CE) (as propane) of the EUCOATINGLINE. Testing was conducted during maximum production operations. During this test, emissions from EUCOATINGLINE were controlled by an RTO.

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

1.2 Key Personnel

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

Catherine Cupal, Human Resource Manager, Ventra Fowlerville, LLC, 517-223-4502
Celia Jackson, Director of Environmental Affairs/IH, Ventra Ionia Main, LLC, 616-597-3220
Karen Kajiya-Mills, TPU Supervisor, Air Quality Division, MDEQ, 517-284-6780
Robert Lisy QSTI, District Manager, Air Compliance Testing, Inc., 800-372-2471
Peter Becker, Project Manager, Air Compliance Testing, Inc., 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 EUCOATINGLINE and the VOC CE (as propane) of the EUCOATINGLINE during maximum production operations. Testing was performed to satisfy the emissions testing requirements pursuant to MDEQ Renewable Operating Permit No. MI-ROP-N7413.

The specific test objectives for this test were to:

Simultaneously measure the concentrations of 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 flow rate of the stack gas at the EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack.

Utilize EPA Method 204A to determine the average VOC content (% by weight as propane) of the coating samples collected.

Utilize the above variables to determine the TGNMO DE of the RTO associated with the EUCOATINGLINE during maximum production rate operations.

Utilize the above variables and recorded coating usage rates to determine the VOC CE (as propane) of the EUCOATINGLINE during maximum production rate operations.

Table 2.1 presents the sampling and analytical matrix log for this test.

2.2 Field Test Changes and Problems

The Tedlar bag containing the Run 3 EPA Method 18 sample, which was collected at the EUCOATINGLINE SV-RTO Inlet Duct, was damaged during transport. Since the Run 1 and Run 2 CH_4 concentrations obtained at the inlet were relatively consistent, their average was utilized as the CH_4 concentration for Run 3.

2.3 Presentation of Results

Two (2) 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 during maximum production operations. At each location, one sampling train measured the stack gas dry molecular weight and moisture content while the second sampling train measured the stack gas concentrations of TGO and CH_4. Stack gas volumetric flow rates were measured at the inlet and exhaust prior to or during each concentration run.

Table 2.2.1 displays the TGNMO DE of the RTO associated with the EUCOATINGLINE during maximum production operations.

The TGO CE (as VOC) of the EUCOATINGLINE and total weight rates of VOCs applied during each run are summarized in Table 2.2.2. The resulting CE displayed in Table 2.2.2 was calculated utilizing the lower confidence limit (LCL) approach as described in Section 3.2 of 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 2.2.2 also displays the calculated LCL TGO CE utilizing only Runs 4-6.

The graphs that follow Table 2.2.2 present the raw, uncorrected concentration data measured in the field by the EPA method 25A sampling systems at the EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack.

			EPA TEST METHODS UTILIZE			
			M1/M2 (Flow)	M3 (Dry Mol. Wt.)	M4 (%H_2O)	M (Cl
Date	Run No.	Sampling Location	Sampling Time / Duration (min)	Sampling Time / Duration (min)	Sampling Time / Duration (min)	Samplin Duratio
11/6/2014	1	EUCOATINGLINE SV-RTO Inlet Duct	8:48 - 8:58 10	8:32 - 9:17 45	8:32 - 9:17 45	8:32 4
11/6/2014	2	EUCOATINGLINE SV-RTO Inlet Duct	9:40 - 9:50 10	9:53 - 10:38 45	9:53 - 10:38 45	9:53 4
11/6/2014	3	EUCOATINGLINE SV-RTO Inlet Duct	10:47 - 10:57 10	11:27 - 12:11 45	11:27 - 12:11 45	11:27 4
11/6/2014	4	EUCOATINGLINE SV-RTO Inlet Duct	12:23 - 12:33 10	12:28 - 13:13 45	12:28 - 13:13 45	-
11/6/2014	5	EUCOATINGLINE SV-RTO Inlet Duct	13:24 - 13:31 7	13:52 - 14:38 45	13:52 - 14:38 45	-
11/6/2014	6	EUCOATINGLINE SV-RTO Inlet Duct	14:45 - 14:49 4	14:50 - 15:35 45	14:50 - 15:35 45	-
11/6/2014	1	EUCOATINGLINE SV-RTO Exhaust Stack	8:14 - 8:26 12	8:32 - 9:17 45	8:32 - 9:17 45	8:32 4
11/6/2014	2	EUCOATINGLINE SV-RTO Exhaust Stack	9:40 - 9:50 10	9:53 - 10:38 45	9:53 - 10:38 45	9:53 4
11/6/2014	3	EUCOATINGLINE SV-RTO Exhaust Stack	10:58 - 11:03 5	11:27 - 12:12 45	11:27 - 12:12 45	11:27 4

All times are Eastern Standard Time.

Table 2.1 - Sampling and Analytical Matrix

	EUCOATINGLINE SV-RTO Inlet Duct				EUCOATINGLINE	
	Run 1	Run 2	Run 3	Average	Run 1	Run 2
TGNMO Destruction Efficiency (%)	-	-	-	-	97.1	96.6
TGNMO Mass Emission Rate (lb/hr as carbon)	147.7	137.9	97.2	127.6	4.32	4.68
TGO Mass Emission Rate (lb/hr as carbon)	148.1	138.3	97.6	128.0	4.35	4.71
TGNMO Concentration (ppmvd as carbon)	4,626	4,390	3,600	4,205	144.8	143.3
Methane Concentration (ppmvd as carbon)	10.6	12.4	11.5	11.5	1.06	0.82
TGO Concentration (ppmvd as carbon)	4,637	4,403	3,612	4,217	145.9	144.1
Stack Gas Average Flow Rate (acfm)	20,145	19,806	17,098	19,016	24,083	26,933
Stack Gas Average Flow Rate (scfm)	17,790	17,468	15,060	16,773	16,632	18,153
Stack Gas Average Flow Rate (dscfm)	17,072	16,789	14,442	16,101	15,944	17,468
Stack Gas Average Velocity (fpm)	2,565	2,521	2,177	2,421	1,941	2,170
Stack Gas Average Static Pressure (in-H_2O)	0.15	0.77	0.32	0.41	0.27	0.32
Stack Gas Average Temperature (°F)	115	116	116	116	274	293
Stack Gas Percent by Volume Moisture (%H_2O)	4.03	3.89	4.11	4.01	4.14	3.78
Measured Stack Inner Diameter (in)*	38.2 X 37.7	38.2 X 37.7	38.2 X 37.7	38.2 X 37.7	47.8 X 47.6	47.8 X 47.6
Percent by Volume Carbon Dioxide in Stack Gas (%-dry)	0.00	0.00	0.00	0.00	0.00	0.00
Percent by Volume Oxygen in Stack Gas (%-dry)	20.67	20.83	20.67	20.72	20.83	20.67
Percent by Volume Nitrogen in Stack Gas (%-dry)	79.33	79.17	79.33	79.28	79.17	79.33

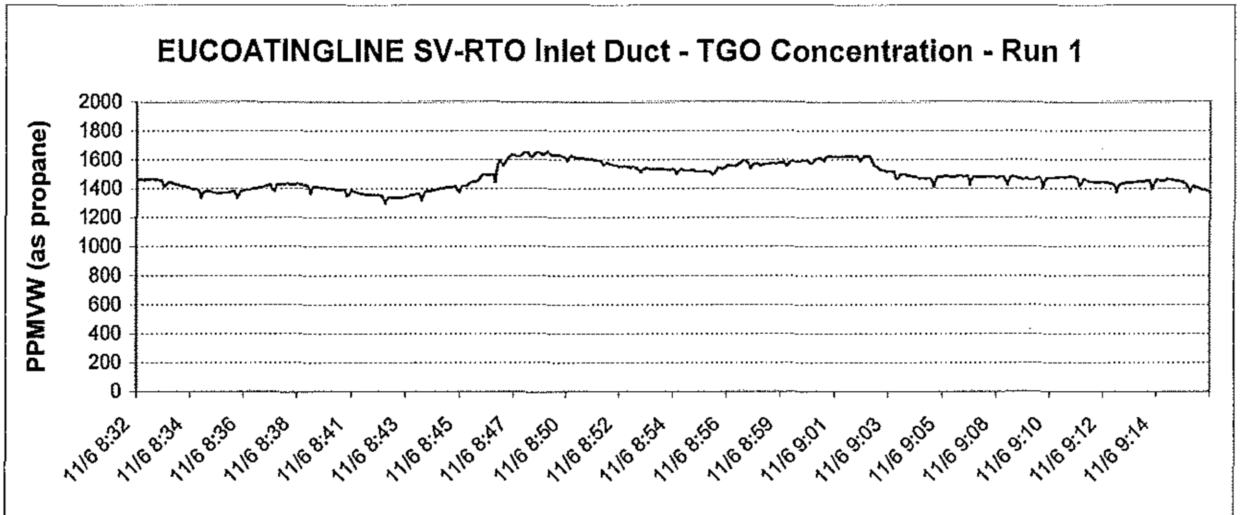
* The EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack were elliptical in shape.

Table 2.2.1 - Emission Results

	EUCOATINGLINE SV-RTO Inlet				
	Run 1	Run 2	Run 3	Run 4	Run 5
Rolling Value - Lower Confidence Limit (LCL) VOC Capture Efficiency (%)	**-**	**59.8**	**72.4**	**75.6**	**78.6**
Run Specific Measured VOC Capture Efficiency (%)	84.6	72.4	80.3	92.0	96.9
Rolling Average VOC Capture Efficiency (%)	84.6	78.5	79.1	82.3	85.3
Rolling DQO Indicator Statistic (P)	-	98.5	19.4	15.8	14.0
Coating Usage Rate (lb/hr)	595.8	545.9	324.7	419.7	462.4
Weight Rate of VOC Applied During Test Run (lb/hr as propane)	214.3	233.7	148.6	188.1	179.6
TGO Mass Emission Rate (lb/hr as propane)	181.2	169.2	119.4	173.1	174.1
TGO Concentration (ppmvd as propane)	1,546	1,468	1,204	1,491	1,495
Stack Gas Average Flow Rate (acfm)	20,145	19,806	17,098	19,826	19,962
Stack Gas Average Flow Rate (scfm)	17,790	17,468	15,060	17,516	17,641
Stack Gas Average Flow Rate (dscfm)	17,072	16,789	14,442	16,904	16,955
Stack Gas Average Velocity (fpm)	2,565	2,521	2,177	2,524	2,541
Stack Gas Average Static Pressure (in-H_2O)	0.15	0.77	0.32	0.87	0.76
Stack Gas Average Temperature (°F)	115	116	116	115	115
Stack Gas Percent by Volume Moisture (%H_2O)	4.03	3.89	4.11	3.50	3.89
Measured Stack Inner Diameter (in)*	38.2 X 37.7	38.2 X 37.7	38.2 X 37.7	38.2 X 37.7	38.2 X 37
Percent by Volume Carbon Dioxide in Stack Gas (%-dry)	0.00	0.00	0.00	0.00	0.00
Percent by Volume Oxygen in Stack Gas (%-dry)	20.67	20.83	20.67	21.00	20.83
Percent by Volume Nitrogen in Stack Gas (%-dry)	79.33	79.17	79.33	79.00	79.17

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

Table 2.2.2 - Emission Results


EUCOATINGLINE SV-RTO Inlet Duct - TGO Concentration - Run 1
PPMVW (as propane)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
11/6 8:32
11/6 8:34
11/6 8:36
11/6 8:38
11/6 8:41
11/6 8:43
11/6 8:45
11/6 8:47
11/6 8:50
11/6 8:52
11/6 8:54
11/6 8:56
11/6 8:59
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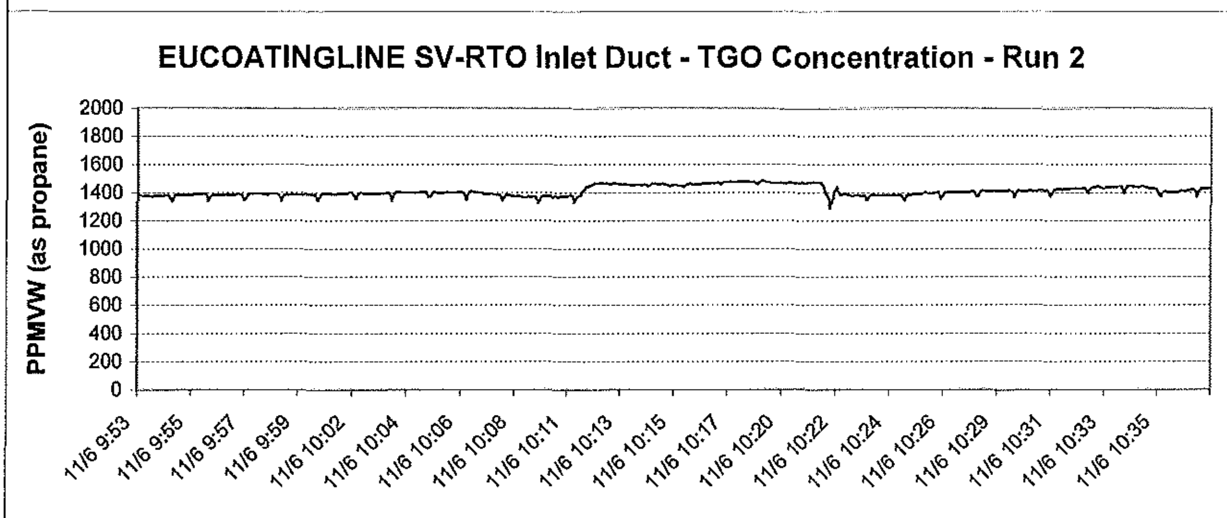
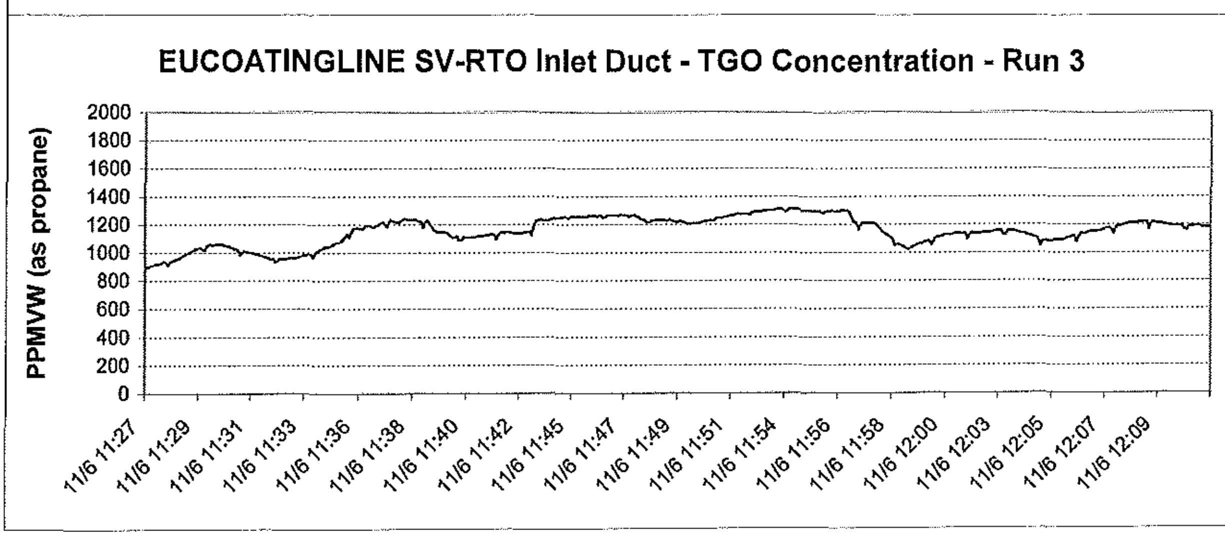
11/6 9:12
11/6 9:14


EUCOATINGLINE SV-RTO Inlet Duct - TGO Concentration - Run 2
PPMVW (as propane)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
11/6 9:53
11/6 9:55
11/6 9:57
11/6 9:59
11/6 10:02
11/6 10:04
11/6 10:06
11/6 10:08
11/6 10:11
11/6 10:13
11/6 10:15
11/6 10:17
11/6 10:20
11/6 10:22
11/6 10:24
11/6 10:26
11/6 10:29
11/6 10:31
11/6 10:33
11/6 10:35


EUCOATINGLINE SV-RTO Inlet Duct - TGO Concentration - Run 3
PPMVW (as propane)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
11/6 11:27
11/6 11:29
11/6 11:31
11/6 11:33
11/6 11:36
11/6 11:38
11/6 11:40
11/6 11:42
11/6 11:45
11/6 11:47
11/6 11:49
11/6 11:51
11/6 11:54
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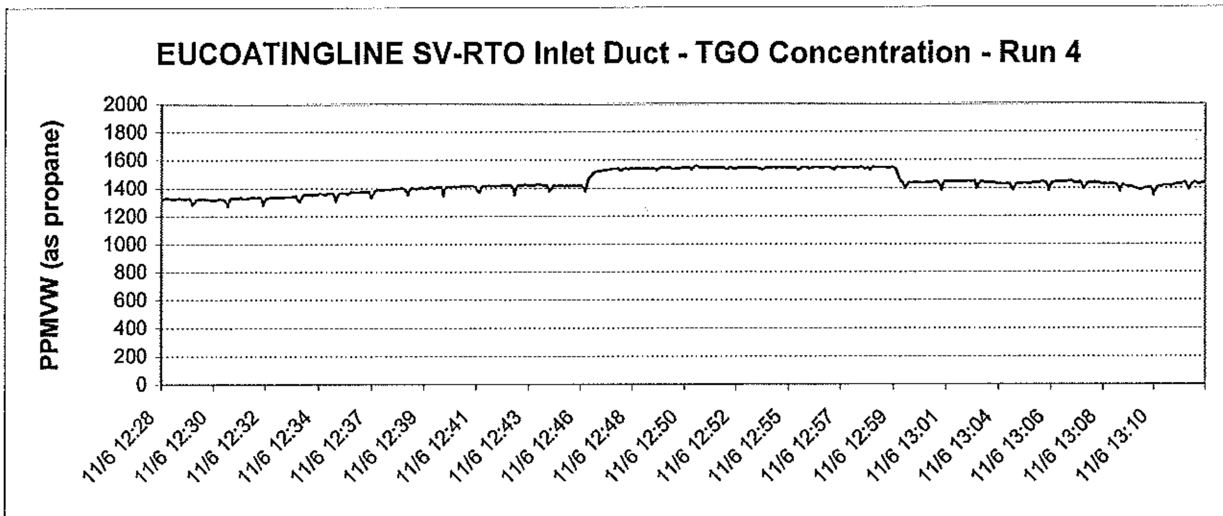
11/6 12:03
11/6 12:05
11/6 12:07
11/6 12:09


EUCOATINGLINE SV-RTO Inlet Duct - TGO Concentration - Run 4
PPMVW (as propane)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
11/6 12:28
11/6 12:30
11/6 12:32
11/6 12:34
11/6 12:37
11/6 12:39
11/6 12:41
11/6 12:43
11/6 12:46
11/6 12:48
11/6 12:50
11/6 12:52
11/6 12:55
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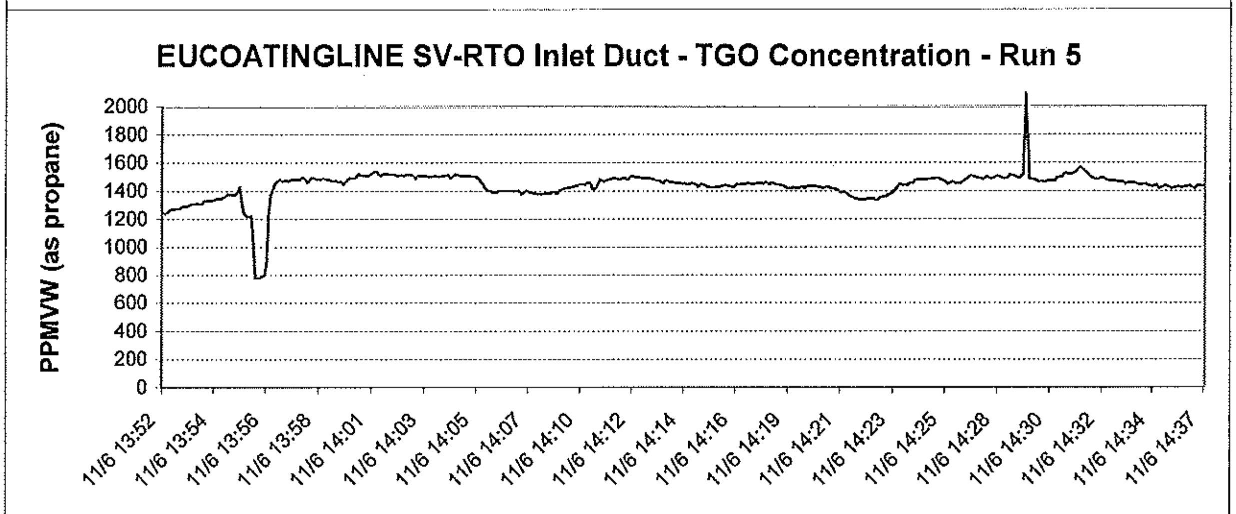
11/6 13:08
11/6 13:10


EUCOATINGLINE SV-RTO Inlet Duct - TGO Concentration - Run 5
PPMVW (as propane)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
11/6 13:52
11/6 13:54
11/6 13:56
11/6 13:58
11/6 14:01
11/6 14:03
11/6 14:05
11/6 14:07
11/6 14:10
11/6 14:12
11/6 14:14
11/6 14:16
11/6 14:19
11/6 14:21
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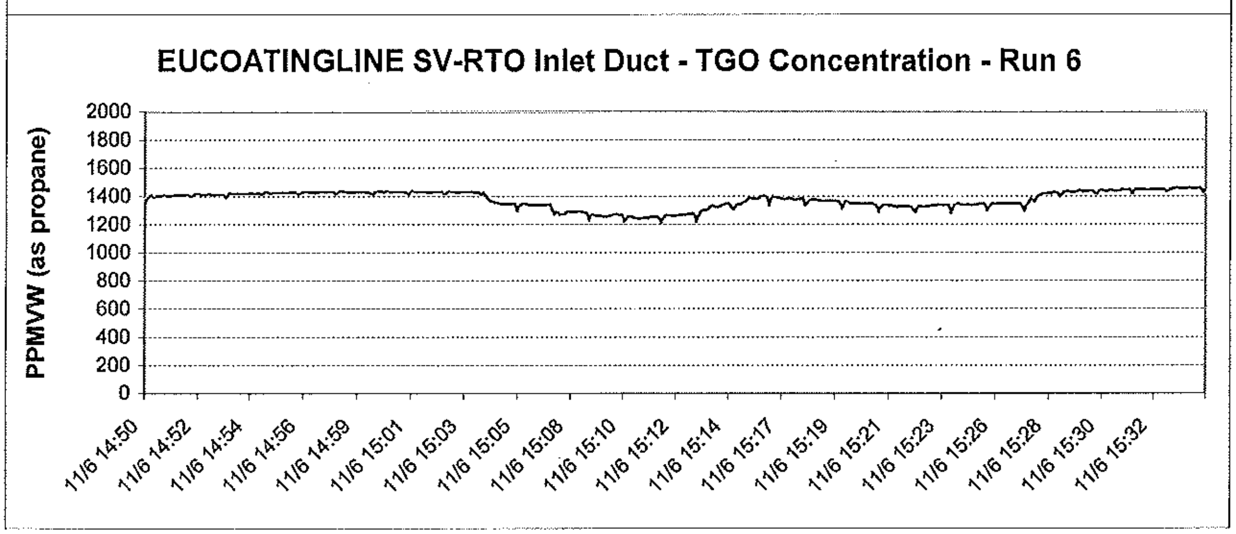
11/6 14:34
11/6 14:37


EUCOATINGLINE SV-RTO Inlet Duct - TGO Concentration - Run 6
PPMVW (as propane)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
11/6 14:50
11/6 14:52
11/6 14:54
11/6 14:56
11/6 14:59
11/6 15:01
11/6 15:03
11/6 15:05
11/6 15:08
11/6 15:10
11/6 15:12
11/6 15:14
11/6 15:17
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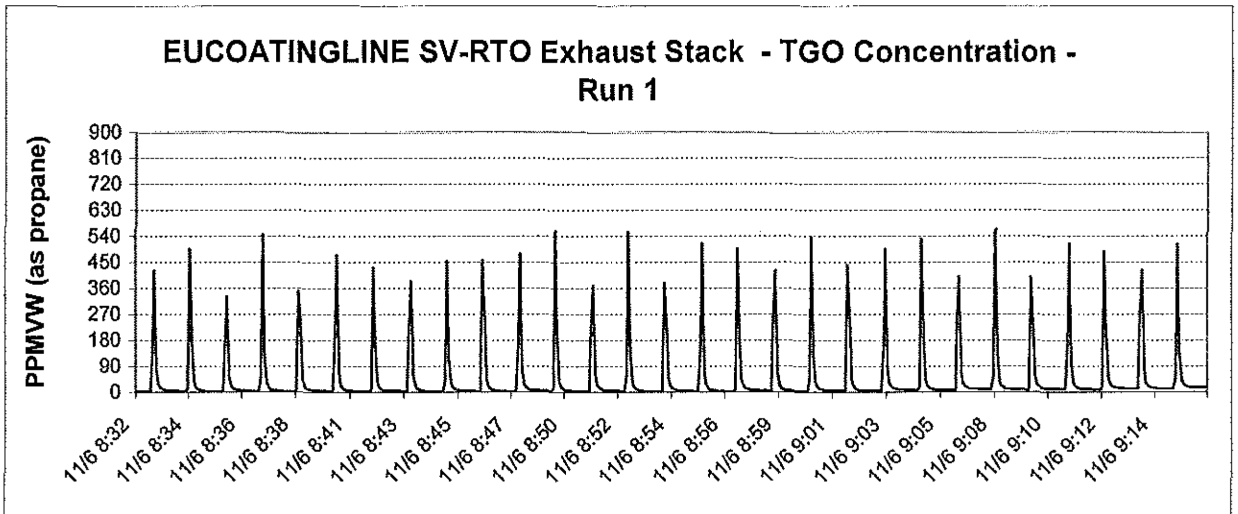
11/6 15:30
11/6 15:32


EUCOATINGLINE SV-RTO Exhaust Stack - TGO Concentration - Run 1
PPMVW (as propane)
900
810
720
630
540
450
360
270
180
90
0
11/6 8:32
11/6 8:34
11/6 8:36
11/6 8:38
11/6 8:41
11/6 8:43
11/6 8:45
11/6 8:47
11/6 8:50
11/6 8:52
11/6 8:54
11/6 8:56
11/6 8:59
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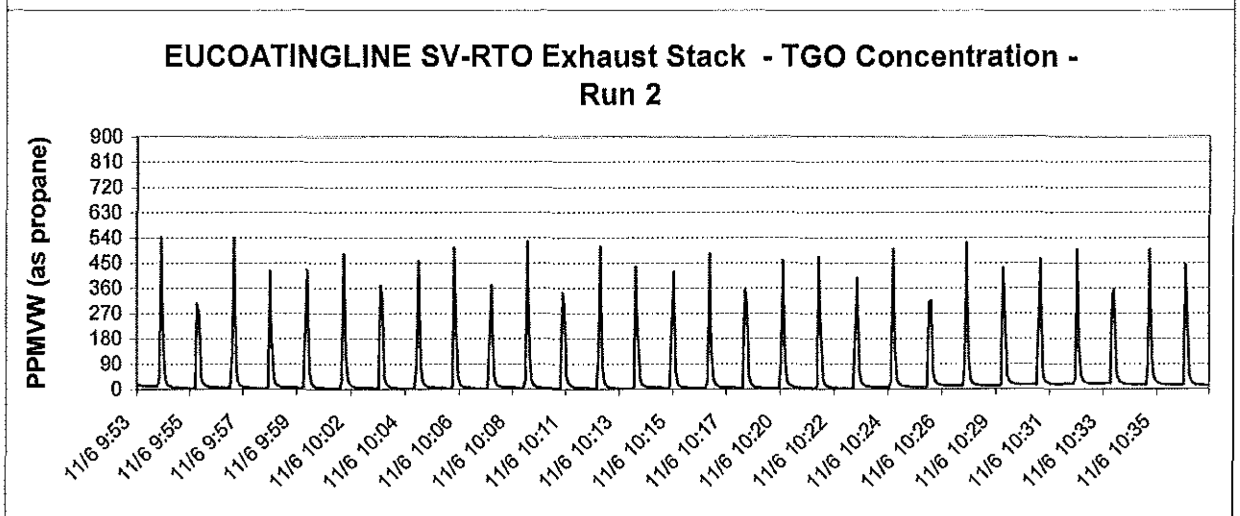
11/6 9:12
11/6 9:14


EUCOATINGLINE SV-RTO Exhaust Stack - TGO Concentration - Run 2
PPMVW (as propane)
900
810
720
630
540
450
360
270
180
90
0
11/6 9:53
11/6 9:55
11/6 9:57
11/6 9:59
11/6 10:02
11/6 10:04
11/6 10:06
11/6 10:08
11/6 10:11
11/6 10:13
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11/6 10:17
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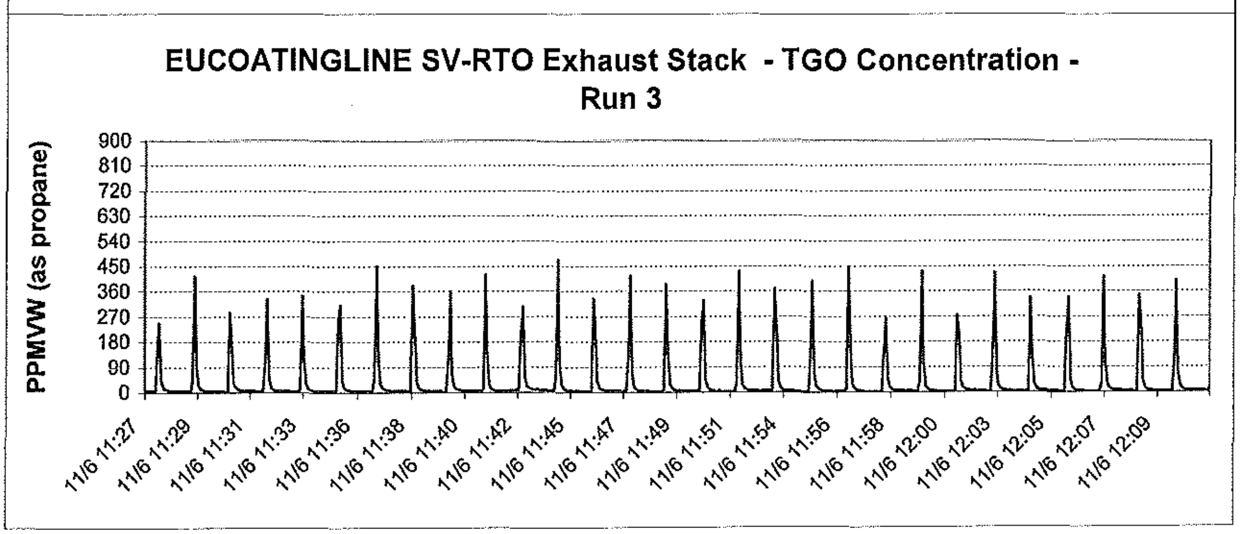
11/6 10:33
11/6 10:35


EUCOATINGLINE SV-RTO Exhaust Stack - TGO Concentration - Run 3
PPMVW (as propane)
900
810
720
630
540
450
360
270
180
90
0
11/6 11:27
11/6 11:29
11/6 11:31
11/6 11:33
11/6 11:36
11/6 11:38
11/6 11:40
11/6 11:42
11/6 11:45
11/6 11:47
11/6 11:49
11/6 11:51
11/6 11:54
11/6 11:56
11/6 11:58
11/6 12:00
11/6 12:03
11/6 12:05
11/6 12:07
11/6 12:09

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 (3) 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 (3) robots employing non-electrostatic applicators, the basecoat booth is equipped with eight (8) robots, five employing electrostatic bell guns and three (3) electrostatic gun applicators, and the clearcoat booth is equipped with six (6) robots, all employing electrostatic 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, base, and clear coatings 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 - 3.6 display the process data. Figure 3.1 depicts the process schematic.

3.2 Control Equipment Description

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

3.3 Flue Gas Sampling Locations

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 stack was oriented in the vertical plane and was accessed from a temporary scaffolding arrangement. Two (2) 2.8-inch I.D. sampling ports were located 90° apart from one another at a location that met 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 12.1° was measured. Therefore, the sampling location also met EPA Method 1, Section 11.4.2 criteria. During emissions sampling, the stack was traversed for stack gas volumetric flow rate. A single point was utilized for dry molecular weight and moisture content determinations. A second point, located within the central 10% of the stack cross-sectional area, was utilized for TGO concentration determination.

3.3.2 EUCOATINGLINE SV-RTO Exhaust Stack

The EUCOATINGLINE SV-RTO Exhaust Stack had a measured inner diameter of 47.3-inches, was oriented in the vertical plane, and was accessed from a permanent platform. Two (2) 4.0-inch I.D. sampling ports were located 90° apart from one another at a location that met EPA Method 1, Section 11.1.1 criteria. On September 5, 2013, 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 EPA Method 1, Section 11.4.2 criteria. During emissions sampling, the stack was traversed for stack gas volumetric flow rate. A single point was utilized for dry molecular weight and moisture content determinations. A second point, located within the central 10% of the stack cross-sectional area, was utilized for TGO concentration determination.

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

3.4 Process Sampling Location

Process samples of base coat and clear coat were obtained by Air Compliance Testing, Inc. personnel. These samples were later analyzed utilizing 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 2.2.2. Tables 3.1 - 3.11 detail the process data recorded during the test runs and the Method 204A analytical data for the coatings used.

	EUCOATINGLINE - Clear			
	Run 1	**Run 2**	**Run 3**	**Run 4**
Net Coating Used (lb)	157.8	223.6	78.9	105.2
Total Process Run Time (hr)	0.78	0.78	0.82	0.75
Total Weight Rate of Coating Applied During Test Run (lb/hr)	201.5	285.4	96.6	140.3
VOC Fraction of Liquid Samples (V)	0.38	0.40	0.40	0.40
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	75.95	113.16	38.69	56.10

Table 3.1 - EUCOATINGLINE Process Data - Clearcoat

	EUCOATINGLINE - ADP			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	59.8	58.8	51.0	55.2
Total Process Run Time (hr)	0.82	0.78	0.77	0.75
Total Weight Rate of Coating Applied During Test Run (lb/hr)	73.2	75.1	66.5	73.6
VOC Fraction of Liquid Samples (V)	0.76	0.74	0.73	0.73
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	55.66	55.36	48.76	53.91

Table 3.2 - EUCOATINGLINE Process Data - ADPRO

	EUCOATINGLINE - Platinu			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	92.4	-	-	-
Total Process Run Time (hr)	0.82	-	-	-
Total Weight Rate of Coating Applied During Test Run (lb/hr)	113.1	-	-	-
VOC Fraction of Liquid Samples (V)	0.240	-	-	-
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	27.14	-	-	-

Table 3.3.1 - EUCOATINGLINE Process Data - Color Coating Station No. 1

	EUCOATINGLINE - Bright			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	-	0.0	14.8	-
Total Process Run Time (hr)	-	0.78	0.78	-
Total Weight Rate of Coating Applied During Test Run (lb/hr)	-	0.0	18.9	-
VOC Fraction of Liquid Samples (V)	-	0.439	0.443	-
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	-	0.00	8.37	-

Table 3.3.2 - EUCOATINGLINE Process Data - Color Coating Station No. 1

	EUCOATINGLINE - Cash			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	-	-	-	157.0
Total Process Run Time (hr)	-	-	-	0.77
Total Weight Rate of Coating Applied During Test Run (lb/hr)	-	-	-	204.8
VOC Fraction of Liquid Samples (V)	-	-	-	0.380
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	-	-	-	77.80

Table 3.3.3 - EUCOATINGLINE Process Data - Color Coating Station No. 1

	EUCOATINGLINE - Bright			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	75.2	-	-	0.8
Total Process Run Time (hr)	0.78	-	-	0.75
Total Weight Rate of Coating Applied During Test Run (lb/hr)	96.0	-	-	1.1
VOC Fraction of Liquid Samples (V)	0.237	-	-	0.232
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	22.76	-	-	0.25

Table 3.4.1 - EUCOATINGLINE Process Data - Color Coating Station No. 2

	EUCOATINGLINE - Billet :			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	-	145.2	-	-
Total Process Run Time (hr)	-	0.78	-	-
Total Weight Rate of Coating Applied During Test Run (lb/hr)	-	185.4	-	-
VOC Fraction of Liquid Samples (V)	-	0.352	-	-
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	-	65.17	-	-

Table 3.4.2 - EUCOATINGLINE Process Data - Color Coating Station No. 2

	EUCOATINGLINE - Oxford			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	30.6	-	101.0	-
Total Process Run Time (hr)	0.80	-	0.77	-
Total Weight Rate of Coating Applied During Test Run (lb/hr)	38.2	-	131.7	-
VOC Fraction of Liquid Samples (V)	0.359	-	0.368	-
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	13.75	-	48.49	-

Table 3.5.1 - EUCOATINGLINE Process Data - Color Coating Station No. 3

	EUCOATINGLINE - Ingot :			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	-	-	-	-
Total Process Run Time (hr)	-	-	-	-
Total Weight Rate of Coating Applied During Test Run (lb/hr)	-	-	-	-
VOC Fraction of Liquid Samples (V)	-	-	-	-
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	-	-	-	-

Table 3.5.2 - EUCOATINGLINE Process Data - Color Coating Station No. 3

	EUCOATINGLINE - Ebony			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	8.0	-	8.2	-
Total Process Run Time (hr)	0.80	-	0.75	-
Total Weight Rate of Coating Applied During Test Run (lb/hr)	10.0	-	10.9	-
VOC Fraction of Liquid Samples (V)	0.380	-	0.393	-
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	3.80	-	4.29	-

Table 3.5.3 - EUCOATINGLINE Process Data - Color Coating Station No. 3

	EUCOATINGLINE - Platinu			
	Run 1	Run 2	Run 3	Run 4
Net Coating Used (lb)	52.0	-	0.0	-
Total Process Run Time (hr)	0.82	-	0.77	-
Total Weight Rate of Coating Applied During Test Run (lb/hr)	63.7	-	0.0	-
VOC Fraction of Liquid Samples (V)	0.239	-	0.241	-
Total Weight Rate of VOC Applied During Test Run (lb/hr as propane)	15.20	-	0.00	-

Table 3.6 - EUCOATINGLINE Process Data - Color Coating Station No. 4

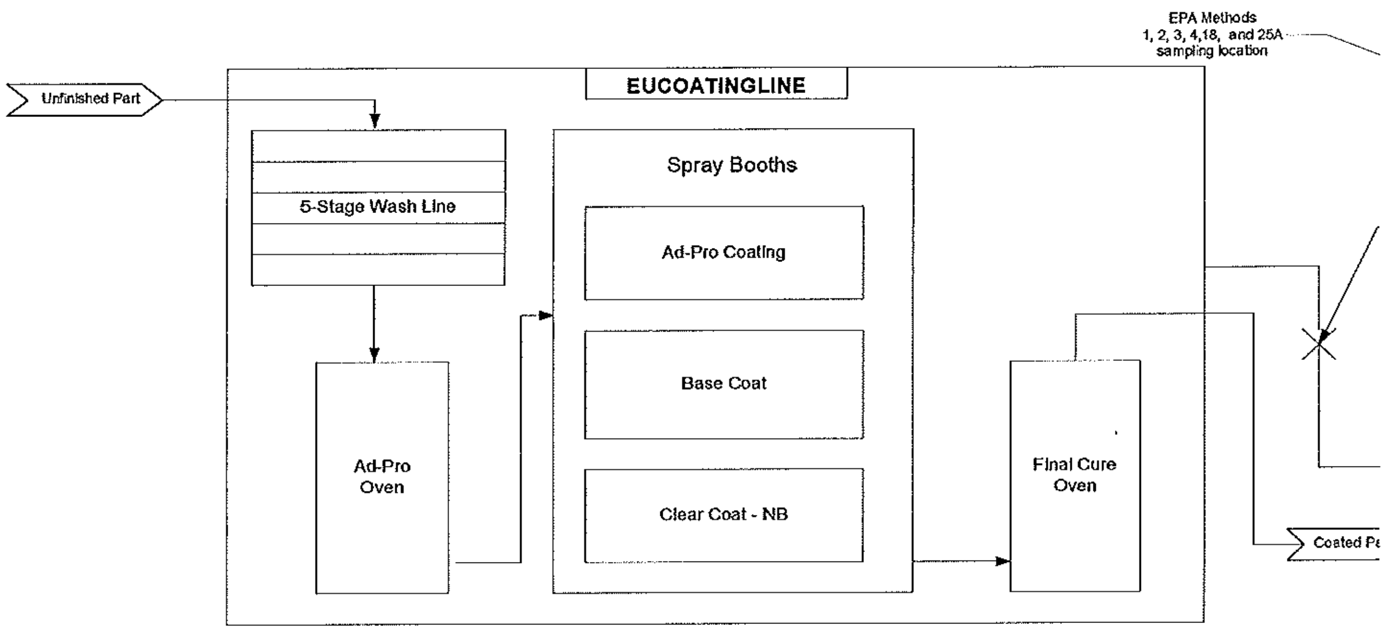
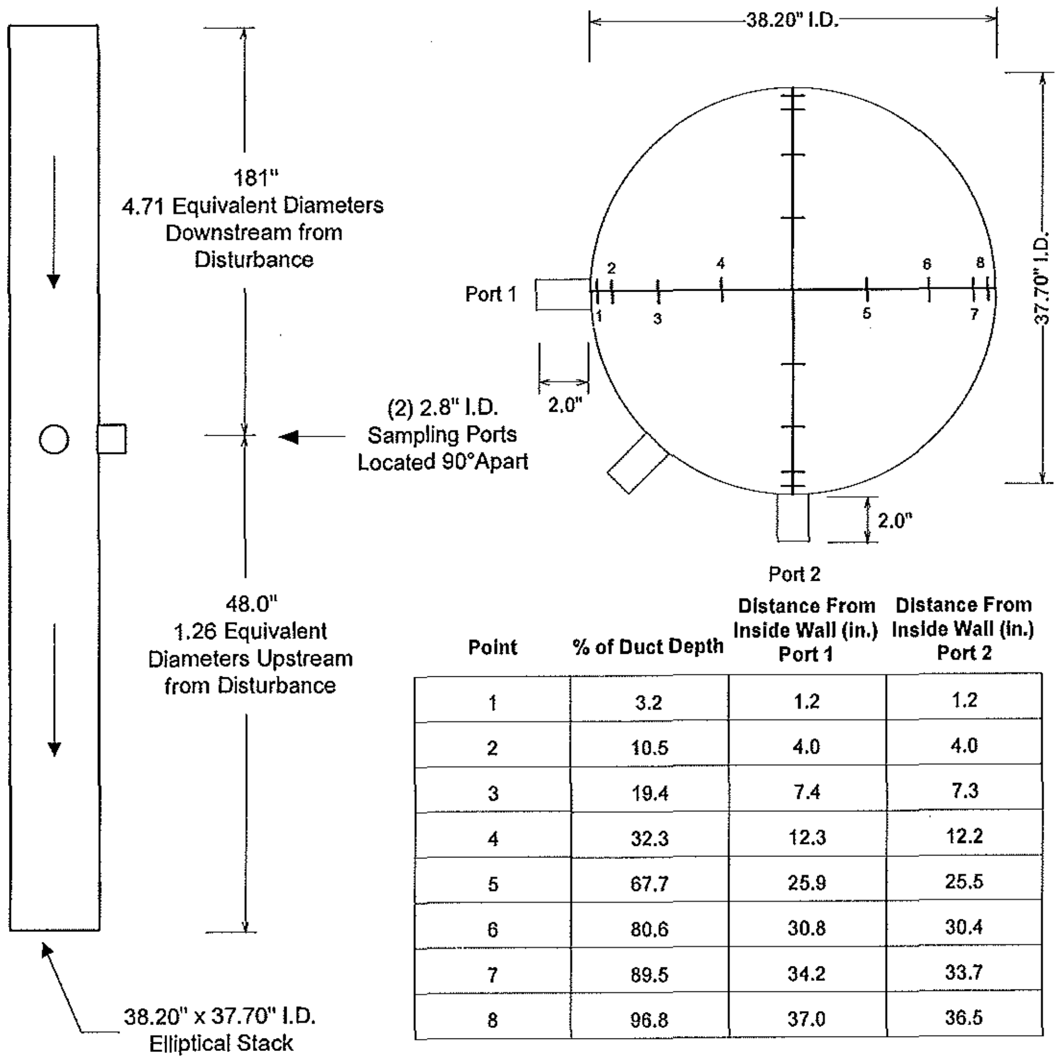
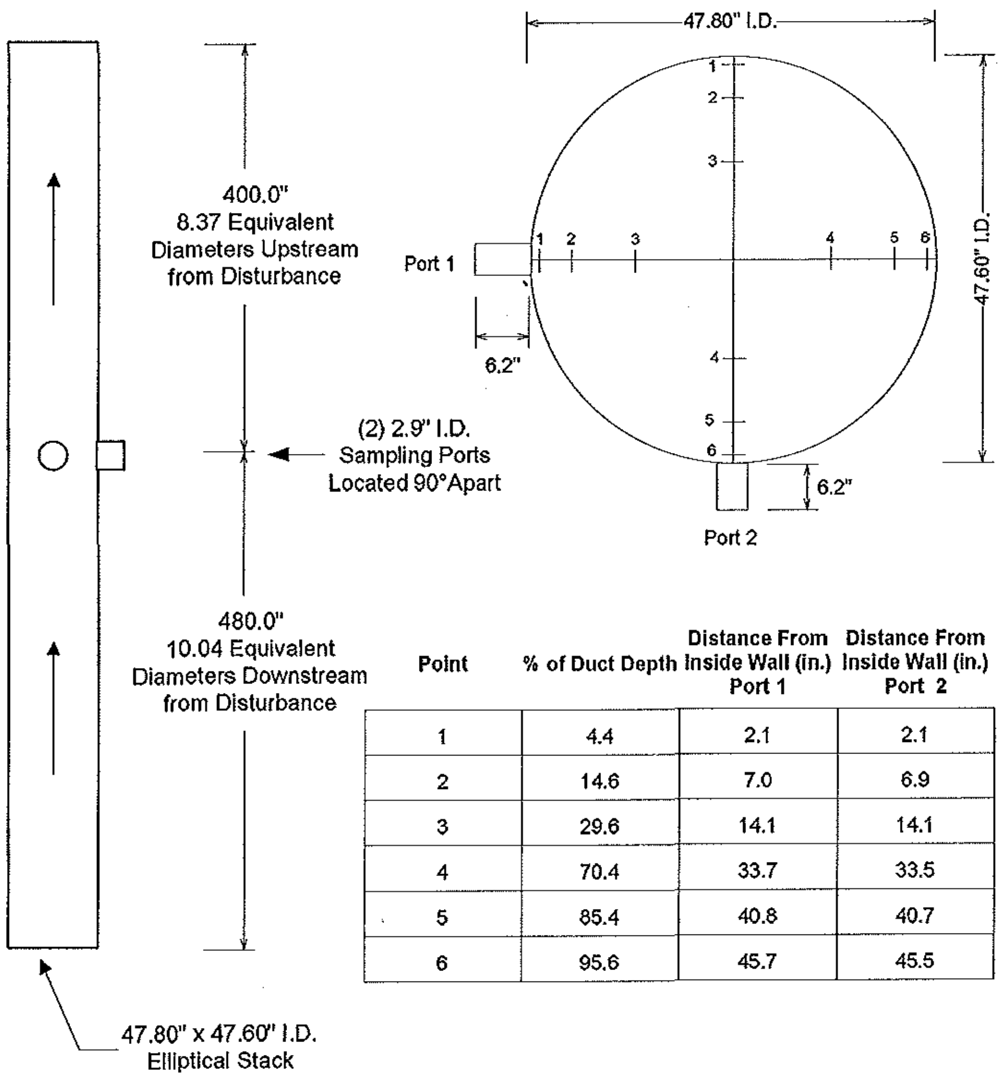


Figure 3.1 - EUCOATINGLINE Process Schematic



Point	% of Duct 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 3.2 - EUCOATINGLINE SV-RTO Inlet Duct Traverse Point Location Drawing



Point	% of Duct 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	7.0	6.9
3	29.6	14.1	14.1
4	70.4	33.7	33.5
5	85.4	40.8	40.7
6	95.6	45.7	45.5

Figure 3.3 - EUCOATINGLINE SV-RTO Exhaust Stack Traverse Point Location Drawing

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 Test Methods

4.1.1 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 EPA Method 2: Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S)
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 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 a Fyrite analyzer will 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 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 EPA Method 18: Measurement of Gaseous Organic Compound Emissions by Gas Chromatography (Concentrations assumed less than 10,000 ppm)
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 EPA Method 25A: Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer (Concentrations assumed less than 10,000 ppm, Propane/Nitrogen Calibration Gases)
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. This method was utilized in its entirety as per the procedures outlined in 40 CFR Part 60, Appendix A.

4.1.7 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 - 4.2.

4.2 Procedures for Obtaining Process Data

Process data was recorded by Ventra Fowlerville, LLC personnel utilizing their typical record keeping procedures. Recorded process data was provided to Air Compliance Testing, Inc. personnel at the conclusion of this test event. The process data is located in Tables 3.1 - 3.6 and in the Appendix.

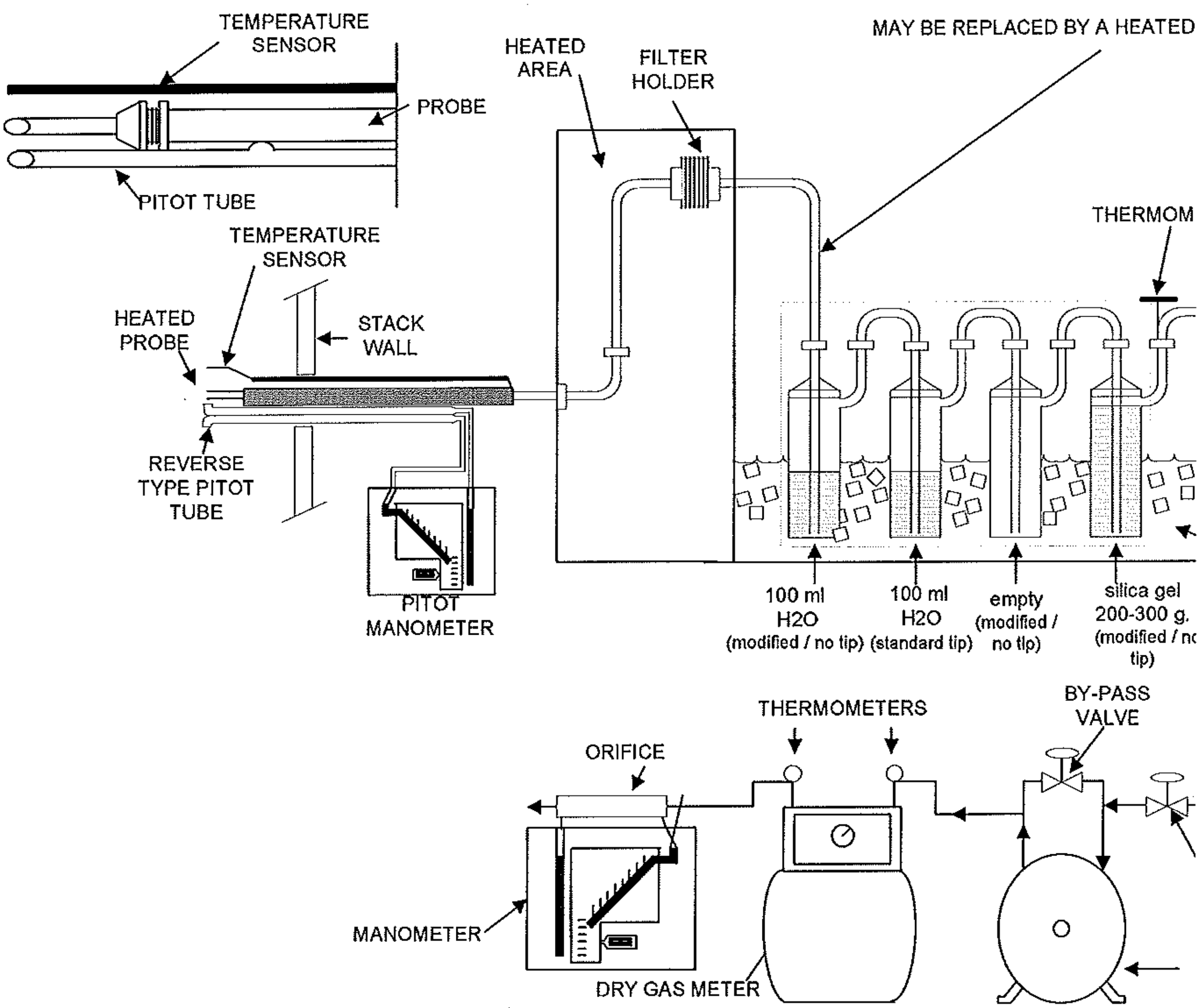


Figure 4.1 - EPA Method 4 Sampling Train Schematic

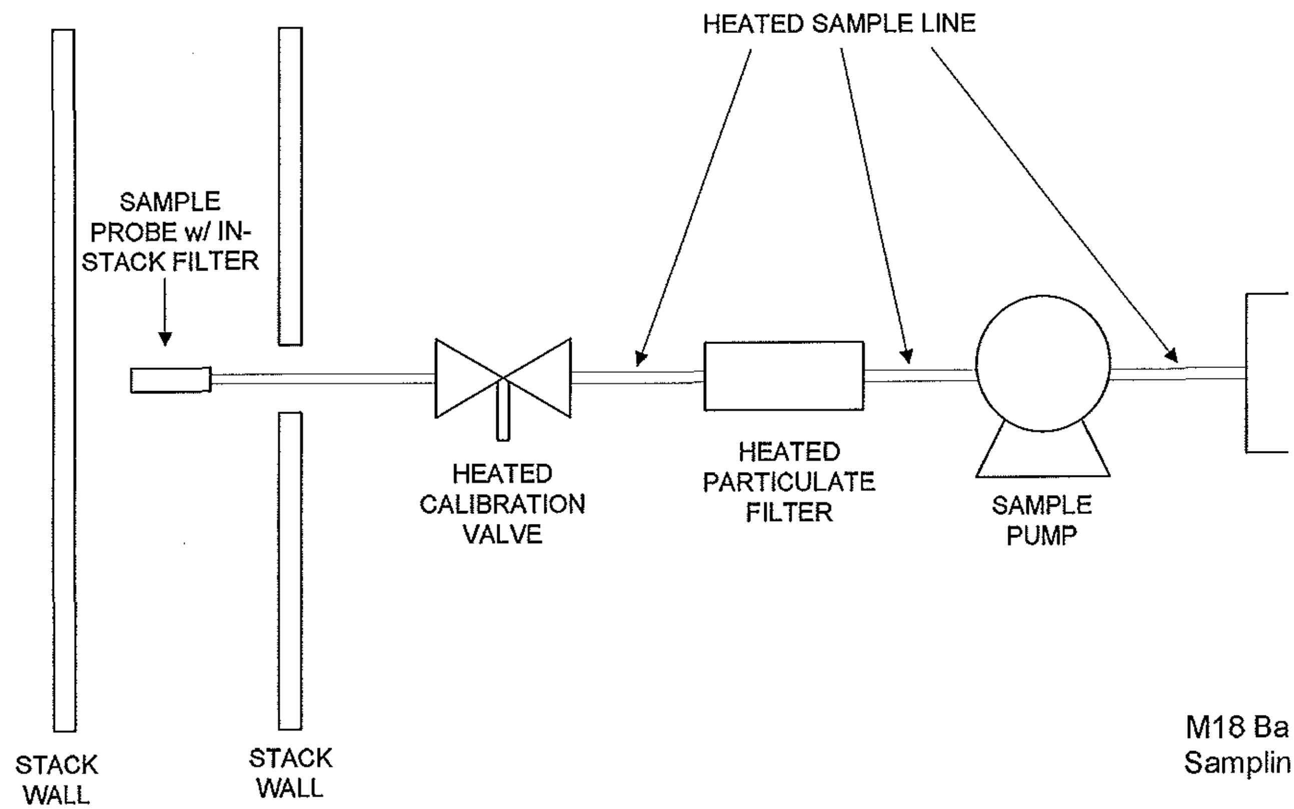


Figure 4.2 - EPA Method 18 and 25A Sampling Train Schematic

5.0 INTERNAL QA/QC ACTIVITIES

5.1 QA Audits

Tables 5.1 - 5.6 illustrate the QA audit activities 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 pre-test and post-test leak checks were well below the applicable limit. Minimum metered volumes were also met where applicable.

Table 5.3 displays the EPA Method 3 Fyrite Audits which were performed during this test in accordance with 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 displays the laboratory QA results for EPA Method 18. The average spike recovery efficiencies for each location were within the acceptable range of 70% to 130%.

Table 5.5 illustrates the FIA calibration audits which were performed during this test (and integral to performing 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 5.6 displays the 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 mid-level gas was also within ±2% of the certified concentration.

5.2 QA/QC Problems

No QA/QC problems occurred during this test event.

	EUCOATINGLINE SV-RTO Inlet Duct		
Method 4 Sampling Train	Run 1	Run 2	Run 3
Leak Rate Observed (Pre/Post) (cfm)	0.000 / 0.000	0.000 / 0.000	0.000 / 0.000
Applicable Method Allowable Leak Rate (cfm)	< 0.020	< 0.020	< 0.020
Acceptable	Yes	Yes	Yes
Volume of Dry Gas Collected (dscf)	28.725	28.458	28.628
Recommended Volume of Dry Gas Collected (dscf)	21.000	21.000	21.000
Acceptable	Yes	Yes	Yes

	EUCOATINGLINE SV-RTO Inlet Duct		
Method 4 Sampling Train	Run 4	Run 5	Run 6
Leak Rate Observed (Pre/Post) (cfm)	0.000 / 0.000	0.000 / 0.000	0.000 / 0.001
Applicable Method Allowable Leak Rate (cfm)	< 0.020	< 0.020	< 0.020
Acceptable	Yes	Yes	Yes
Volume of Dry Gas Collected (dscf)	28.360	28.669	28.099
Recommended Volume of Dry Gas Collected (dscf)	21.000	21.000	21.000
Acceptable	Yes	Yes	Yes

	EUCOATINGLINE SV-RTO Exhaust Stack		
Method 4 Sampling Train	Run 1	Run 2	Run 3
Leak Rate Observed (Pre/Post) (cfm)	0.002 / 0.000	0.004 / 0.000	0.002 / 0.000
Applicable Method Allowable Leak Rate (cfm)	< 0.020	< 0.020	< 0.020
Acceptable	Yes	Yes	Yes
Volume of Dry Gas Collected (dscf)	26.421	26.195	26.272
Recommended Volume of Dry Gas Collected (dscf)	21.000	21.000	21.000
Acceptable	Yes	Yes	Yes

Table 5.1 - EPA Method 4 Sample Train Audit Results Table

EUCOATINGLINE SV-RTO Inlet Duct				
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
0.9850	0.9717	-1.35%	5.00%	Yes

EUCOATINGLINE SV-RTO Inlet Duct				
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
1.0100	1.0489	3.85%	5.00%	Yes

Table 5.2 - EPA Method 4 Dry Gas Meter Audit Results Table

	$\%CO_2$	Acceptability Criteria	Acceptable	$\%O_2$	Acceptability Criteria	Accep
Audit Gas Concentration (%)	**0.0**	-	-	**21.0**	-	-
Fyrite Response 1 (%)	0.0	±0.5%	Yes	21.0	±0.5%	Y
Fyrite Response 2 (%)	0.0	±0.5%	Yes	21.0	±0.5%	Y
Fyrite Response 3 (%)	0.0	±0.5%	Yes	21.0	±0.5%	Y

Table 5.3 - EPA Method 3 Audit Results Table

	EUCOATINGLINE SV-RTO Inlet Duct	EUCOATINGLINE SV-I Exhaust Stack
	Methane	Methane
Initial Sample Concentration (ppmv)	10.98	0.93
Theoretical Spike Concentration (ppmv)	5.17	0.41
Final Sample Concentration (ppmv)	15.66	1.41
Recovery (%)	90.5	116.5
Acceptable Per EPA Method 18	Yes	Yes

Table 5.4 - EPA Method 18 Laboratory QA

	EUCOATINGLINE SV-RTO Inlet Duct					
	Run 1	Acceptable per Method 25A	Run 2	Acceptable per Method 25A	Run 3	Accep per M 25
Analyzer Span During Test Run (ppmv as propane)	2,000.0	YES	2,000.0	YES	2,000.0	YE
Average Stack Gas Concentration (ppmv as propane)	1,483.2	YES	1,410.6	YES	1,154.5	YE
Zero Drift (% of Span)	0.30	YES	0.26	YES	0.15	YE
Calibration Drift for Mid-Level Gas (% of Span)	-0.09	YES	0.69	YES	-0.40	YE
Calibration Error for Low-Level Gas (% of Cal. Gas Tag Value)	-0.59	YES	-0.59	YES	-0.59	YE
Calibration Error for Mid-Level Gas (% of Cal. Gas Tag Value)	0.33	YES	0.33	YES	0.33	YE

	EUCOATINGLINE SV-RTO Inlet Duct					
	Run 4	Acceptable per Method 25A	Run 5	Acceptable per Method 25A	Run 6	Accep per M 25
Analyzer Span During Test Run (ppmv as propane)	2,000.0	YES	2,000.0	YES	2,000.0	YE
Average Stack Gas Concentration (ppmv as propane)	1,438.7	YES	1,436.9	YES	1,373.8	YE
Zero Drift (% of Span)	0.47	YES	0.36	YES	0.40	YE
Calibration Drift for Mid-Level Gas (% of Span)	1.92	YES	0.26	YES	-0.02	YE
Calibration Error for Low-Level Gas (% of Cal. Gas Tag Value)	-0.59	YES	-1.50	YES	-1.50	YE
Calibration Error for Mid-Level Gas (% of Cal. Gas Tag Value)	0.33	YES	-0.39	YES	-0.39	YE

	EUCOATINGLINE SV-RTO Exhaust Stack					
	Run 1	Acceptable per Method 25A	Run 2	Acceptable per Method 25A	Run 3	Accep per M 25
Analyzer Span During Test Run (ppmv as propane)	900.0	YES	900.0	YES	900.0	YE
Average Stack Gas Concentration (ppmv as propane)	46.6	YES	46.2	YES	36.6	YE
Zero Drift (% of Span)	-0.03	YES	-0.03	YES	-0.01	YE
Calibration Drift for Mid-Level Gas (% of Span)	-0.01	YES	0.08	YES	0.20	YE
Calibration Error for Low-Level Gas (% of Cal. Gas Tag Value)	-0.58	YES	-0.58	YES	-0.58	YE
Calibration Error for Mid-Level Gas (% of Cal. Gas Tag Value)	-0.11	YES	-0.11	YES	-0.11	YE

Table 5.5 - EPA Method 25A Instrument Calibration and QA Table

	Calibration Tag Value (ppm)	Dilution Ratio	Predicted Diluted Value (ppm)	Injection 1 Response (ppm)	Injection 2 Response (ppm)	Injection 3 Response (ppm)	Average Response (ppm)	Di Pı
Dilution Level 1	484.2	4.035	120.00	120.09	120.83	120.64	120.52	
Dilution Level 2	484.2	6.053	80.00	80.10	80.53	80.34	80.32	
Mid-Level Gas	83.45	-	-	82.85	82.82	82.82	82.83	

Analyzer Serial Number: 15G02008

Dilution System Serial Number: 4918

Table 5.6 - EPA Method 205 Gas Dilution System Calibration and QA Table