1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

Ventra Fowlerville (State Registration Number: N7413) contracted Montrose Air Quality Services, LLC (Montrose) to perform a compliance emissions test program on the Coating Operations (EUCOATINGLINE) at the Ventra Fowlerville located in Fowlerville, Michigan. Testing was conducted to demonstrate compliance with Michigan Department of Environment, Great Lakes, and Energy (EGLE) Renewable Operating Permit (ROP) No. MI-ROP-N7413-2014a.

The specific objectives were to:

- Verify the volatile organic compound (VOC) capture efficiency (CE) of the Permanent Total Enclosure (PTE) serving EUCOATINGLINE
- Conduct the test program with a focus on safety

Montrose performed the tests to measure the emission parameters listed in Table 1-1.

TABLE 1-1
SUMMARY OF TEST PROGRAM

Test Date(s)	Unit ID/ Source Name	Activity/ Parameters	Test Methods	No. of Runs	Duration (Minutes)
3/17/2020	EUCOATINGLINE/ SV-RTO INLET	Velocity/Volumetric Flow Rate	EPA 1 & 2	7	~10
3/17/2020	EUCOATINGLINE/ SV-RTO INLET	O_2, CO_2	EPA 3	7	30
3/17/2020	EUCOATINGLINE/ SV-RTO INLET	Moisture	EPA 4	7	30
3/17/2020	EUCOATINGLINE/ SV-RTO INLET	TGO	EPA 25A	7	30
3/17/2020	EUCOATINGLINE	VOC CE	EPA 204A	7	30

To simplify this report, a list of Units and Abbreviations is included in Appendix D.1. Throughout this report, chemical nomenclature, acronyms, and reporting units are not defined. Please refer to the list for specific details.

This report presents the test results and supporting data, descriptions of the testing procedures, descriptions of the facility and sampling locations, and a summary of the quality assurance procedures used by Montrose. The average emission test results are summarized and compared to their respective permit limits in Table 1-2. Detailed results for individual test runs can be found in Section 4.0. All supporting data can be found in the appendices.

The testing was conducted by the Montrose personnel listed in Table 1-3. The tests were conducted according to the test plan (protocol) dated January 15, 2020 that was submitted to EGLE.

TABLE 1-2
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
EUCOATINGLINE
MARCH 17, 2020

Parameter/Units	Average Results	Emission Limits
VOC CE		
%	79.5	90

1.2 KEY PERSONNEL

A list of project participants is included below:

Facility Information

Source Location:	Ventra Fowlerville 8887 W. Grand River Avenue Fowlerville, MI 48836	
Project Contact:	Kaylyn Cox	Celia Jackson
Role:	EHS Specialist	EHS Specialist
Company:	Ventra Fowlerville	Ventra Fowlerville
Telephone:	517-223-4504	616-597-3220
Email:	**KCox@ventra.us**	CJackson@ventra.us

Agency Information

Regulatory Agency:	EGLE	
Agency Contact:	Karen Kajiya-Mills	Mark Dziadosz
Telephone:	517-256-0880	586-753-3731
Email:	kajiya-millsk@michigan.gov	dziadoszm@michigan.gov

Testing Company Information

Testing Firm:	Montrose Air Quality Services, LLC	
Contact:	Robert J. Lisy, Jr.	Jack Hoard
Title:	District Manager	Field Project Manager
Telephone:	440-262-3760	440-262-3760
Email:	rlisy@montrose-env.com	jhoard@montrose-env.com

Laboratory Information

Laboratory:	Montrose
City, State:	Cleveland, Ohio
Method:	US EPA Method 204A

Test personnel and observers are summarized in Table 1-3.

TABLE 1-3
TEST PERSONNEL AND OBSERVERS

Name	Affiliation	Role/Responsibility
Jack Hoard	Montrose	Field Project Manager, QI
Jon Grech	Montrose	Field Technician, QI
Chris Trevillian	Montrose	Field Technician, QI
Kaylyn Cox	Ventra Fowlerville, LLC	Observer/Client Liaison/Test Coordinator
Mark Dziadosz	EGLE	Observer

2.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

2.1 PROCESS DESCRIPTION, OPERATION, AND CONTROL EQUIPMENT

Ventra Fowlerville operates an automotive plastic parts coating line (EUCOATINGLINE). The EUCOATINGLINE is an automated conveyor 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 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, 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.

2.2 FLUE GAS SAMPLING LOCATION

Information regarding the sampling location is presented in Table 2-1.

TABLE 2-1
SAMPLING LOCATION

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance		Number of Traverse Points
		Downstream EPA "B" (in./dia.)	Upstream EPA "A" (in./dia.)	
SV-RTO Inlet Duct	37.9 X 38.2	180.0 / 4.7	48.0 / 1.3	Flow: 16 (8/port); Moisture: 1 TGO: 1

Sample location(s) were verified in the field to conform to EPA Method 1. Acceptable cyclonic flow conditions were confirmed prior to testing using EPA Method 1, Section 11.4. See Appendix A.1 for more information.

2.3 OPERATING CONDITIONS AND PROCESS DATA

Emission tests were performed while the source/units and air pollution control devices were operating at the conditions required by the permit. The unit(s) were tested when operating at or near maximum routine operating conditions.

Process samples of coatings were obtained by Montrose personnel from the coating vats associated with the EUCOATINGLINE at the beginning and at the end 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 Tables 4-1 and 4-2. The process data recorded during the CE test runs and the Method 204A analytical data for each coating is included in Appendix B. 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 are also included in the Appendix B.

- Coating usage rate, lb/hr
- Weight rate of VOC applied

3.0 SAMPLING AND ANALYTICAL PROCEDURES

3.1 TEST METHODS

The test methods for this test program were presented previously in Table 1-1. Additional information regarding specific applications or modifications to standard procedures is presented below.

3.1.1 EPA Method 1, Sample and Velocity Traverses for Stationary Sources

EPA Method 1 is used to assure that representative measurements of volumetric flow rate are obtained by dividing the cross-section of the stack or duct into equal areas, and then locating a traverse point within each of the equal areas. Acceptable sample locations must be located at least two stack or duct equivalent diameters downstream from a flow disturbance and one-half equivalent diameter upstream from a flow disturbance.

3.1.2 EPA Method 2, Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)

EPA Method 2 is used to measure the gas velocity using an S-type pitot tube connected to a pressure measurement device, and to measure the gas temperature using a calibrated thermocouple connected to a thermocouple indicator. Typically, Type S (Stausscheibe) pitot tubes conforming to the geometric specifications in the test method are used, along with an inclined manometer.

3.1.3 EPA Method 3, Gas Analysis for the Determination of Dry Molecular Weight

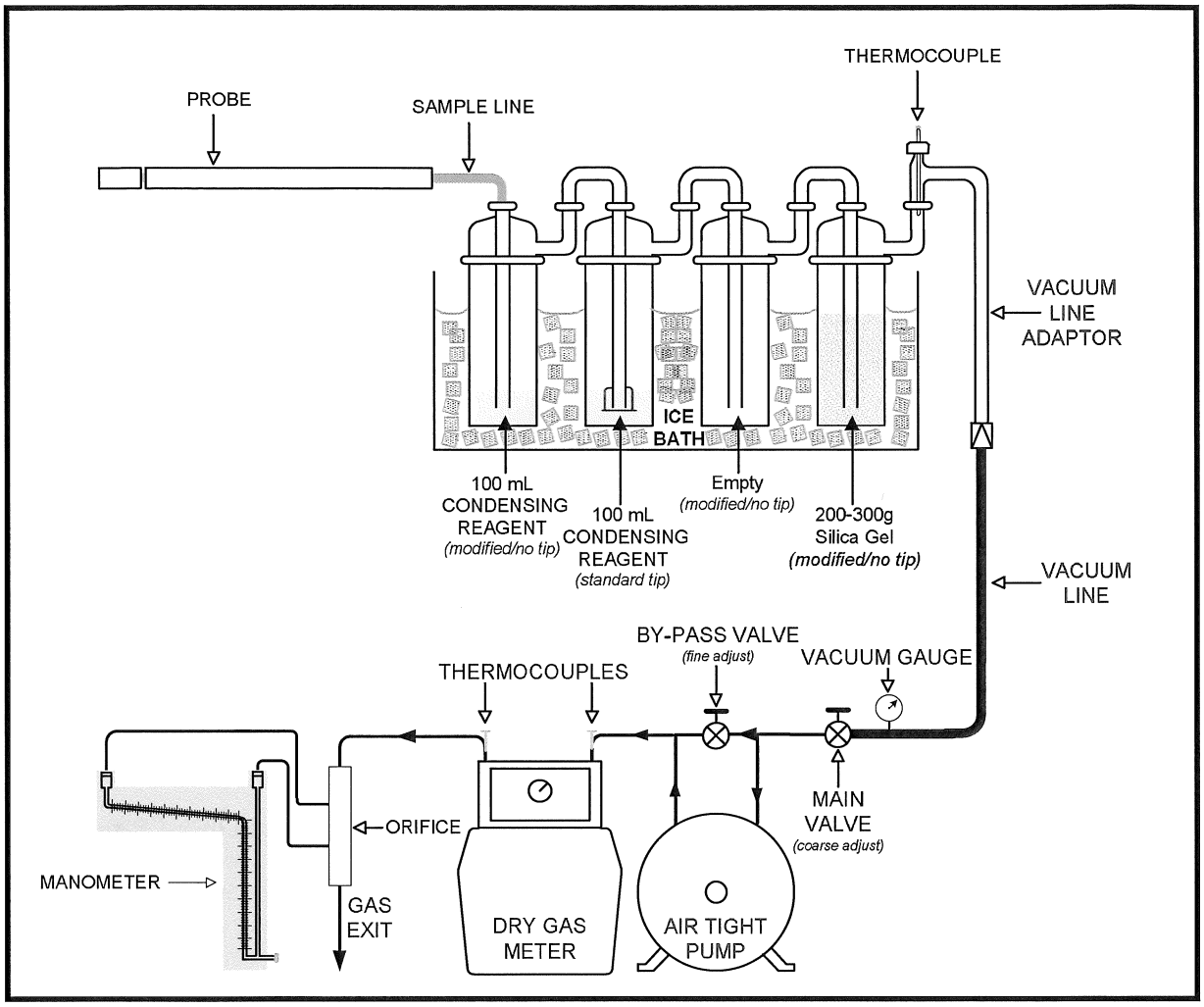
EPA Method 3 is used to calculate the dry molecular weight of the stack gas using one of three methods. The first choice is to measure the percent O_2 and CO_2 in the gas stream. A gas sample is extracted from a stack by one of the following methods: (1) single-point, grab sampling; (2) single-point, integrated sampling; or (3) multi-point, integrated sampling. The gas sample is analyzed for percent CO_2 and percent O_2 using either an Orsat or a Fyrite analyzer.

3.1.4 EPA Method 4, Determination of Moisture Content in Stack Gas

EPA Method 4 is a manual, non-isokinetic method used to measure the moisture content of gas streams. Gas is sampled at a constant sampling rate through a probe and impinger train. Moisture is removed using a series of pre-weighed impingers containing methodology-specific liquids and silica gel immersed in an ice water bath. The impingers are weighed after each run to determine the percent moisture.

The typical sampling system is detailed in Figure 3-1.

FIGURE 3-1
EPA METHOD 4(DETACHED) SAMPLING TRAIN

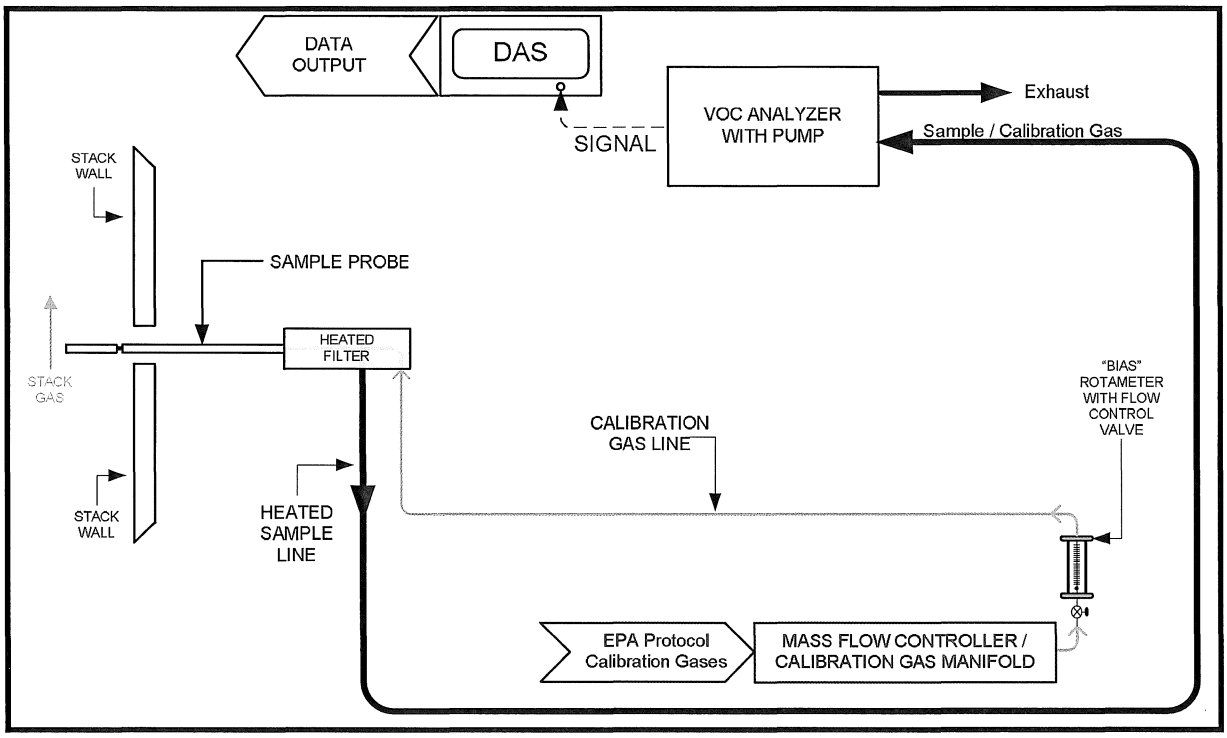


3.1.5 EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer

EPA Method 25A is an instrumental test method used to measure the concentration of THC in stack gas. A gas sample is extracted from the source through a heated sample line 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.

The typical sampling system is detailed in Figure 3-2.

FIGURE 3-2
EPA METHOD 25A SAMPLING TRAIN



3.1.6 EPA Method 204A, Volatile Organic Compounds Content in Liquid Input Stream

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 (V) 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 an FIA to determine V.

3.2 PROCESS TEST METHODS

Process samples of coatings were obtained by Montrose personnel from the coating vats associated with the EUCOATINGLINE prior to and after 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 4-1. The weight of the coatings applied during the CE test runs was recorded by Ventra Fowlerville personnel utilizing their typical record keeping procedures. See Appendix B for the US EPA Method 204A Material Balance data.

4.0 TEST DISCUSSION AND RESULTS

4.1 FIELD TEST DEVIATIONS AND EXCEPTIONS

Run 3 sampling at the SV-RTO Inlet was voided after 15-mintues because the DAQ computer had lost power. Data from Run 3 is not included in the report.

4.2 PRESENTATION OF RESULTS

The CE result is compared to the permit limit in Table 1-2. The results of four valid CE runs are presented in table 4-1. The results of individual compliance test runs performed are presented in Tables 4-2 and 4-3. Emissions are reported in units consistent with those in the applicable regulations or requirements. Additional information is included in the appendices as presented in the Table of Contents. The Lower Confidence Limit (LCL) approach, as outlined in EPA Emission Measurement Center Guideline Document (GD-035) Section 3.2, was utilized in determining CE of EUCOATINGLINE.

TABLE 4-1
CAPTURE EFFICIENCY (CE) RESULTS-
EUCOATINGLINE

Valid CE Runs	1	2	4	7
Date	03/17/2020	03/17/2020	03/17/2020	03/17/2020
Time	10:30-11:00	11:25-12:00	13:25-13:55	15:55-16:25
Process Data				
Coating Usage Rate (lb/hr)	558	487	379	212
Volatile Organic Compound (VOC) of Coating Applied, as Propane				
lb/hr	228	197	181	172
Total Gaseous Organic (TGO), as Propane, measured at SV-RTO Inlet				
lb/hr	172	174	171	147
Measured VOC CE				
%	75.5	88.0	94.4	85.8
Rolling Value - Calculated Lower Confidence Limit (LCL) VOC CE				
%	-	62.6	75.5	79.5
VOC CE (%)				
%		79.5		

TABLE 4-2
TGO, VOC, AND CE EMISSIONS RESULTS -
EUCOATINGLINE

Run Number	1	2	4	5
Date	03/17/2020	03/17/2020	03/17/2020	03/17/2020
Time	10:30-11:00	11:25-12:00	13:25-13:55	14:10-14:40
Process Data				
Coating Usage (lb/hr)	558	487	379	217
Flue Gas Parameters measured at the SV RTO Inlet Duct				
O_2, % volume dry	20.3	20.2	20.1	20.1
CO_2, % volume dry	0.50	0.25	0.0	0.0
flue gas temperature, °F	122	121	123	123
moisture content, % volume	3.42	3.43	3.31	3.33
volumetric flow rate, dscfm	20,462	20,465	20,605	20,472
TGO, as Propane, measured at the SV-RTO Inlet Duct				
ppmvd	1,270	1,279	1,247	1,282
lb/hr	172	174	171	174
VOC of Coating Applied, as Propane				
lb/hr	228	197	181	157
Measured VOC CE				
%	75.5	88.0	94.4	111
Run Valid, < 105% CE, (Yes/No)	Yes	Yes	Yes	No

TABLE 4-2
TGO, VOC, AND CE EMISSIONS RESULTS (CONTINUED)-
EUCOATINGLINE

Run Number	6	7	8	Average
Date	03/17/2020	03/17/2020	03/17/2020	--
Time	15:00-15:30	15:55-16:25	16:40-17:10	--
Process Data				
Coating Usage (lb/hr)	163	212	215	319
Flue Gas Parameters measured at the SV RTO Inlet Duct				
O_2, % volume dry	19.92	20.17	20.00	20.11
CO_2, % volume dry	0.00	0.00	0.00	0.11
flue gas temperature, °F	123	122	123	122
moisture content, % volume	3.38	3.18	3.45	3.36
volumetric flow rate, dscfm	19,667	19,933	19,627	19,781
TGO, as Propane, measured at the SV-RTO Inlet Duct				
ppmvd	1,089	1,077	1,337	1,226
lb/hr	147	147	180	166
VOC of Coating Applied as Propane				
lb/hr	131	172	161	175
Measured VOC CE				
%	113	85.8	112	--
Run Valid, < 105% CE, (Yes/No)	No	Yes	No	--

5.0 INTERNAL QA/QC ACTIVITIES

5.1 QA/QC AUDITS

The meter box and sampling train used during sampling performed within the requirements of their respective methods. All post-test leak checks, minimum metered volumes, met the applicable QA/QC criteria.

Fyrite analyzer audits were performed during this test in accordance with EPA Method 3, Section 10.1 requirements. The results were within ± 0.5% of the respective audit gas concentrations.

EPA Method 25A FIA calibration audits were within the measurement system performance specifications for the calibration drift checks and calibration error checks.

EPA Method 204A analytical QA/QC results are included in the laboratory report. The method QA/QC criteria were met.

An EPA Method 205 field evaluation of the calibration gas dilution system was conducted. The dilution accuracy and precision QA specifications were met.

5.2 QA/QC DISCUSSION

All QA/QC criteria were met during this test program.

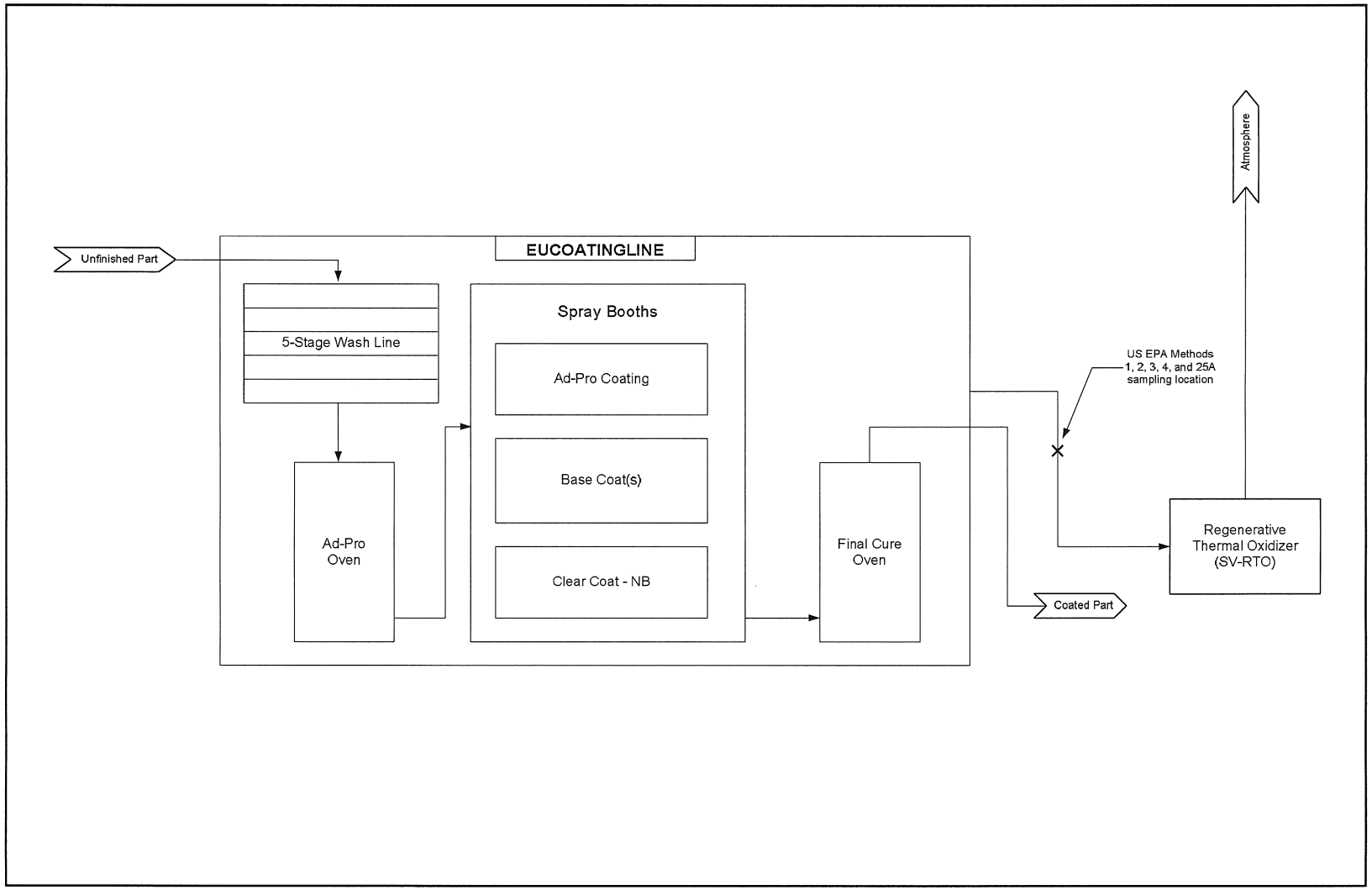
5.3 QUALITY STATEMENT

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 included in the report appendices. The content of this report is modeled after the EPA Emission Measurement Center Guideline Document (GD-043).

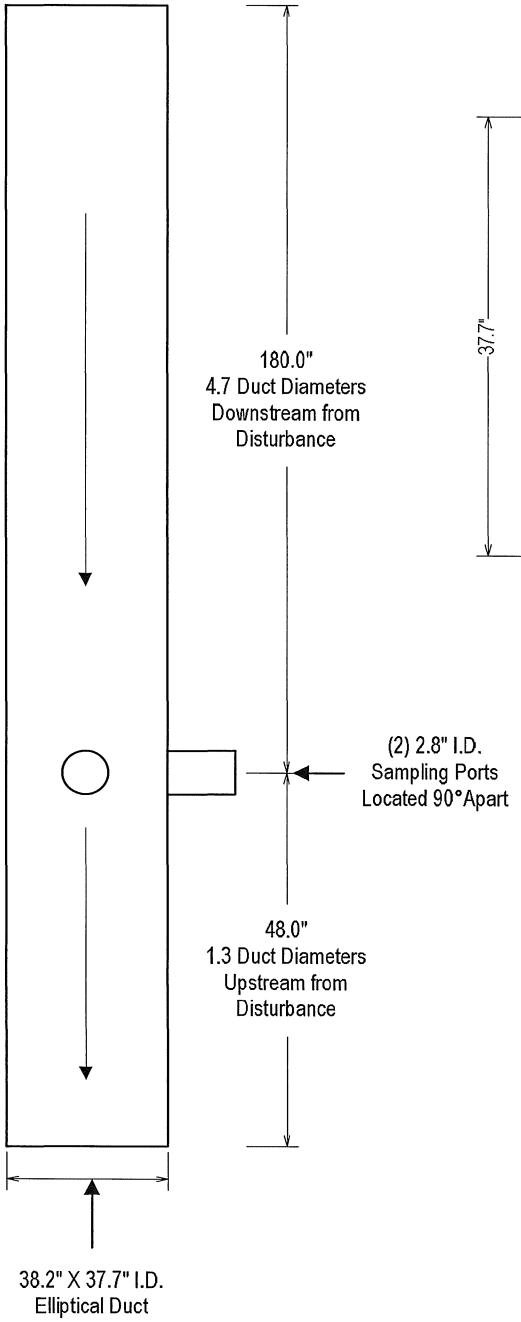
APPENDIX A
FIELD DATA AND CALCULATIONS

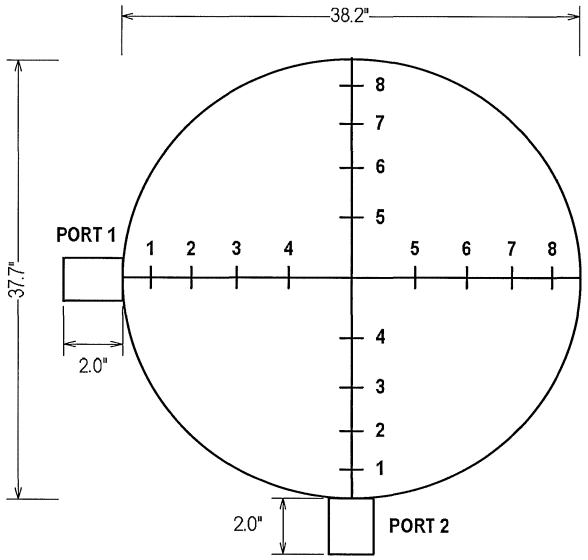
Appendix A.1
Sampling Locations

EUCOATINGLINE PROCESS AND SAMPLING LOCATION SCHEMATIC



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	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