1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

ZFS Ithaca, LLC contracted Montrose Air Quality Services, LLC (Montrose) to perform a compliance emissions test program on the Soybean Processing Operations and Soybean Meal Loadout Operations (EULOADOUT), Soybean Preparation Processes (EUPREP), Soybean Dryer-Cooler Operations (EUDC), Soybean Oil Extraction Process (EUEXTRACTION), Soybean Meal Grinding Operations (EUMEALGRINDING), and Soybean Hull Pelletizing System (EUPELLETIZING) at the ZFS Ithaca, LLC facility located in Zeeland, Michigan. The tests were conducted to satisfy the emissions testing requirements pursuant to Michigan Department of Environment, Great Lakes, and Energy (EGLE) Permit No. 20-17B.

The specific objectives were to:

- Verify the total particulate matter (PM) emissions at the exhaust stacks of the baghouses and cyclones serving EULOADOUT, EUMEALGRINDING, EUPREP, EUDC, and EUPELLETIZING
- Verify the PM under 10-µm (PM_{10}) and PM under 2.5-µm ($PM_{2.5}$) emissions at the exhaust stack of the cyclones and baghouses serving EUPREP.
- Verify the VOC (as hexane) emissions at the exhaust stack of EUDC and at the exhaust duct of the mineral oil adsorption system (MOS) serving EUEXTRACTION.
- Verify the visible emissions (% opacity, 6-minute average) at exhaust stacks of the baghouses and cyclones serving EULOADOUT, EUMEALGRINDING, EUPREP, EUDC, and EUPELLETIZING
- Conduct the test program with a focus on safety

Montrose performed the tests to measure the emission parameters listed in Table 1-1, with the exception of visible emissions which were recorded by ZFS Ithaca personnel.

TABLE 1-1
SUMMARY OF TEST PROGRAM

Test Date(s)	Unit ID/ Source Name	Activity/ Parameters	Test Methods	No. of Runs	Duration (Minutes)
07/28/2020	EULOADOUT	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
07/28/2020	EULOADOUT	O_2, CO_2	EPA 3	3	~5
07/28/2020	EULOADOUT	Moisture	EPA 4	3	60
07/28/2020	EULOADOUT	Filterable PM	EPA 5	3	60
07/28/2020	EULOADOUT	Visible Emissions*	EPA 9	3	60
07/28/2020	EULOADOUT	Condensable PM	EPA 202	3	60
07/28/2020	EUPREP	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	124-131
07/28/2020	EUPREP	O_2, CO_2	EPA 3	3	~5
07/28/2020	EUPREP	Moisture	EPA 4	3	124-131
07/28/2020	EUPREP	Visible Emissions*	EPA 9	3	60
07/28/2020	EUPREP	PM_{10}	EPA 201A	3	124-131
07/28/2020	EUPREP	$PM_{2.5}$	EPA 201A	3	124-131
07/28/2020	EUPREP	Condensable PM	EPA 202	3	124-131
07/29/2020	EUPREP	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
07/29/2020	EUPREP	O_2, CO_2	EPA 3	3	60
07/29/2020	EUPREP	Moisture	EPA 4	3	60
07/29/2020	EUPREP	Filterable PM	EPA 5	3	60
07/29/2020	EUPREP	Visible Emissions*	EPA 9	3	60
07/29/2020	EUPREP	Condensable PM	EPA 202	3	60

TABLE 1-1
SUMMARY OF TEST PROGRAM (CONTINUED)

Test Date(s)	Unit ID/ Source Name	Activity/ Parameters	Test Methods	No. of Runs	Duration (Minutes)
07/29/2020	EUDC	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
07/29/2020	EUDC	O_2, CO_2	EPA 3	3	~5
07/29/2020	EUDC	Moisture	EPA 4	3	60
07/29/2020	EUDC	Filterable PM	EPA 5	3	60
07/28/2020	EUDC	Visible Emissions*	EPA 9	3	60
07/29/2020	EUDC	TGNMO	EPA 25	3	60
07/29/2020	EUDC	Condensable PM	EPA 202	3	60
07/29/2020	EUEXTRACTION	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	5
07/29/2020	EUEXTRACTION	O_2, CO_2	EPA 3	3	~5
07/29/2020	EUEXTRACTION	Moisture (wb/db)	EPA 4	3	~1
07/29/2020	EUEXTRACTION	TGNMO	EPA 25	3	60
07/30/2020	EUMEALGRINDING	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
07/30/2020	EUMEALGRINDING	O_2, CO_2	EPA 3	3	~5
07/30/2020	EUMEALGRINDING	Moisture	EPA 4	3	60
07/30/2020	EUMEALGRINDING	Filterable PM	EPA 5	3	60
07/30/2020	EUMEALGRINDING	Visible Emissions*	EPA 9	3	60
07/30/2020	EUMEALGRINDING	Condensable PM	EPA 202	3	60

TABLE 1-1
SUMMARY OF TEST PROGRAM (CONTINUED)

Test Date(s)	Unit ID/ Source Name	Activity/ Parameters	Test Methods	No. of Runs	Duration (Minutes)
07/30/2020	EUPELLETIZATION	Velocity/Volumetric Flow Rate	EPA 1 & 2	3	60
07/30/2020	EUPELLETIZATION	O_2, CO_2	EPA 3	3	60
07/30/2020	EUPELLETIZATION	Moisture	EPA 4	3	60
07/30/2020	EUPELLETIZATION	Filterable PM	EPA 5	3	60
07/30/2020	EUPELLETIZATION	Visible Emissions*	EPA 9	3	60
07/30/2020	EUPELLETIZATION	Condensable PM	EPA 202	3	60

* Visible emissions were recorded by ZFS Ithaca Personnel.

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 through 1-8. 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 1-9. The tests were conducted according to the test plan (protocol) dated July 1, 2020 that was submitted to EGLE.

TABLE 1-2
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
EULOADOUT
JULY 28, 2020

Parameter/Units	Average Results	Emission Limits
Particulate Matter (PM)		
lb/1000lb wet stack gas	0.0031	0.10
Opacity		
%, 6 minute average	0	10

TABLE 1-3
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
EUPREP
JULY 28, 2020

Parameter/Units	Average Results	Emission Limits
PM_{10}		
lb/hr*	<3.61	9.44
$PM_{2.5}$		
lb/hr*	<3.51	8.09
Opacity		
%, 6 minute average	0	10

* The "<" symbol indicates that compound was below the Minimum Detection Limit (MDL) of the analytical method. See Section 4.2 for details.

TABLE 1-4
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
EUPREP
JULY 29, 2020

Parameter/Units	Average Results	Emission Limits
PM		
grains/dscf	0.0032	0.0153
lb/hr	2.60	16.17
Opacity		
%, 6 minute average	0	10

TABLE 1-5
SUMMARY OF AVERAGE COMPLIANCE RESULTS - EUDC
JULY 29, 2020

Parameter/Units	Average Results	Emission Limits
PM		
grains/dscf	0.0049	0.033
VOC, as hexane		
lb/hr	12.49	30.25
Opacity		
%, 6 minute average	0	10

TABLE 1-6
SUMMARY OF AVERAGE COMPLIANCE RESULTS - EUEXTRACTION
JULY 29, 2020

Parameter/Units	Average Results	Emission Limits
VOC, as hexane		
lb/hr	0.30	14.36

TABLE 1-7
SUMMARY OF AVERAGE COMPLIANCE RESULTS - EUMEALGRINDING
JULY 30, 2020

Parameter/Units	Average Results	Emission Limits
PM		
grains/dscf	0.002	0.005
lb/hr	0.17	0.80
Opacity		
%, 6 minute average	0	10

TABLE 1-8
SUMMARY OF AVERAGE COMPLIANCE RESULTS -
EUPELLETIZING
JULY 30, 2020

Parameter/Units	Average Results	Emission Limits
PM		
grains/dscf	0.022	0.026
lb/hr	1.0	1.6
Opacity		
%, 6 minute average	0	10

1.2 KEY PERSONNEL

A list of project participants is included below:

Facility Information

Source Location:	ZFS Solutions, LLC ZFS Ithaca, LLC 1266 E Washington Road Ithaca, MI 48847
Project Contact:	Bridgette L. Rillema
Role:	Environmental Manager
Company:	ZFS Solutions, LLC
Telephone:	616-897-1711
Email:	bridgetter@zfs.com

Agency Information

Regulatory Agency:	EGLE
Agency Contact:	Karen Kajiya-Mills
Telephone:	517-335-3122
Email:	kajiya-millsk@michigan.gov

Testing Company Information

Testing Firm:	Montrose Air Quality Services, LLC	
Contact:	Matthew Young	Steven Smith
Title:	District Manager	Client Project Manager
Telephone:	248-548-8070	248-548-8070
Email:	myoung@montrose-env.com	ssmith@montrose-env.com

Laboratory Information

Laboratory:	Montrose
City, State:	Royal Oak, MI
Method:	5 and 201A
Laboratory:	Enthalpy Analytical, LLC
City, State:	Durham, NC
Method:	202

Test personnel and observers are summarized in Table 1-9.

TABLE 1-9
TEST PERSONNEL AND OBSERVERS

Name	Affiliation	Role/Responsibility
Steve Smith	Montrose	District Manager, QI
Mike Nummer	Montrose	Field Technician, QI
Shane Rabideau	Montrose	Field Technician
Ben Durham	Montrose	Field Technician
Bridgette L. Rillema	ZFS Solutions, LLC	Coordinator/Test Liaison

2.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

2.1 PROCESS DESCRIPTION, OPERATION, AND CONTROL EQUIPMENT

ZFS Ithaca, LLC is a processing plant for soybeans. This plant utilizes various different processes to transport and treat the soybeans as they arrive. Emissions from EULOADOUT and EUMEALGRINDING were controlled by baghouses. Emissions from EUPREP were controlled by multiple baghouses and cyclones. Emissions from EUDC and EUPELLETIZING were controlled by cyclones and emissions from EUEXTRACTION were controlled by a mineral oil adsorption system (MOS). EULOADOUT, EUPREP, EUDC, EUEXTRACTION, EUMEALGRINDING and EUPELLETIZING were in operation during this test event. A more detailed description of the processes mentioned are located in Appendix E.2

2.2 FLUE GAS SAMPLING LOCATION(S)

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

TABLE 2-1
SAMPLING LOCATION(S)

Sampling Location	Stack Inside Diameter (in.)	Distance from Nearest Disturbance Downstream EPA "B" (in./dia.)	Distance from Nearest Disturbance Upstream EPA "A" (in./dia.)	Number of Traverse Points
EULOADOUT Baghouse Exhaust Stack	44.0	1,200/27.3	600/13.6	Isokinetic (M5/202): 12 (6/port);
EUPREP Cyclone Exhaust Stack	99.0	300/3.0	600/6.1	Isokinetic (M5/202): 24 (12/port); Isokinetic (M201A/202): 12 (3/port);
EUDC Cyclone Exhaust Stack	65.8	540/8.2	240/3.7	Isokinetic (M5/202): 24 (12/port);) Gaseous: 1
EUEXTRACTION MOS Exhaust Stack (SVVENTFAN)	8.0	120/15.0	240/30.0	Flow: 16(8/port) Moisture: 1 Gaseous: 1
EUMEALGRINDING Baghouse Exhaust Stack	33.8	1,440.0/42.7	300.0/8.9	Isokinetic (M5/202): 12 (6/port);
EUPELLETIZING Cyclone Exhaust Stack	20.0	540.0/27.0	168.0/8.4	Isokinetic (M5/202): 12 (6/port);

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 Appendices A.1 through A.7 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 and were operating as close to maximum capacity as possible.

Plant personnel were responsible for establishing the test conditions and collecting all applicable unit-operating data. The process data that was provided is presented in Appendix B. Data collected includes the following parameters:

- EULOADOUT - Baghouse differential pressure, in-H_2O
- EULOADOUT - Monitoring period, hr
- EULOADOUT - Soybeans received during monitoring, ton
- EULOADOUT - Soybeans received rate, ton/hr
- EUPREP - Baghouse differential pressure, in-H_2O
- EUPREP - Monitoring period, hr
- EUPREP - Soybeans processed during monitoring, ton
- EUPREP - Soybeans processed during monitoring period, ton/hr
- EUPREP - Estimated soybeans processed per day, ton
- EUPREP - Actual soybeans processed in day, ton
- EUDC - Sparge Deck temperature, °F
- EUDC - Soybeans processed during monitoring, ton
- EUDC - Soybeans processed during monitoring period, ton/hr
- EUDC - Estimated soybeans processed per day, ton
- EUDC - Actual soybeans processed in day, ton
- EUEXTRACTION - Mineral oil flowrate, gpm
- EUEXTRACTION - LEL, %
- EUEXTRACTION - Sparge Deck temperature, °F
- EUEXTRACTION - Baghouse differential pressure, in-H_2O
- EUEXTRACTION - Soybeans processed during monitoring period, ton/hr
- EUEXTRACTION - Estimated soybeans processed per day, ton
- EUEXTRACTION - Actual soybeans processed in day, ton
- EUMEALGRINDING - Baghouse differential pressure, in-H_2O
- EUMEALGRINDING - Soybeans processed during monitoring, ton
- EUMEALGRINDING - Soybeans processed during monitoring period, ton/hr
- EUMEALGRINDING - Estimated soybeans processed per day, ton
- EUMEALGRINDING - Actual soybeans processed in day, ton
- EUPELLETIZING - Soybeans processed during monitoring, ton
- EUPELLETIZING - Soybeans processed during monitoring period, ton/hr
- EUPELLETIZING - Estimated soybeans processed per day, ton
- EUPELLETIZING - Actual soybeans processed in day, ton

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.

The sample port and traverse point locations are detailed in Appendix A.

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. The measurements are made at traverse points specified by EPA Method 1.

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.

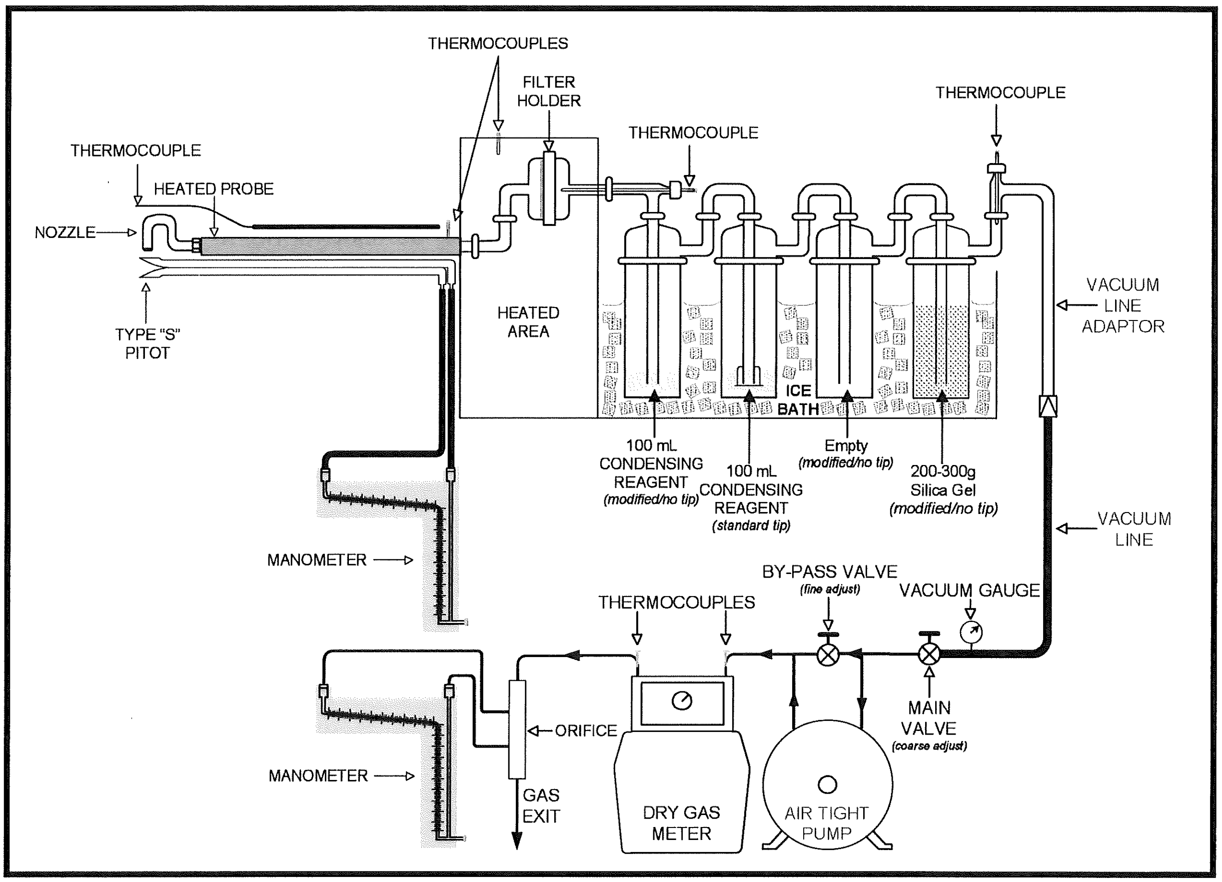
The typical sampling system is detailed in Figures 3-1 and 3-3.

3.1.5 EPA Method 5, Determination of Particulate Matter from Stationary Sources

EPA Method 5 is a manual, isokinetic method used to measure Filterable PM emissions. The samples are analyzed gravimetrically. This method is performed in conjunction with EPA Methods 1 through 4. The stack gas is sampled through a nozzle, probe, filter, and impinger train. FPM results are reported in emission concentration and emission rate units.

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

FIGURE 3-1
US EPA METHOD 5/202 SAMPLING TRAIN



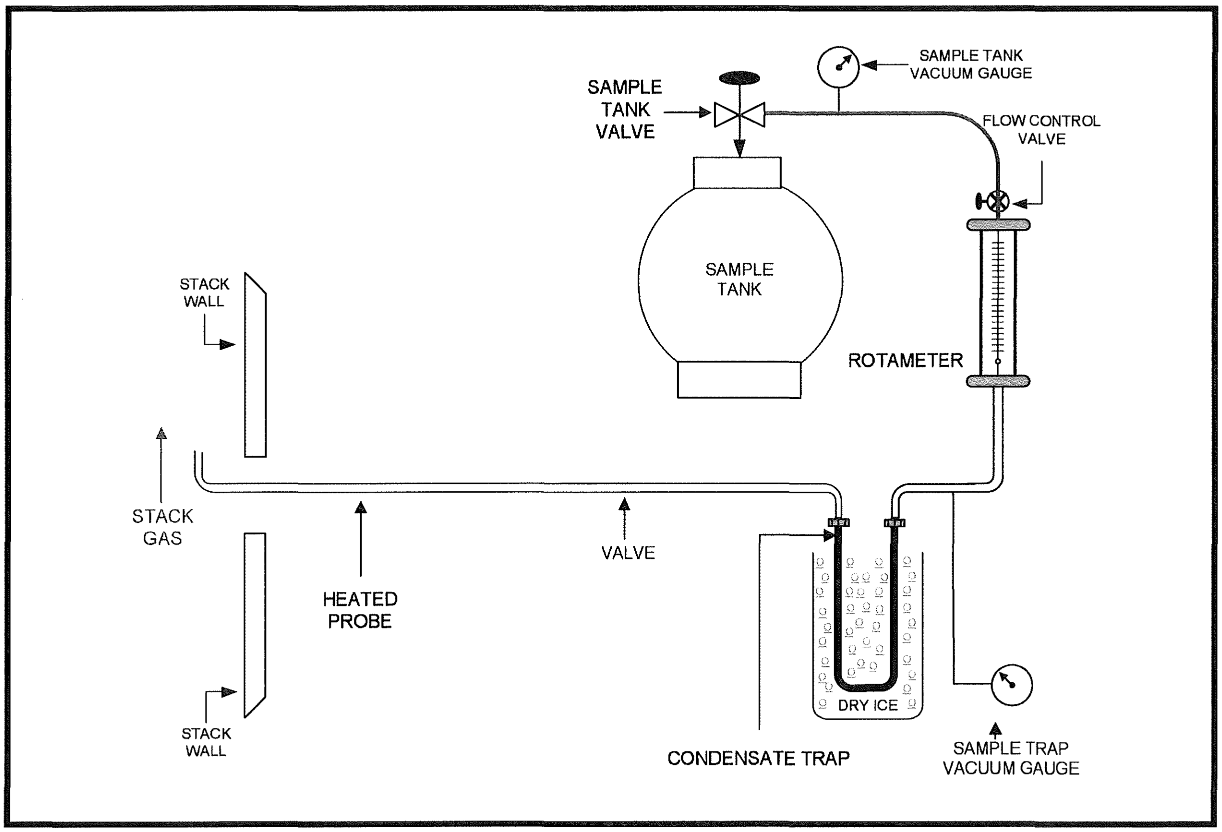
3.1.6 EPA Method 25, Determination of Total Gaseous Nonmethane Organic Emissions as Carbon

An emission sample is withdrawn from the stack at a constant rate through a heated filter and a chilled condensate trap by means of an evacuated sample tank. After sampling is completed, the TGNMO are determined by independently analyzing the condensate trap and sample tank fractions and combining the analytical results. The organic content of the condensate trap fraction is determined by oxidizing the NMO to carbon dioxide (CO_2) and quantitatively collecting in the effluent in an evacuated vessel; then a portion of the CO_2 is reduced to CH_4 and measured by an FID. The organic content of the sample tank fraction is measured by injecting a portion of the sample into a gas chromatographic column to separate the NMO from carbon monoxide (CO), CO_2, and CH_4; the NMO are oxidized to CO_2 reduced to CH_4, and measured by an FID. In this manner, the variable response of the FID associated with different types of organics is eliminated.

During this test an unheated EPA Method 25 sampling system for utilized at all the locations tested.

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

FIGURE 3-2
US EPA METHOD 25 (UNHEATED) SAMPLING TRAIN

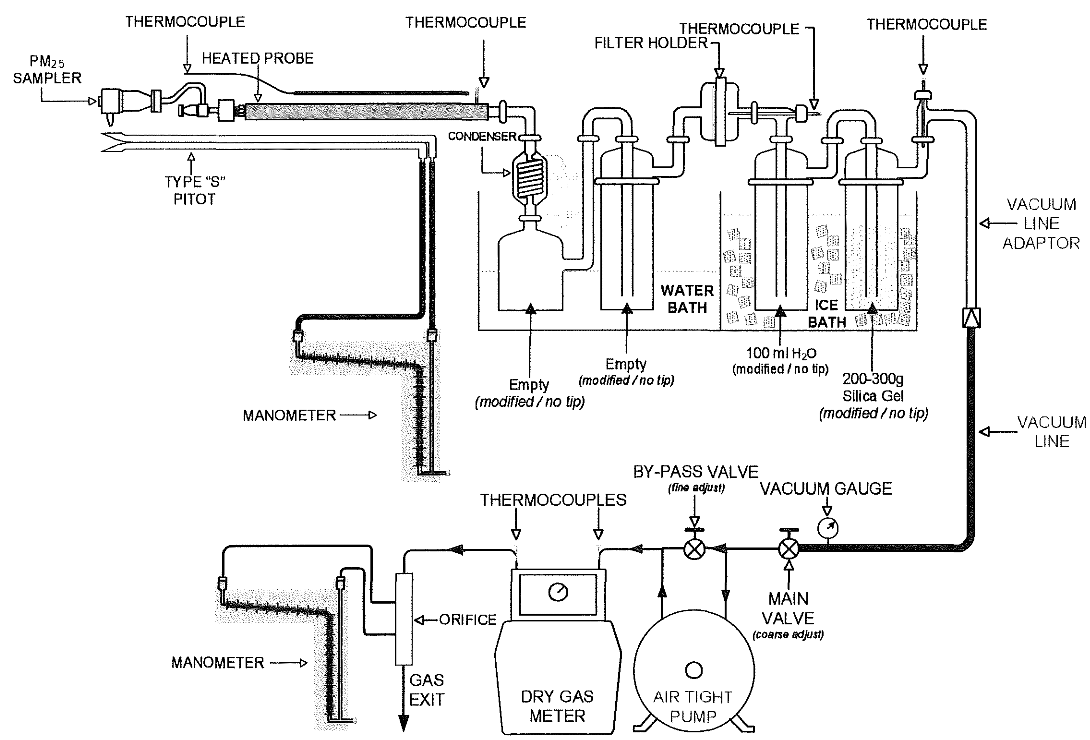


3.1.7 EPA Method 201A, Determination of PM10 and PM2.5 Emissions from Stationary Sources (Constant Sampling Rate Procedure)

A sample of gas is extracted at a predetermined constant flow rate through an in-stack sizing device. The particle-sizing device separates particles with nominal aerodynamic diameters of 10 micrometers and 2.5 micrometers. To minimize variations in the isokinetic sampling conditions, you must establish well-defined limits. After a sample is obtained, remove uncombined water from the particulate, then use gravimetric analysis to determine the particulate mass for each size fraction. The original method, as promulgated in 1990, has been changed by adding a $PM_{2.5}$ cyclone downstream of the PM_{10} cyclone. Both cyclones were developed and evaluated as part of a conventional five-stage cascade cyclone train. The addition of a $PM_{2.5}$ cyclone between the PM_{10} cyclone and the stack temperature filter in the sampling train supplements the measurement of PM_{10} with the measurement of $PM_{2.5}$.

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

FIGURE 3-3
US EPA METHOD 201A ($PM_{10}/PM_{2.5}$)/202 SAMPLING TRAIN



3.1.8 EPA Method 202, Dry Impinger Method for Determining Condensable Particulate Emissions from Stationary Sources

The CPM is collected in dry impingers after filterable PM has been collected on a filter maintained as specified in either Method 5 of Appendix A-3 to 40 CFR 60, Method 17 of Appendix A-6 to 40 CFR 60, or Method 201A of Appendix M to 40 CFR 51. The organic and aqueous fractions of the impingers and an out-of-stack CPM filter are then taken to dryness and weighed. The total of the impinger fractions and the CPM filter represents the CPM. Compared to the version of Method 202 that was promulgated on December 17, 1991, this method eliminates the use of water as the collection media in impingers and includes the addition of a condenser followed by a water dropout impinger immediately after the final in-stack or heated filter. This method also includes the addition of one modified Greenburg Smith impinger (backup impinger) and a CPM filter following the water dropout impinger.

CPM is collected in the water dropout impinger, the modified Greenburg Smith impinger, and the CPM filter of the sampling train as described in this method. The impinger contents are purged with nitrogen immediately after sample collection to remove dissolved SO_2 gases from the impinger. The CPM filter is extracted with water and hexane. The impinger solution is then extracted with hexane. The organic and aqueous fractions are dried and the residues are weighed. The total of the aqueous and organic fractions represents the CPM.

The potential artifacts from SO_2 are reduced using a condenser and water dropout impinger to separate CPM from reactive gases. No water is added to the impingers prior to the start of sampling. To improve the collection efficiency of CPM, an additional filter (the "CPM filter") is placed between the second and third impingers

The typical sampling system is detailed in Figures 3-1 and 3-2.

3.2 PROCESS TEST METHODS

The test plan did not require that process samples be collected during this test program; therefore, no process sample data are presented in this test report.

4.0 TEST DISCUSSION AND RESULTS

4.1 FIELD TEST DEVIATIONS AND EXCEPTIONS

No field deviations or exceptions from the test plan or test methods occurred during this test program.

4.2 PRESENTATION OF RESULTS

The average results are compared to the permit limits in Tables 1-2 through 1-8. The results of individual compliance test runs performed are presented in Tables 4-1 through 4-7. 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.

Concentration values in Table 4-2 denoted with a '<' was measured to be below the minimum detection limit (MDL) of the applicable analytical method. Emissions denoted with a '<' in Tables 1-3 and 4-2 were calculated utilizing the applicable MDL concentration value instead of the "as measured" concentration value.

The emissions for Run 1 displayed in Table 4-4 utilize the saturated moisture content values determined for the given stack gas temperatures and pressures as per Section 4.0, of US EPA Method 4. The measured flue gas percent by volume moisture contents were higher than the calculated saturated values.

Moisture content of the stack gas displayed in Table 4-5 was measured utilizing the EPA Method 4 (Section 2.2.1) wet-bulb/dry-bulb approximation technique during each run.

TABLE 4-1
PM AND VISIBLE EMISSIONS RESULTS -
EULOADOUT

Run Number	1	2	3	Average
Date	7/28/2020	7/28/2020	7/28/2020	--
Time	6:42-07:44	8:16-09:19	10:00-11:08	--
Process Data				
soybeans received, ton/hr	217.59	170.20	243.90	210.56
Opacity*				
%, 6 minute average	0.0	0.0	0.0	0.0
Flue Gas Parameters				
O_2, % volume dry	20.9	20.9	20.9	20.9
CO_2, % volume dry	0.0	0.0	0.0	0.0
flue gas temperature, °F	78.6	81.5	86.8	82.3
moisture content, % volume	2.51	2.58	2.31	2.47
volumetric flow rate, dscfm	34,190	34,422	34,654	34,422
Filterable PM				
gr/dscf	0.00080	0.00058	0.00077	0.00072
lb/1000lb wet stack gas	0.0015	0.0011	0.0015	0.0013
Condensable PM				
gr/dscf	0.00079	0.00106	0.00094	0.00093
lb/1000lb wet stack gas	0.0015	0.0020	0.0018	0.0018
Total PM				
lb/1000lb wet stack gas	0.0030	0.0031	0.0032	0.0031

* Opacity observations were recorded by ZFS Ithaca, LLC personnel.

TABLE 4-2
PM_{10}, $PM_{2.5}$, AND VISIBLE EMISSIONS RESULTS - EUPREP

Run Number	1	2	3	Average
Date	7/28/2020	7/28/2020	7/28/2020	--
Time	7:20-9:33	10:24-12:58	13:53-16:05	--
Process Data - Soybeans Processed				
ton/hr	157.5	158.9	158.3	158.2
ton/day		3747.69		--
Opacity*				
%, 6 minute average	0.0	0.0	0.0	0.0
Flue Gas Parameters				
O_2, % volume dry	20.9	20.9	20.9	20.9
CO_2, % volume dry	0.0	0.0	0.0	0.0
flue gas temperature, °F	142.0	144.0	143.0	143.0
moisture content, % volume	5.27	5.61	5.13	5.34
volumetric flow rate, dscfm	98,943	103,588	99,443	100,658
Condensable PM				
gr/dscf	0.0023	0.0017	0.0016	0.0018
lb/hr	1.92	1.47	1.36	1.58
Filterable PM_{10}				
gr/dscf**	0.0042	0.0023	<0.00048	<0.00235
lb/hr**	3.60	2.06	<0.41	<2.02
Filterable $PM_{2.5}$				
gr/dscf**	0.0041	0.0021	<0.00045	<0.00223
lb/hr**	3.52	1.87	<0.38	<1.92
PM_{10}				
lb/hr**	5.52	3.53	<1.77	<3.61
$PM_{2.5}$				
lb/hr**	5.44	3.33	<1.74	<3.51

* Opacity observations were recorded by ZFS Ithaca, LLC personnel.

** The "<" symbol indicates that compound was below the Minimum Detection Limit (MDL) of the analytical method. See Section 4.2 for details.

TABLE 4-3
PM EMISSIONS RESULTS - EUPREP

Run Number	1	2	3	Average
Date	7/29/2020	7/29/2020	7/29/2020	--
Time	8:35-9:59	10:33-11:49	12:34-13:55	--
Process Data - Soybeans Processed				
ton/hr	159.3	155.1	159.9	158.1
ton/day		3778.61		
Opacity*				
%, 6 minute average	0.0	0.0	0.0	0.0
Flue Gas Parameters				
O_2, % volume dry	20.9	20.9	20.9	20.9
CO_2, % volume dry	0.0	0.0	0.0	0.0
flue gas temperature, °F	142	144	144	143
moisture content, % volume	6.52	6.01	6.39	6.30
volumetric flow rate, dscfm	96,077	95,855	96,129	96,020
Filterable PM				
gr/dscf	0.0020	0.0020	0.0025	0.0022
lb/hr	1.64	1.66	2.10	1.80
Condensable PM				
gr/dscf	0.0010	0.0010	0.0009	0.0010
lb/hr	0.82	0.83	0.76	0.80
Total PM				
gr/dscf	0.0030	0.0030	0.0035	0.0032
lb/hr	2.46	2.48	2.86	2.60

* Opacity observations were recorded by ZFS Ithaca, LLC personnel.

TABLE 4-4
PM , VOC, AND OPACITY EMISSIONS RESULTS - EUDC

Run Number	1	2	3	Average
Date	7/29/2020	7/29/2020	7/29/2020	--
Time	8:47-10:11	11:59-13:10	14:10-15:12	--
Process Data - Soybeans Processed				
ton/hr	159.0	152.5	157.4	156.3
ton/day		3778.61		
Opacity*				
%, 6 minute average	0.0	0.0	0.0	0.0
Flue Gas Parameters				
O_2, % volume dry	20.9	20.9	20.9	20.9
CO_2, % volume dry	0.0	0.0	0.0	0.0
flue gas temperature, °F	127	131	131	129
moisture content, % volume†	14.27	13.99	13.40	13.89
volumetric flow rate, dscfm	55,558	55,422	53,125	54,702
Filterable PM				
gr/dscf	0.0043	0.0030	0.0022	0.0032
Condensable PM				
gr/dscf	0.0021	0.0014	0.0015	0.0017
Total PM				
gr/dscf	0.0065	0.0044	0.0037	0.0049
TGNMO, as carbon				
ppmvd	118	94	94	102
lb/hr	12.3	9.7	9.3	10.4
VOC, as hexane				
lb/hr	14.7	11.7	11.2	12.5

* Opacity observations were recorded by ZFS Ithaca, LLC personnel.

† The moisture content of Run 1 was saturated for the given duct gas temperatures and pressures as per Section 4.0, of EPA Method 4.

TABLE 4-5
VOC EMISSIONS RESULTS -
EUEXTRACTION

Run Number	1	2	3	Average
Date	7/29/2020	7/29/2020	7/29/2020	--
Time	10:11-11:11	12:08-13:08	14:14-15:14	--
Process Data - Soybeans Processed				
ton/hr	150.2	148.0	158.2	152.1
ton/day		3778.61		
Flue Gas Parameters				
O_2, % volume dry	11.67	11.67	11.67	11.67
CO_2, % volume dry	8.3	9.0	8.7	8.7
flue gas temperature, °F	90.0	92.0	92.0	91.3
moisture content, % volume	2.12	2.12	2.12	2.12
volumetric flow rate, dscfm	110	110	110	110
TGNMO, as carbon				
ppmvd	1,076	1,297	1,344	1,239
lb/hr	0.22	0.27	0.28	0.25
VOC, as hexane				
lb/hr	0.26	0.32	0.33	0.30

TABLE 4-6
PM EMISSIONS RESULTS -
EUMEALGRINDING

Run Number	1	2	3	Average
Date	7/30/2020	7/30/2020	7/30/2020	--
Time	8:17-9:22	9:49-11:12	11:46-12:52	--
Process Data - Soybeans Processed				
ton/hr	158.0	157.7	157.0	157.6
ton/day		3772.12		
Opacity*				
%, 6 minute average	0.0	0.0	0.0	0.0
Flue Gas Parameters				
O_2, % volume dry	20.9	20.9	20.9	20.9
CO_2, % volume dry	0.0	0.0	0.0	0.0
flue gas temperature, °F	92.8	94.7	96.0	94.5
moisture content, % volume	3.56	3.58	3.49	3.54
volumetric flow rate, dscfm	11,827	11,589	11,783	11,733
Filterable PM				
gr/dscf	0.0014	0.0003	0.0003	0.0007
lb/hr	0.14	0.03	0.03	0.07
Condensable PM				
gr/dscf	0.0010	0.0010	0.0008	0.0010
lb/hr	0.10	0.10	0.08	0.10
Total PM				
gr/dscf	0.0024	0.0014	0.0012	0.0017
lb/hr	0.24	0.14	0.12	0.17

* Opacity observations were recorded by ZFS Ithaca, LLC personnel.

TABLE 4-7
PM EMISSIONS RESULTS -
EUPELLETIZING

Run Number	1	2	3	Average
Date	7/30/2020	7/30/2020	7/30/2020	--
Time	8:13-9:14	10:25-11:27	12:46-13:48	--
Process Data - Soybeans Processed				
ton/hr	157.6	156.5	156.2	156.8
ton/day		3772.12		
Opacity*				
%, 6 minute average	0.0	0.0	0.0	0.0
Flue Gas Parameters				
O_2, % volume dry	20.9	20.9	20.9	20.9
CO_2, % volume dry	0.0	0.0	0.0	0.0
flue gas temperature, °F	135	137	138	137
moisture content, % volume	10.9	10.6	10.4	10.7
volumetric flow rate, dscfm	5,606	5,522	5,516	5,548
Filterable PM				
gr/dscf	0.013	0.023	0.027	0.021
lb/hr	0.61	1.08	1.26	0.98
Condensable PM				
gr/dscf	0.0011	0.0010	0.0010	0.0010
lb/hr	0.051	0.046	0.045	0.047
Total PM				
gr/dscf	0.014	0.024	0.028	0.022
lb/hr	0.66	1.12	1.31	1.03

* Opacity observations were recorded by ZFS Ithaca, LLC personnel.

5.0 INTERNAL QA/QC ACTIVITIES

5.1 QA/QC AUDITS

The meter boxes and sampling trains used during sampling performed within the requirements of their respective methods. All post-test leak checks, minimum metered volumes, minimum sample durations, and percent isokinetics 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 201A QA/QC for $\triangle$Ps and aerodynamic cut sizes (D_{50}) met the criteria specified in Section 8.5 of the method.

EPA Method 5 analytical QA/QC results are included in the laboratory report. The method QA/QC criteria were met. An EPA Method 5 reagent blank was analyzed. The maximum allowable amount that can be subtracted is 0.001% of the weight of the acetone blank. The blank did not exceed the maximum residue allowed.

EPA Method 25 analytical QA/QC results are included in the laboratory report. The method QA/QC criteria were met.

EPA Method 202 analytical QA/QC results are included in the laboratory report. The method QA/QC criteria were met. An EPA Method 202 Field Train Recovery Blank (FTRB) was performed for each source category. The maximum allowable amount that can be subtracted is 0.002 g (2.0 mg). For this project, the FTRB had a mass of 2.0 mg.

5.2 QA/QC DISCUSSION

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

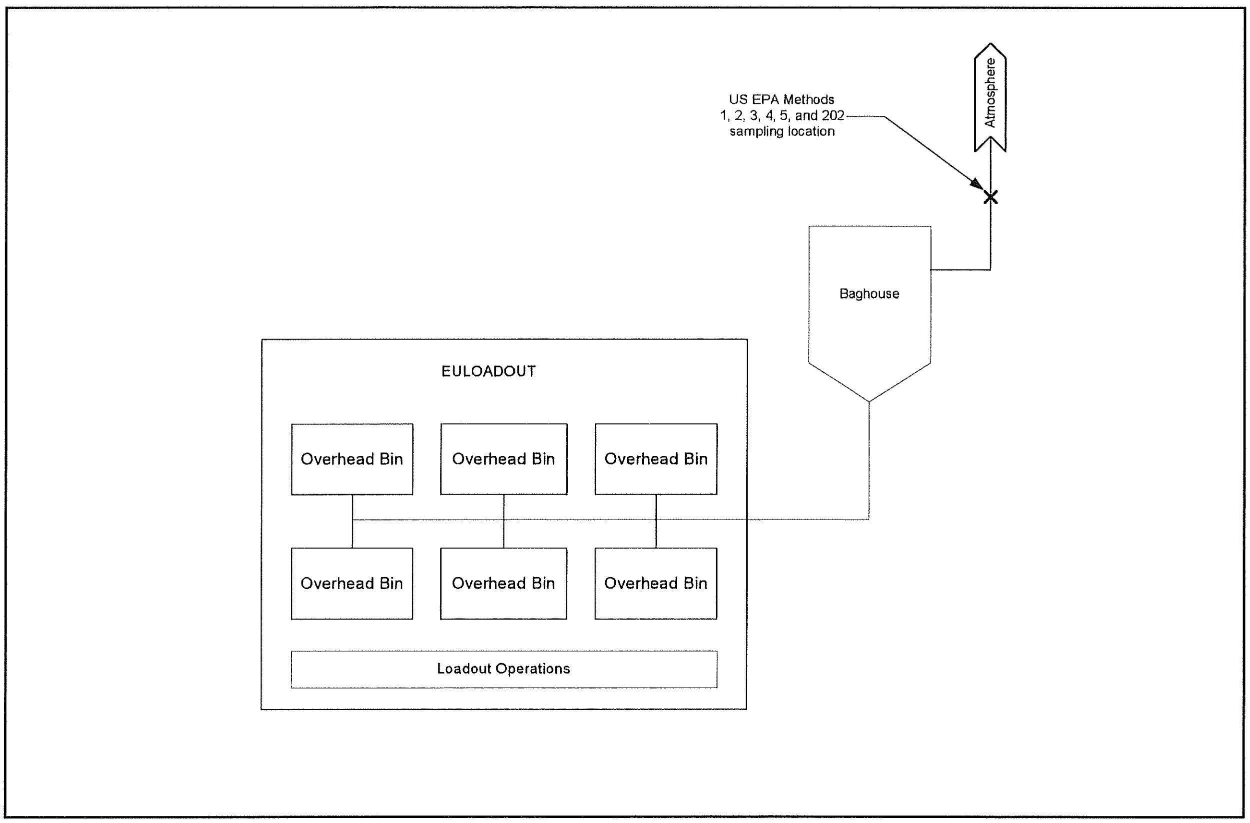
5.3 QUALITY STATEMENT

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).

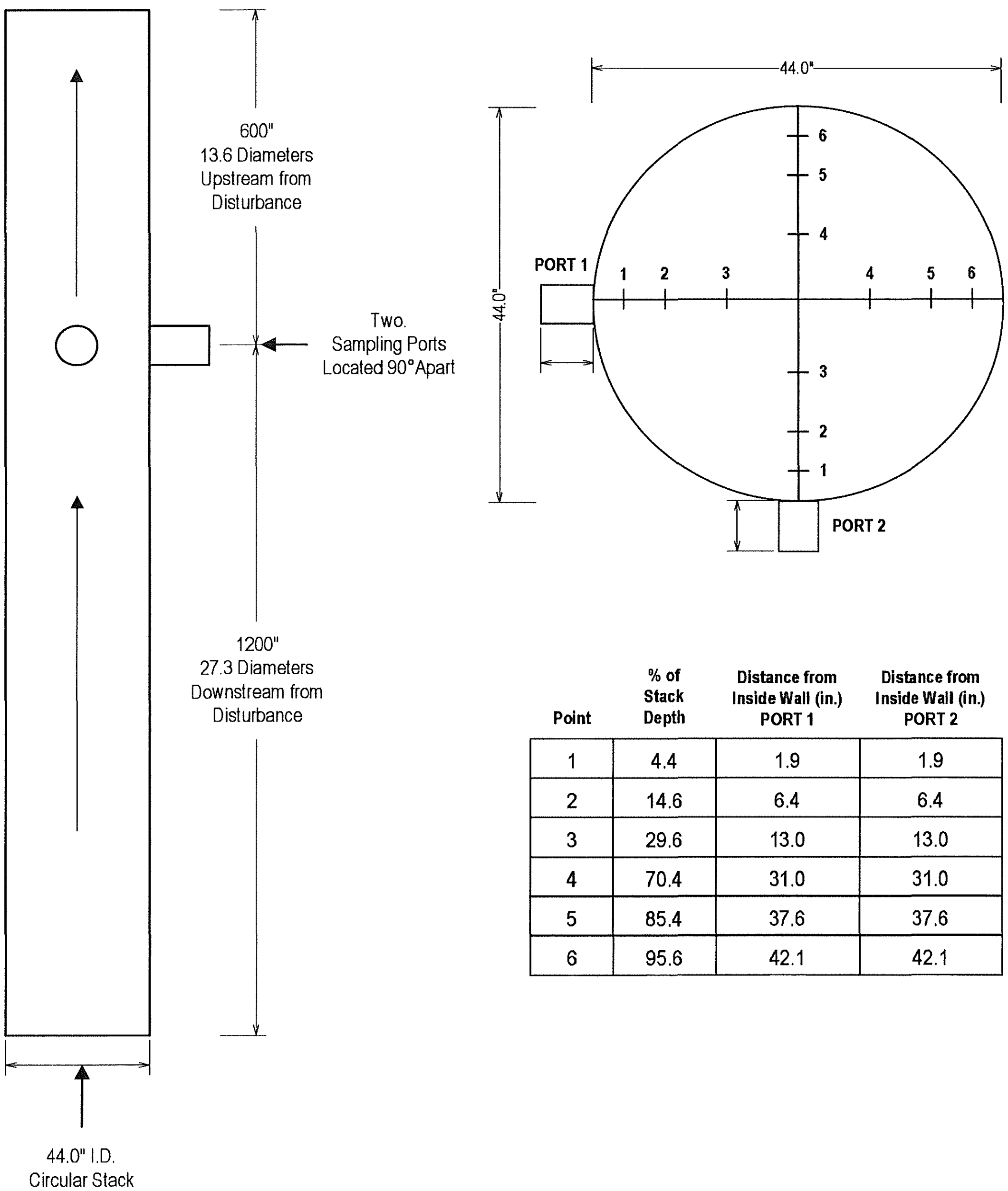
APPENDIX A
FIELD DATA AND CALCULATIONS

Appendix A.1
Sampling Locations

EULOADOUT SAMPLING LOCATION SCHEMATIC

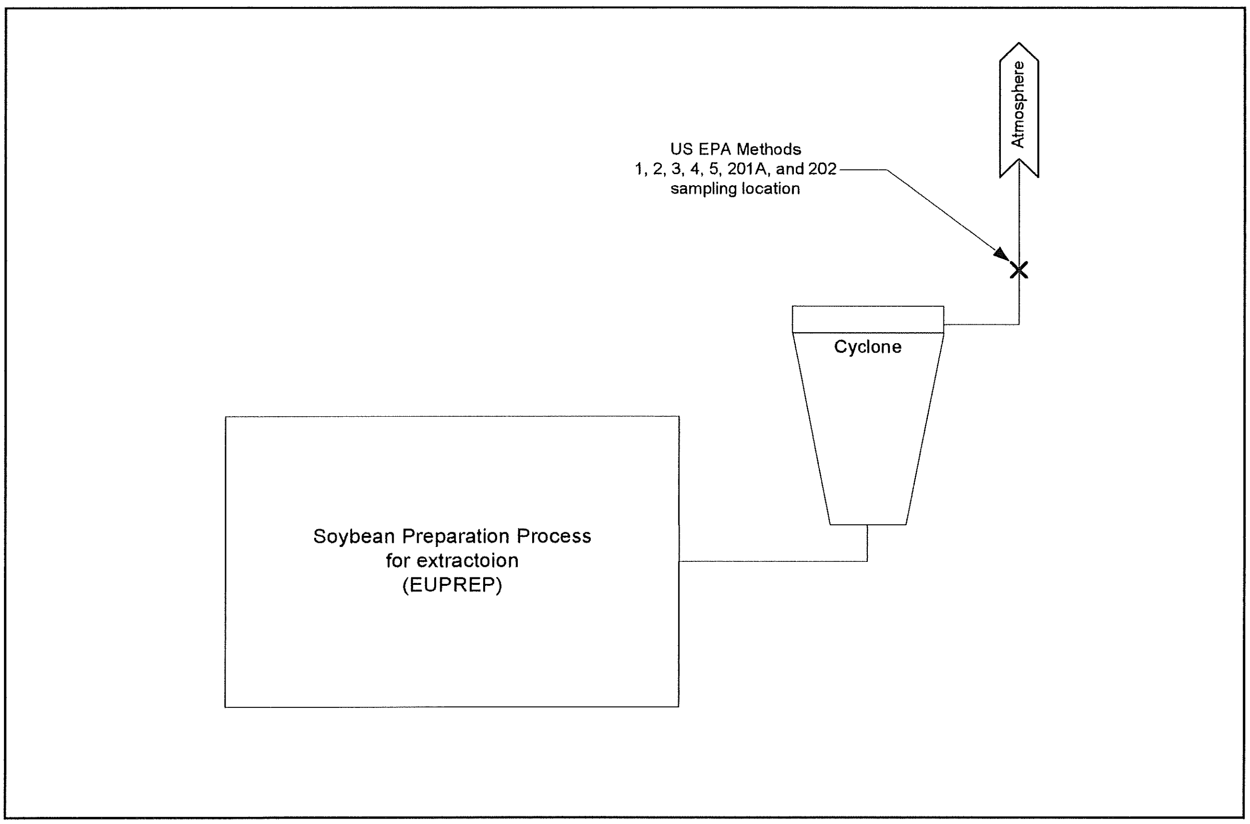


EULOADOUT BAGHOUSE EXHAUST TRAVERSE POINT LOCATION DRAWIN(

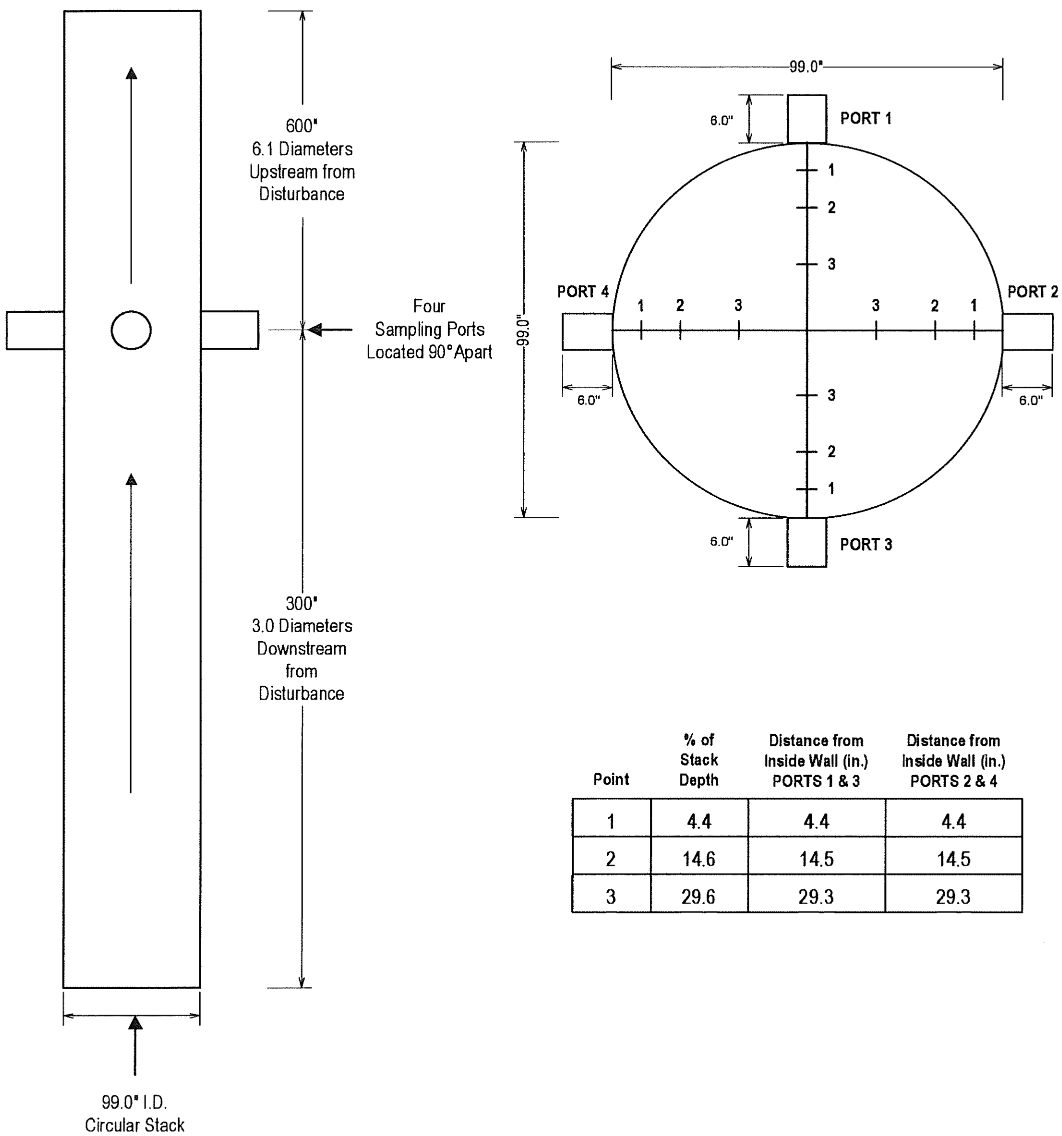


Point	% of Stack Depth	Distance from Inside Wall (in.) PORT 1	Distance from Inside Wall (in.) PORT 2
1	4.4	1.9	1.9
2	14.6	6.4	6.4
3	29.6	13.0	13.0
4	70.4	31.0	31.0
5	85.4	37.6	37.6
6	95.6	42.1	42.1

EUPREP SAMPLING LOCATION SCHEMATIC

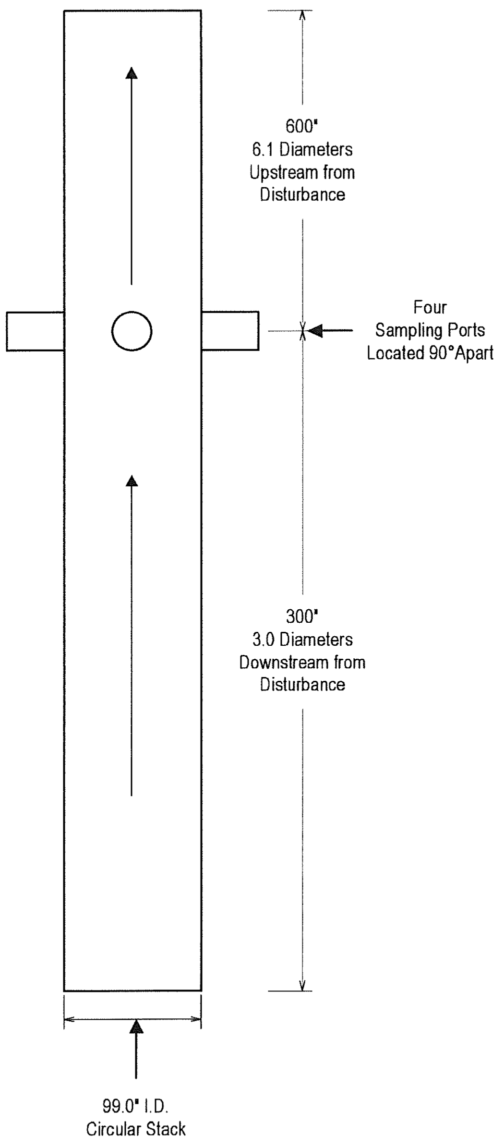


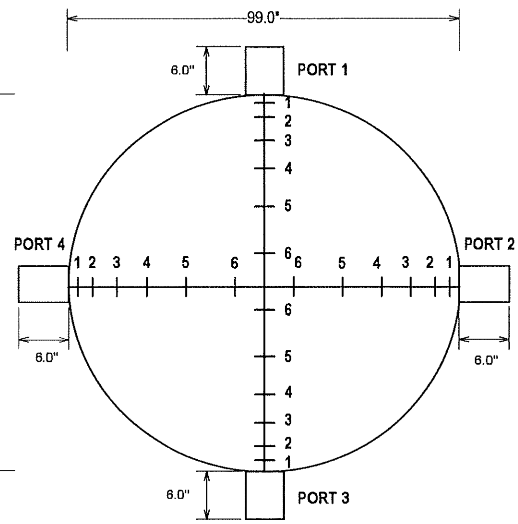
EUPREP CYCLONE EXHAUST M201A/202 TRAVERSE POINT LOCATION DRAWING



Point	% of Stack Depth	Distance from Inside Wall (in.) PORTS 1 & 3	Distance from Inside Wall (in.) PORTS 2 & 4
1	4.4	4.4	4.4
2	14.6	14.5	14.5
3	29.6	29.3	29.3

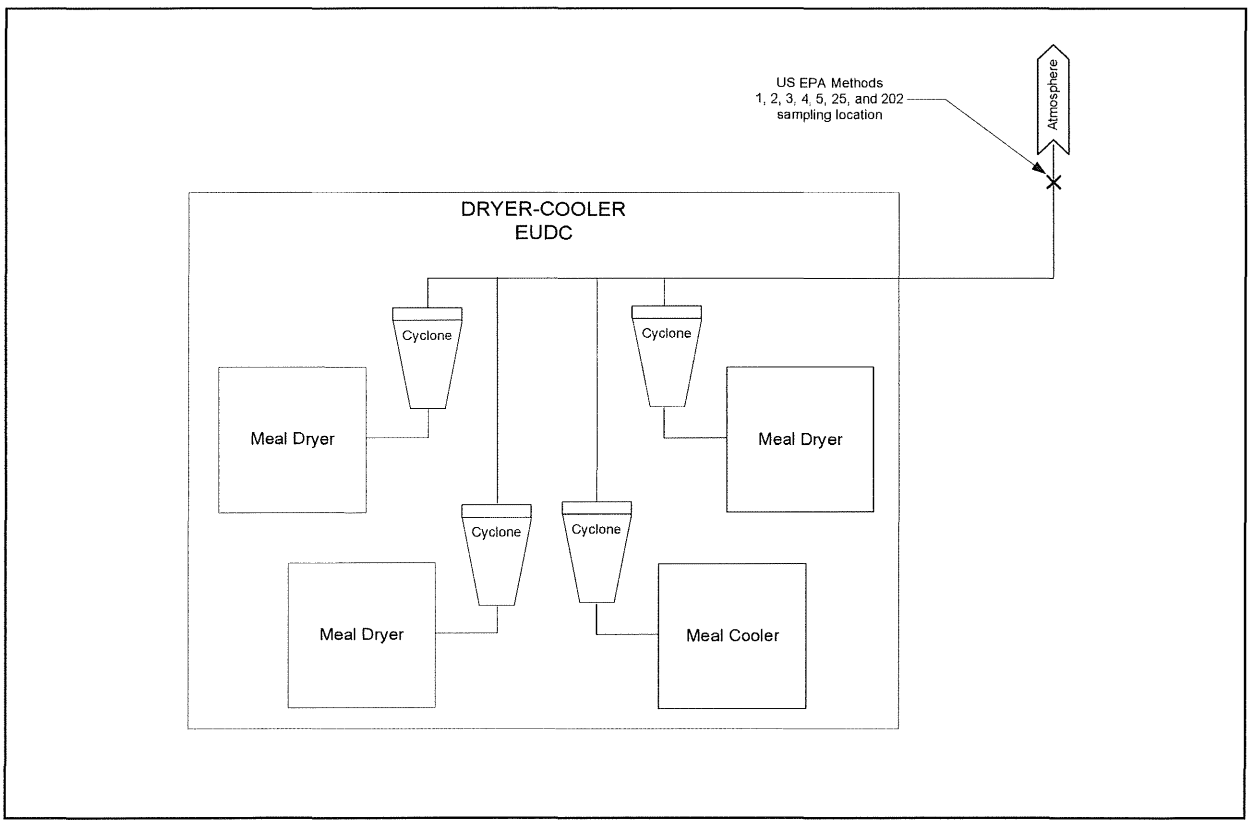
EUPREP CYCLONE EXHAUST M5/202 TRAVERSE POINT LOCATION DRAWING



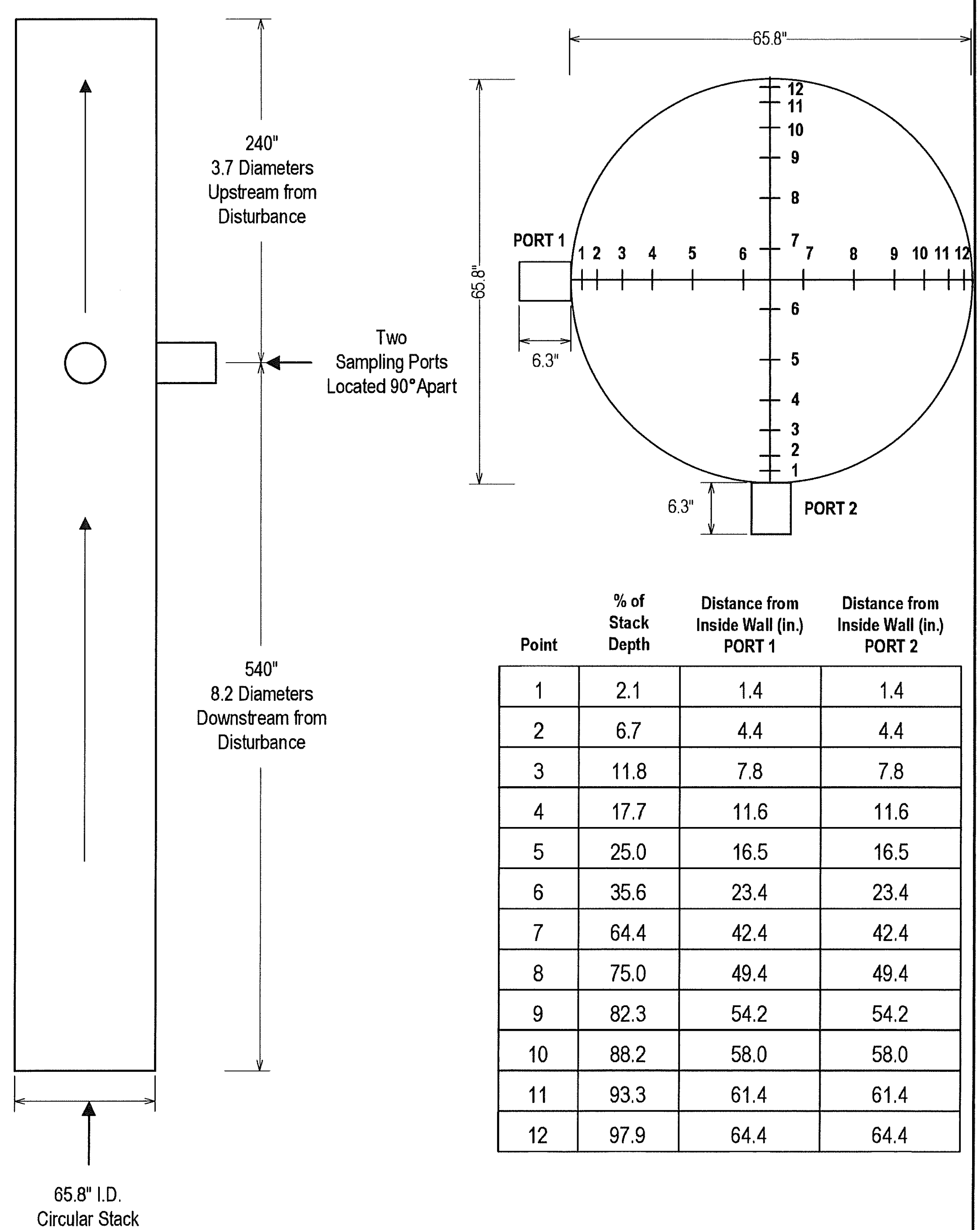


Point	% of Stack Depth	Distance from Inside Wall (in.) PORTS 1 & 3	Distance from Inside Wall (in.) PORTS 2 & 4
1	2.1	2.1	2.1
2	6.7	6.6	6.6
3	11.8	11.7	11.7
4	17.7	17.5	17.5
5	25.0	24.8	24.8
6	35.6	35.2	35.2

EUDC SAMPLING LOCATION SCHEMATIC

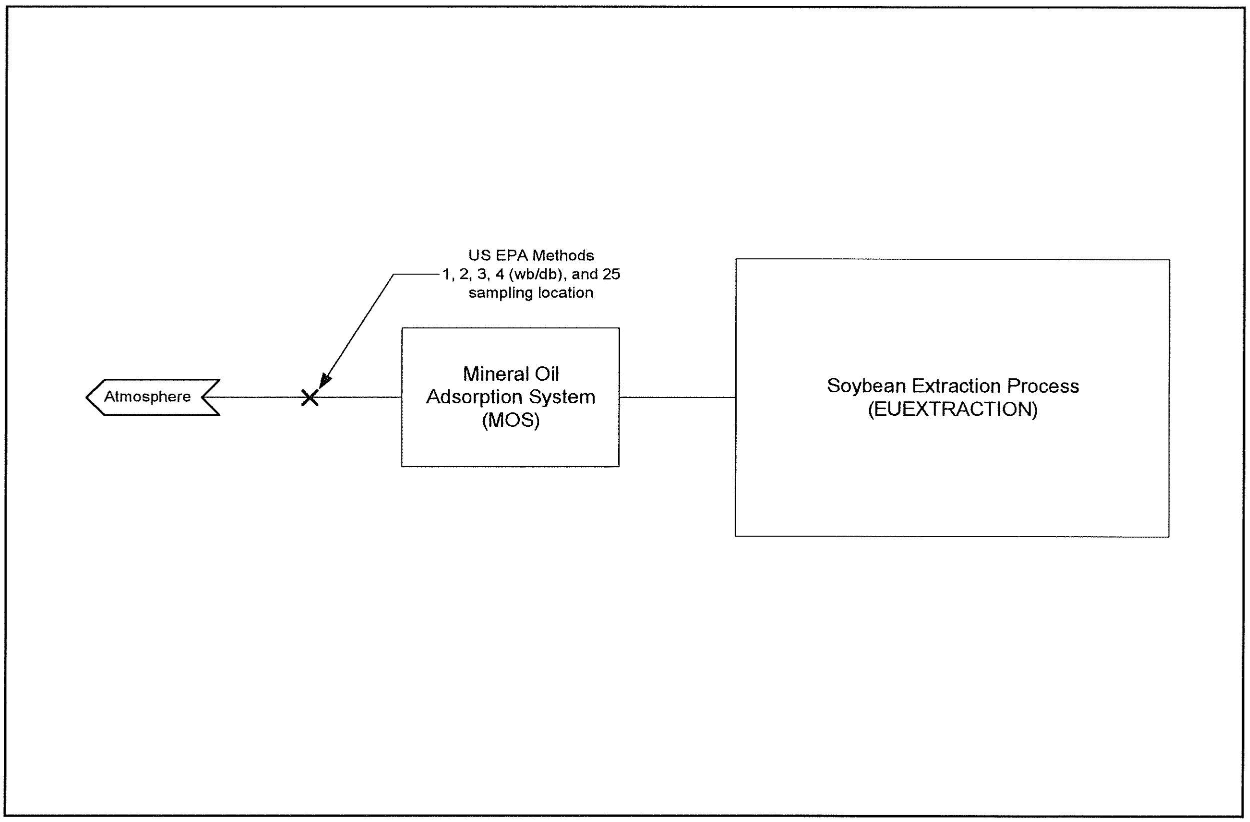


EUDC CYCLONE EXHAUST TRAVERSE POINT LOCATION DRAWING

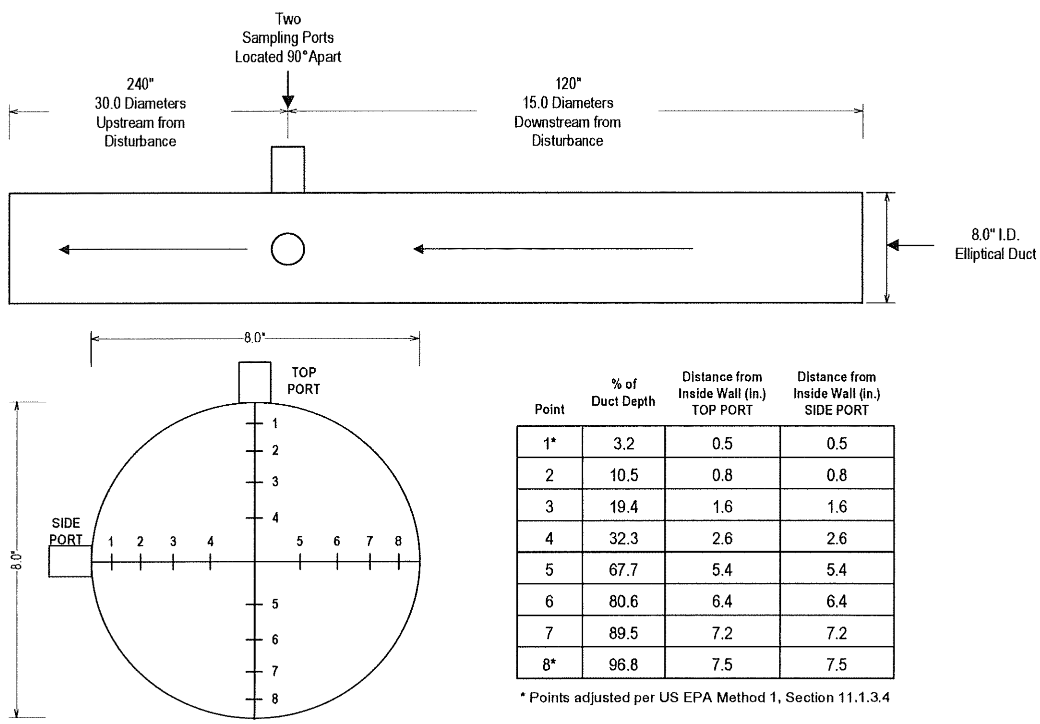


Point	% of Stack Depth	Distance from Inside Wall (in.) PORT 1	Distance from Inside Wall (in.) PORT 2
1	2.1	1.4	1.4
2	6.7	4.4	4.4
3	11.8	7.8	7.8
4	17.7	11.6	11.6
5	25.0	16.5	16.5
6	35.6	23.4	23.4
7	64.4	42.4	42.4
8	75.0	49.4	49.4
9	82.3	54.2	54.2
10	88.2	58.0	58.0
11	93.3	61.4	61.4
12	97.9	64.4	64.4

EUEXTRACTION SAMPLING LOCATION SCHEMATIC



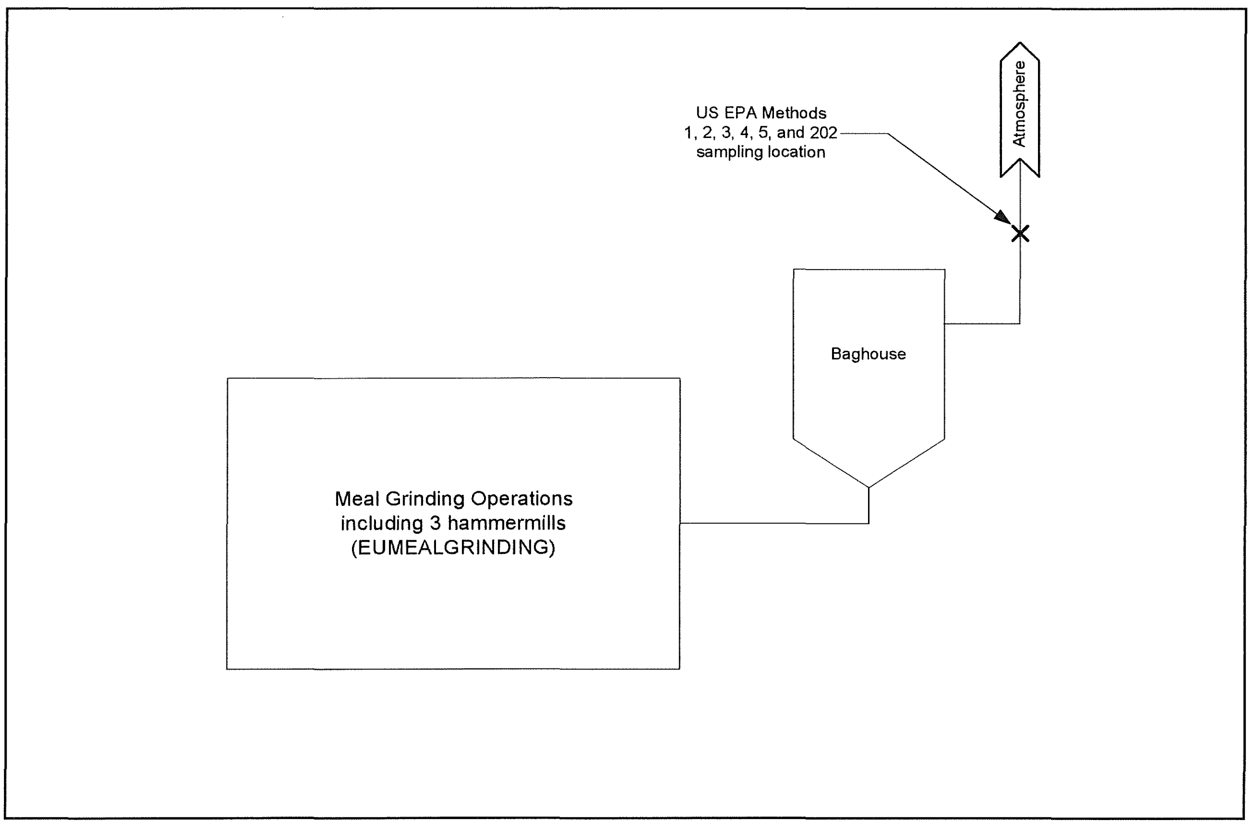
EUEXTRACTION MOS EXHAUST TRAVERSE POINT LOCATION DRAWINC



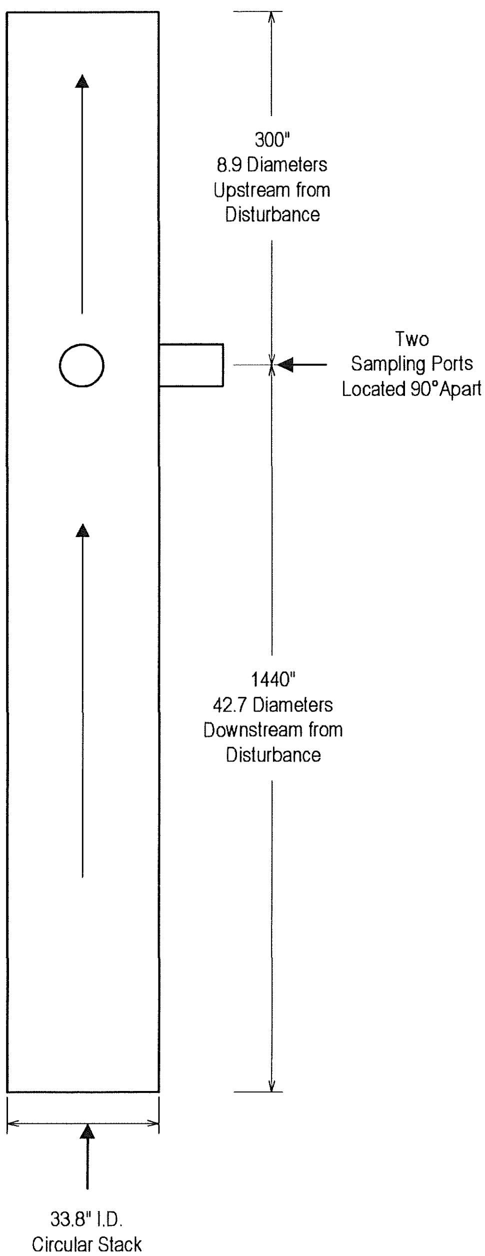
Point	% of Duct Depth	Distance from Inside Wall (In.) TOP PORT	Distance from Inside Wall (in.) SIDE PORT
1*	3.2	0.5	0.5
2	10.5	0.8	0.8
3	19.4	1.6	1.6
4	32.3	2.6	2.6
5	67.7	5.4	5.4
6	80.6	6.4	6.4
7	89.5	7.2	7.2
8*	96.8	7.5	7.5

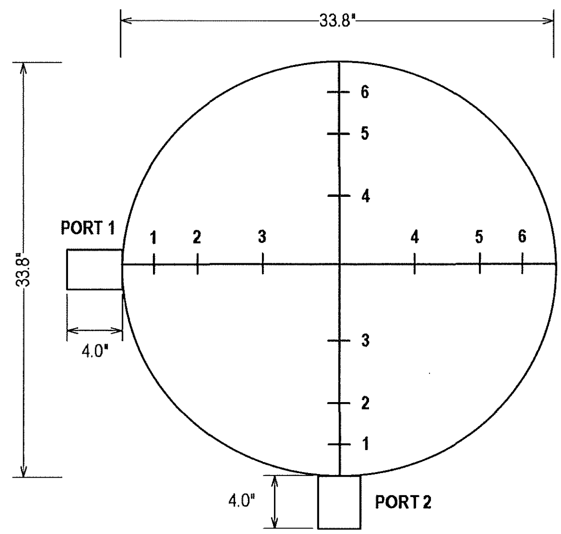
* Points adjusted per US EPA Method 1, Section 11.1.3.4

EUMEALGRINDING SAMPLING LOCATION SCHEMATI(



EUMEALGRINDING BAGHOUSE EXHAUST STACK TRAVERSE POINT LOCATION DRAWING

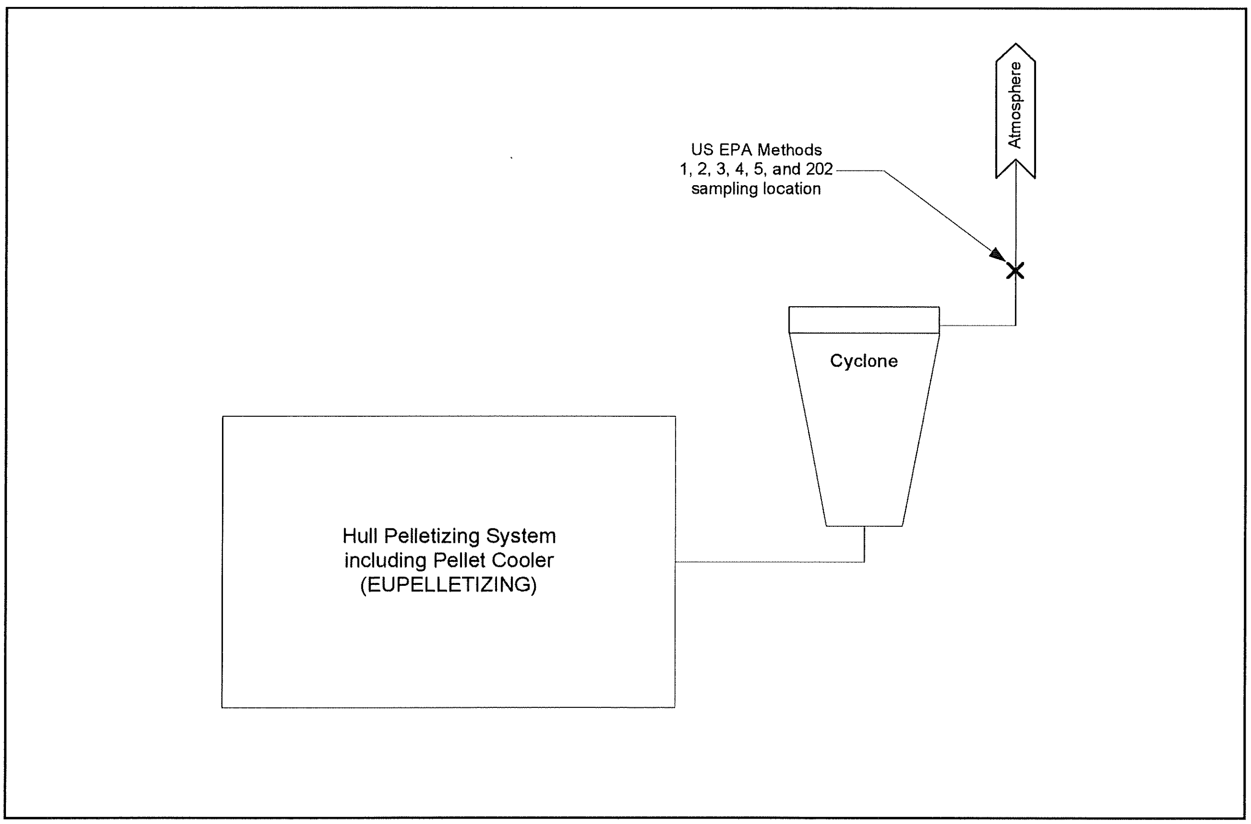




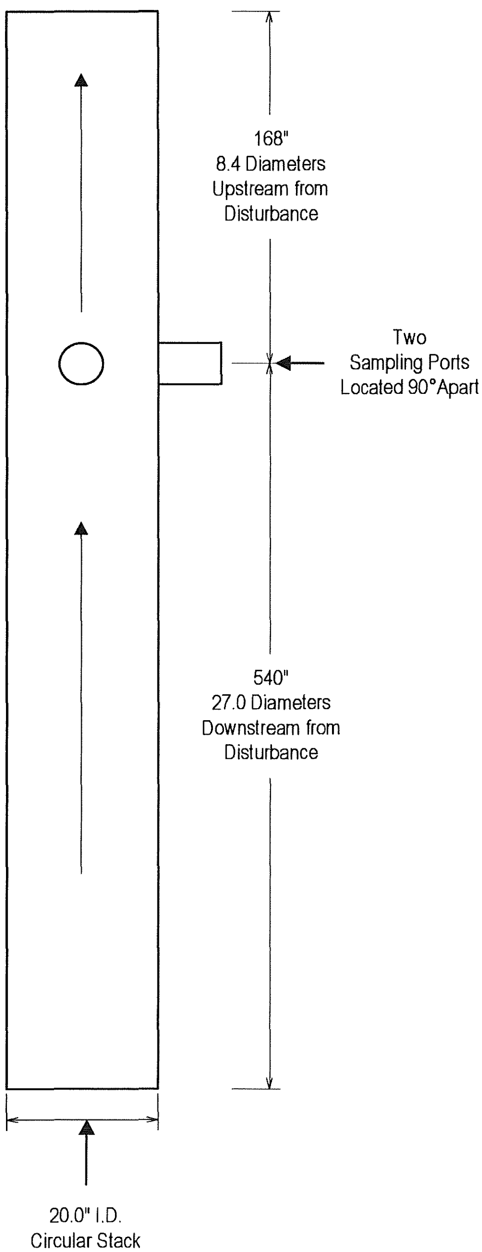
Point	% of Stack Depth	Distance from Inside Wall (in.) PORT 1	Distance from Inside Wall (in.) PORT 2
1*	4.4	1.5	1.5
2	14.6	4.9	4.9
3	29.6	10.0	10.0
4	70.4	23.8	23.8
5	85.4	28.8	28.8
6*	95.6	32.3	32.3

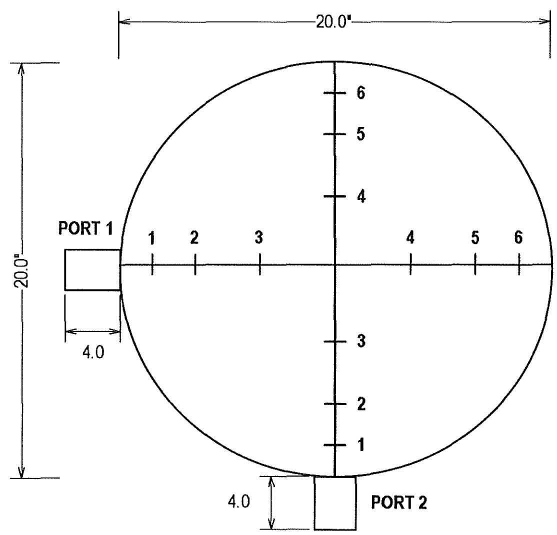
* Points adjusted per US EPA Method 1, Section 11.1.3.4

EUPELLETIZING SAMPLING LOCATION SCHEMATIC



EUPELLETIZING CYCLONE 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	0.9	0.9
2	14.6	2.9	2.9
3	29.6	5.9	5.9
4	70.4	14.1	14.1
5	85.4	17.1	17.1
6	95.6	19.1	19.1