FLUOROMONOMERS
MANUFACTURING PROCESS
DIVISION AND VINYL ETHERS SOUTH STACKS
HFPO MONOMER EMISSIONS TEST REPORT
TEST DATES: 3-5 AND 25-26 APRIL 2018

THE CHEMOURS COMPANY
FAYETTEVILLE, NORTH CAROLINA

Prepared for:

THE CHEMOURS COMPANY
22828 NC Hwy 87 W
Fayetteville, North Carolina 28306

Prepared by:

WESTON SOLUTIONS, INC.
1400 Weston Way
P.O. Box 2653
West Chester, Pennsylvania 19380

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1. INTRODUCTION

1.1 FACILITY AND BACKGROUND INFORMATION

The Chemours Fayetteville Works (Chemours) is located in Bladen County, North Carolina, approximately ten miles south of the city of Fayetteville. Chemours operating areas on the site include the Fluoromonomers, IXM and Polymer Processing Aid (PPA) manufacturing areas, Wastewater Treatment, and Powerhouse.

Chemours contracted Weston Solutions, Inc. (WESTON) to perform hexafluoropropylene oxide [(HFPO Monomer) CAS No. 428-59-1], emission testing on two sources at the facility (Division Stack and Vinyl Ethers (VE) South Stack). Testing was performed during two separate mobilizations on 3-5 and 25-26 April 2018 and generally followed the procedures provided to the North Carolina Department of Environmental Quality (NCDEQ). This report provides the results from the emission test program.

1.2 TEST OBJECTIVES

The specific objectives for this test program were as follows:

- Measure the emissions concentrations and mass emissions rates of HFPO Monomer from the Division Stack and VE South Stack which are located in the Fluoromonomers process.
- Monitor and record process and emissions control data in conjunction with the test program.
- Provide representative emissions data.

1.3 TEST PROGRAM OVERVIEW

During the emissions test program, the concentrations and mass emissions rates of HFPO Monomer were measured on two sources (Division Stack and VE South Stack).

Tables 1-1 and 1-2 provide a summary of the test locations and the parameters that were measured along with the sampling/analytical procedures that were followed.

Section 2 provides a summary of test results. A description of the processes is provided in Section 3. Section 4 provides a description of the test locations. The sampling and analytical procedures are provided in Section 5. Detailed test results and discussion are provided in Section 6.

Process operating data, raw and reduced test data, laboratory analytical reports, sample calculations, equipment calibration records, and a list of WESTON project participants are provided in Appendices A through F, respectively.

Appendix C includes the summary reports for the laboratory analytical results. The full laboratory data packages are provided in electronic format and on CD with each hard copy.

Table 1-1
Sampling Plan for Division Stack

Sampling Point & Location	**Division Stack**				
Number of Tests:	7				
Parameters To Be Tested:	HFPO Monomer	Volumetric Flow Rate and Gas Velocity	Carbon Dioxide	Oxygen	Water Content
Sampling or Monitoring Method	EPA Modified Method 18 (M-18)	EPA M1, M2, M3A, and M4 in conjunction with M-18 tests	EPA M3A		Wet bulb dry bulb in conjunction with M-18 tests
Sample Extraction/ Analysis Method(s):	GC/MS	NA[6]	NA		NA
Sample Size	> 0.4 ft^3	NA	NA	NA	NA
Total Number of Samples Collected[1]	7	7	7	7	7
Reagent Blanks (Solvents, Resins)[1]	2 sets	0	0	0	0
Field Blank Trains[1]	2	0	0	0	0
Proof Blanks[1]	2 sets	0	0	0	0
Trip Blanks[1,2]	2 sets	0	0	0	
Lab Blanks	2 per fraction[3]	0	0	0	0
Laboratory or Batch Control Spike Samples (LCS)	2 per fraction[3]	0	0	0	0
Laboratory or Batch Control Spike Sample Duplicate (LCSD)	2 per fraction[3]	0	0	0	0
Media Blanks	2 sets[4]	0	0	0	0
Isotope Dilution Internal Standard Spikes	Each sample	0	0	0	0
Total No. of Samples	15[5]	7	7	7	7

Key:

[1] Sample collected in field.

[2] Trip blanks include one methanol sample per sample shipment.

[3] Lab blank and LCS/LCSD includes one set per analytical fraction.

[4] One set of media blank archived at laboratory at media preparation.

[5] Actual number of samples collected in field.

[6] Not applicable.

Table 1-2
Sampling Plan for VE South Stack

Sampling Point & Location	**VE South Stack**				
Number of Tests:	3				
Parameters To Be Tested:	HFPO Monomer	Volumetric Flow Rate and Gas Velocity	Carbon Dioxide	Oxygen	Water Content
Sampling or Monitoring Method	EPA Modified Method 18 (M-18)	EPA M1, M2, M3A, and M4 in conjunction with M-18 tests	EPA M3A		Wet bulb dry bulb in conjunction with M-18 tests
Sample Extraction/ Analysis Method(s):	GC/MS	NA[6]	NA		NA
Sample Size	> 0.5 ft^3	NA	NA	NA	NA
Total Number of Samples Collected[1]	3	3	3	3	3
Reagent Blanks (Solvents, Resins)[1]	1 set	0	0	0	0
Field Blank Trains[1]	1 per source	0	0	0	0
Proof Blanks[1]	1 set	0	0	0	0
Trip Blanks[1,2]	1 set	0	0	0	
Lab Blanks	1 per fraction[3]	0	0	0	0
Laboratory or Batch Control Spike Samples (LCS)	1 per fraction[3]	0	0	0	0
Laboratory or Batch Control Spike Sample Duplicate (LCSD)	1 per fraction[3]	0	0	0	0
Media Blanks	1 set[4]	0	0	0	0
Isotope Dilution Internal Standard Spikes	Each sample	0	0	0	0
Total No. of Samples	7[5]	3	3	3	3

Key:

[1] Sample collected in field.

[2] Trip blanks include one methanol sample per sample shipment.

[3] Lab blank and LCS/LCSD includes one set per analytical fraction.

[4] One set of media blank archived at laboratory at media preparation.

[5] Actual number of samples collected in field.

[6] Not applicable.

2. SUMMARY OF TEST RESULTS

During the initial HFPO Monomer test program on 3-5 April 2018, a total of three test runs were performed on both the Division stack [with stripper column vent on (HFPO monomer emissions from HFPO Process and VE North Process, combined.)] and VE South stack. During the second HFPO Monomer test program on 25 and 26 April 2018, a total of four (4) tests [2 with stripper column off (HFPO monomer emissions from HFPO process, only) and 2 with stripper column on] were performed on the Division stack. The Table 2-1 provides a summary of the HFPO Monomer emission test results. Detailed test results summaries are provided in Section 6.

Table 2-1

Summary of HFPO Monomer Test Results

Source[1,2]	Run No.	Emission Rates	
		lb/hr	g/sec
Division Stack (Stripper Column Vent On 4/5/18)	1	14.67	1.85
	2	22.97	2.89
	3	18.31	2.31
	Average	18.65	2.35
Division Stack (Stripper Column) Vent Off (4/25-26/18)	1	6.30	0.79
	2	3.03	0.38
	Average	4.67	0.59
Division Stack (Stripper Column) Vent On (4/26/18)	1	8.53	1.07
	2	12.36	1.56
	Average	10.44	1.32
VE South Stack (4/3-4/18)	1	0.0178	0.0022
	2	0.0245	0.0031
	3	0.0237	0.0030
	Average	0.0220	0.0028

[1] The designation of "Stripper Column Vent Off" indicates the VE North was not venting HFP/HFPO from the stripper column.

[2] The designation of "Stripper Column Vent On" indicates the VE North was venting HFP/HFPO from the stripper column to the Division Waste Gas Scrubber.

3. PROCESS DESCRIPTIONS

The Fluoromonomers area is included in the scope of this test program.

3.1 FLUOROMONOMERS AREA

The facility produces a family of fluorocarbon compounds used to produce Chemours products such as Nafion®, Krytox®, and Viton®, as well as sales to outside customers.

The following process streams are vented to the Division Waste Gas Scrubber (NCD-Hdr1):

- HFPO Refining
- VEN Crude Ether Process
- VEN Condensation
- Refined VE Process
- Rearranged Sultone Process
- Methyl Malonyl Fluoride Process

The Division Waste Gas Scrubber is vented to a process stack (NEP-Hdr1). In addition, the following building air systems are vented to this stack:

- HFPO RV Catch Pots
- HFPO Tower Exhaust Blower
- VEN Permeators Catch Pot
- HDT Vent
- VEN Tower Exhaust Blower
- Analyzer Room Blower
- HFPO Crude Dryer Moisture Analyzer Vent

The VE South Waste Gas Scrubber is vented to a process stack (NEP-Hdr2). In addition, the following building air systems are vented to this stack:

- Permeators
- RV Catch Pots
- Tower HVAC
- Nitrogen Supply to Catch Tanks
- Catalyst Feed Tan Pot Charge Vent

3.2 PROCESS OPERATIONS AND PARAMETERS

Testing during the following operations provided "normal" conditions while running products and operations that were expected to result in the most conservative (i.e., highest) emissions for the target compound.

Source	Operation/Product	Batch or Continuous
Division	VEN/PPVE	Semi-continuous – Condensation is continuous, Agitated Bed Reactor is batch for 30-40 mins at end of each run, Refining (ether column) is batch
VE South	VES/PMVE/PEVE	Semi-continuous – Condensation is continuous, Two Agitated Bed Reactors are batch for 30-40 mins at end of each run, Refining (ether column) is batch

During the test program, the following parameters were monitored by Chemours and are included in Appendix A.

- Fluoromonomers Process
  - Division Waste Gas Scrubber
    - Caustic recirculation flow rate
- Fluoromonomers Process
  - VE South Waste Gas Scrubber
    - Caustic recirculation flow rate

4. DESCRIPTION OF TEST LOCATIONS

4.1 DIVISION STACK

Two 6” ID test ports were installed on the 36” ID fiberglass stack. The ports were placed ~ 30’ (10 diameters) from the nearest downstream disturbance and 9’ (3 diameters) from the stack exit. The four vents that enter the top of the stack and the one vent ~ 11’ below are catch pots which under normal process operations do not discharge to the stack. They are used to vent process gas to the stack in the event of a process upset and are not considered a flow contributor or a disturbance.

Per EPA Method 1, a total of 12 traverse points (6 per axis) were used for velocity and volumetric flow monitoring. Figure 4-1 provides a schematic of the test ports and traverse point locations.

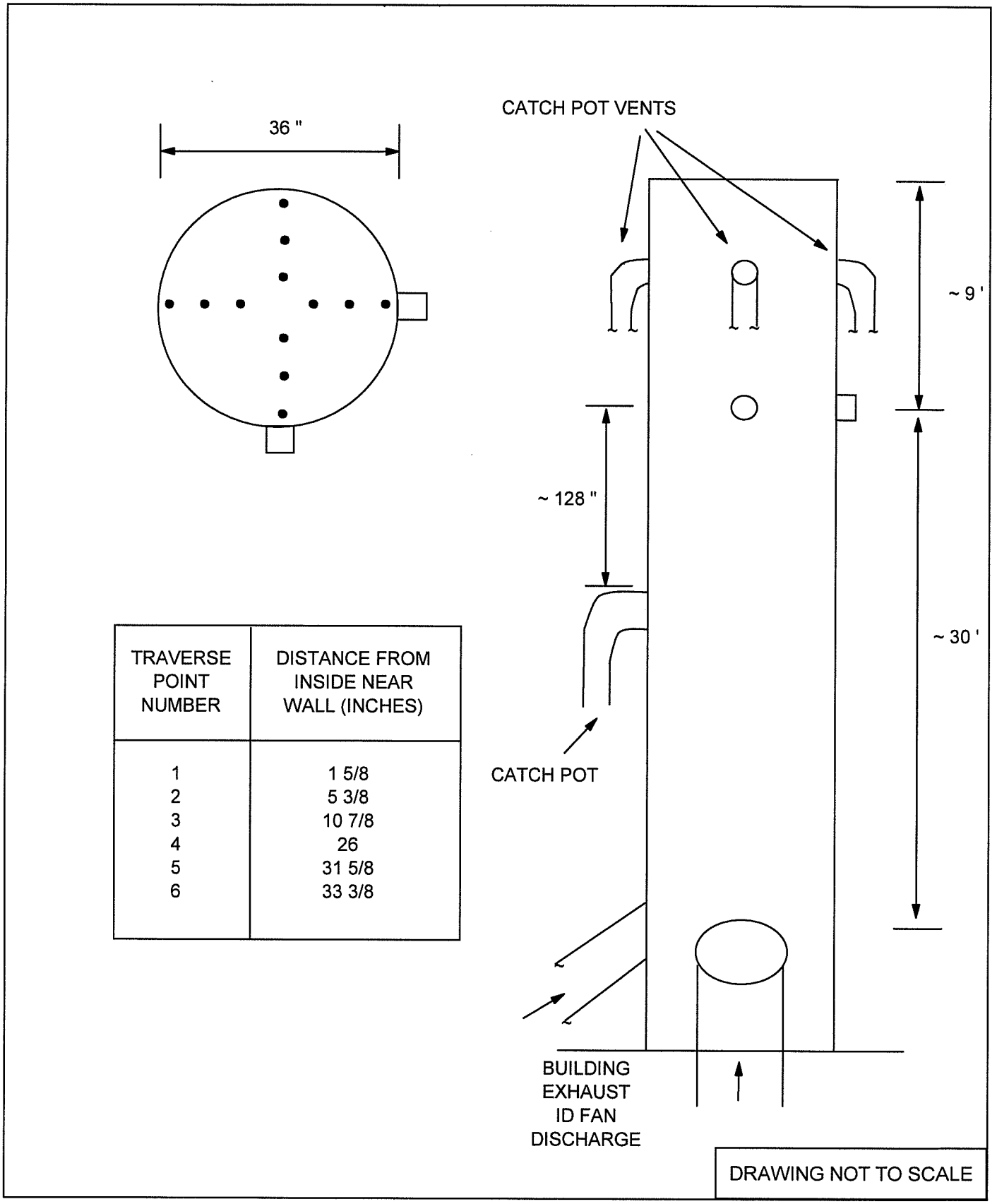
4.2 VE SOUTH SCRUBBER STACK

Two 6” ID test ports are installed on the 42” ID steel stack. The ports are placed 150” (3.6 diameters) from the location where the waste gas scrubber vent enters the stack and 20’ (5.7 diameters) from the stack exit.

Per EPA Method 1, a total of 24 traverse points (12 per axis) were used for velocity and volumetric flow measurement. It should be noted that near the port locations are a number of small ducts leading to the stack. These are catch pots which, under normal operation, do not discharge to the stack. They are used to vent process gas to the stack in the event of a process upset. For the purpose of test port location, and given the fact that there is no flow from these catch pots, they are not considered a flow contributor or a disturbance.

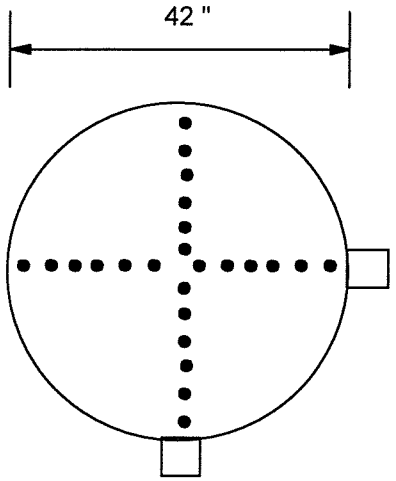
See Figure 4-2 for a schematic of the test port and traverse point locations.

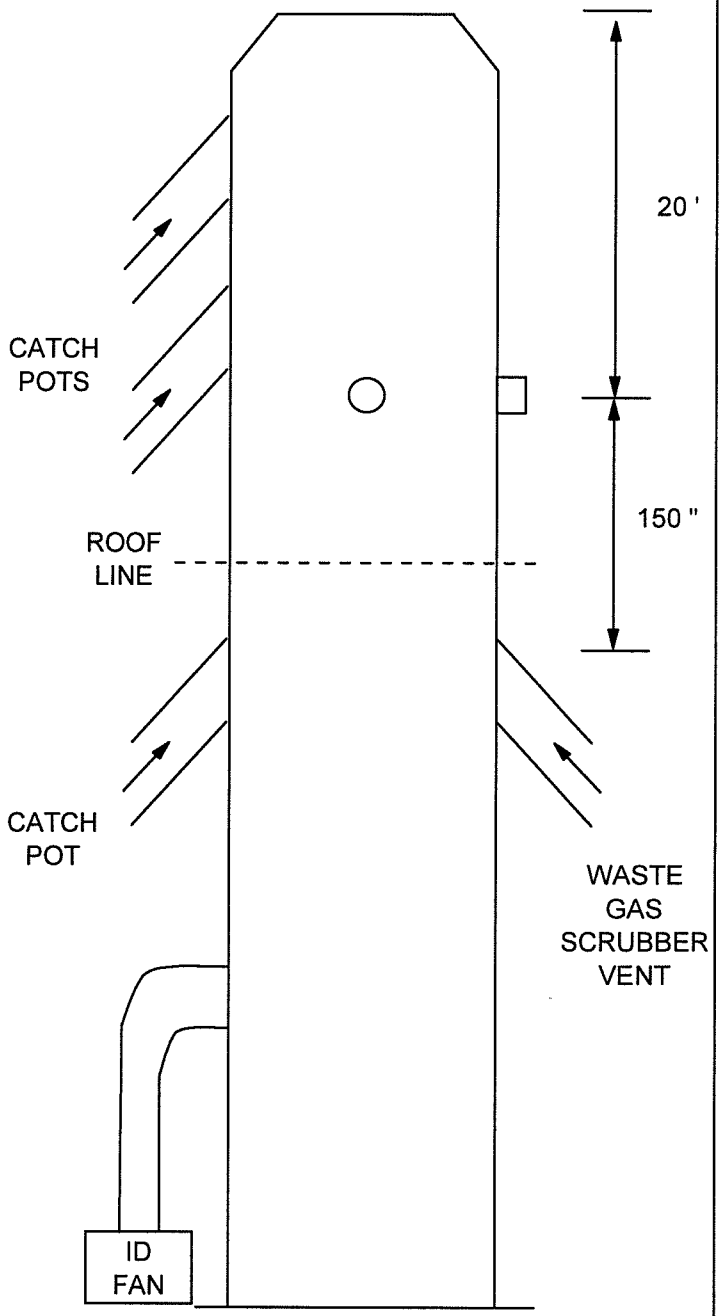
Note: All measurements at the test location were confirmed prior to sampling.



TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE NEAR WALL (INCHES)
1	1 5/8
2	5 3/8
3	10 7/8
4	26
5	31 5/8
6	33 3/8

FIGURE 4-1
DIVISION STACK TEST PORT
AND TRAVERSE POINT LOCATIONS





TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE NEAR WALL (INCHES)
1	1
2	2 7/8
3	5
4	7 3/8
5	10 1/2
6	15
7	27
8	31 1/2
9	34 5/8
10	37
11	39 1/8
12	41

DRAWING NOT TO SCALE

FIGURE 4-2
VE SOUTH SCRUBBER STACK TEST PORT
AND TRAVERSE POINT LOCATION

5. SAMPLING AND ANALYTICAL METHODS

5.1 STACK GAS SAMPLING PROCEDURES

The purpose of this section is to describe the stack gas emissions sampling trains and to provide details of the stack sampling and analytical procedures utilized during the emissions test program.

5.1.1 Pre-Test Determinations

Preliminary test data were obtained at each test location. Stack geometry measurements were measured and recorded, and traverse point distances verified. A preliminary velocity traverse was performed utilizing a calibrated "S" type pitot tube and an inclined manometer to determine velocity profiles. Flue gas temperatures were observed with a calibrated direct readout panel meter equipped with a chromel-alumel thermocouple. Preliminary water vapor content was estimated by wet bulb/dry bulb temperature measurements.

A check for the presence or absence of cyclonic flow was conducted at each test location. The cyclonic flow checks were negative (< 20°) verifying that both sources were acceptable for testing.

Preliminary test data was used for nozzle sizing and sampling rate determinations for isokinetic sampling procedures.

Calibration of probe nozzles, pitot tubes, metering systems, and temperature measurement devices was performed as specified in Section 5 of EPA Method 5 test procedures.

5.2 STACK PARAMETERS

5.2.1 HFPO Monomer

For all HFPO Monomer tests, the sample train was a modified EPA Method 18 using midget impingers. During the initial test on 3-5 April 2018 the sample run include six impingers. The first impinger was of a modified short stem design. Impingers 1 through 6 each contained 20 milliliters of methanol.

During the second test program on 25 and 26 April 2018, and as a result of the data obtained on the initial test program, the Method 18 run was modified to include eight (8) midget impingers each containing 20 milliliter of methanol.

During both stack test programs the midget impingers were maintained in a dry ice/methanol bath. Each test was 60 minutes in duration collecting at a rate between 0.2 to 0.25 liters per minute.

Follow each sample period, the impinger train was allowed to warm to ambient temperature. Each impinger was recovered separately and included a methanol rinse of each impinger and connector. The contents and rinse of impingers 1 and 2 were combined in the field. The remaining impinge contents and rinses were collected separately.

Each sample was analyzed by EPA SW-846 Method 8260B procedures by Gas Chromatography (GC) Mass Spectrometry (MS).

Test America developed detailed procedures for the sample extraction and analysis for HFPO Monomer. These procedures were incorporated into the test protocol and are provided in Appendix C.

5.2.2 Flue Gas Velocity Measurements

The stack gas velocity was measured at the stack locations according to the procedures outlines in EPA Methods 1 and 2. A S-type pitot and inclined manometer, or electronic pressure transducer, were used to measure the velocity pressure at each traverse point. The traverse points are selected in accordance to EPA Reference Method 1 on the basis of stack dimensions, geometry and upstream and downstream disturbances. The traverse points for the stack locations are presented on Figures 4-1, and 4-2.

One velocity traverse was conducted prior to and one conducted following each 60-minute test run. The average of each velocity traverse was used to calculate the volumetric flow rate for calculating mass rates for that rest run.

Stack gas moisture content was calculated by wet bulb/dry bulb measurement in conjunction with each velocity traverse.

5.2.3 Gas Composition

The WESTON mobile laboratory equipped with instrumental analyzers was used to measure carbon dioxide (CO_2) and oxygen (O_2) concentrations. A diagram of the WESTON sampling system is presented in Figure 5-1.

The sample was collected at the exhaust of the HFPO Monomers sampling system. The sample was drawn through the heated probe, filter and impingers which acted as a sample conditioner. At the end of the line, a tee permitted the introduction of calibration gas. The output from the sampling system was recorded electronically, and one-minute averages were recorded and displayed on a data logger.

Each analyzer was set up and calibrated internally by introduction of calibration gas standards directly to the analyzer from a calibration manifold. The calibration manifold is designed with an atmospheric vent to release excess calibration gas and maintains the calibration at ambient pressure. The direct calibration sequence consisted of alternate injections of zero and mid-range gases with appropriate adjustments until the desired responses were obtained. The high range standards were then introduced in sequence without further adjustment.

The sample line integrity was verified by performing a bias test before and after each test period. The sampling system bias test consisted of introducing the zero gas and one up range calibration standard in excess to the valve at the probe end when the system was sampling normally. The excess calibration gas flowed out through the probe to maintain ambient sampling system pressure. Calibration gas supply was regulated to maintain constant sampling rate and pressure. Instrument bias check response was compared to internal calibration responses to insure sample line integrity and to calculate a bias correction factor after each run using the ratio of the measured concentration of the bias gas certified by the calibration gas supplier.

The oxygen and carbon dioxide content of each stack gas was measured according to EPA Method 3A procedures which incorporate the latest updates of EPA Method 7E. A Servomex Model 4900 analyzer (or equivalent) was used to measure oxygen content. A Servomex Model 4900 analyzer (or equivalent) was used to measure carbon dioxide content of the stack gas. Both

analyzers were calibrated with EPA Protocol gases prior to the start of the test program and performance was verified by sample bias checks before and after each test run.

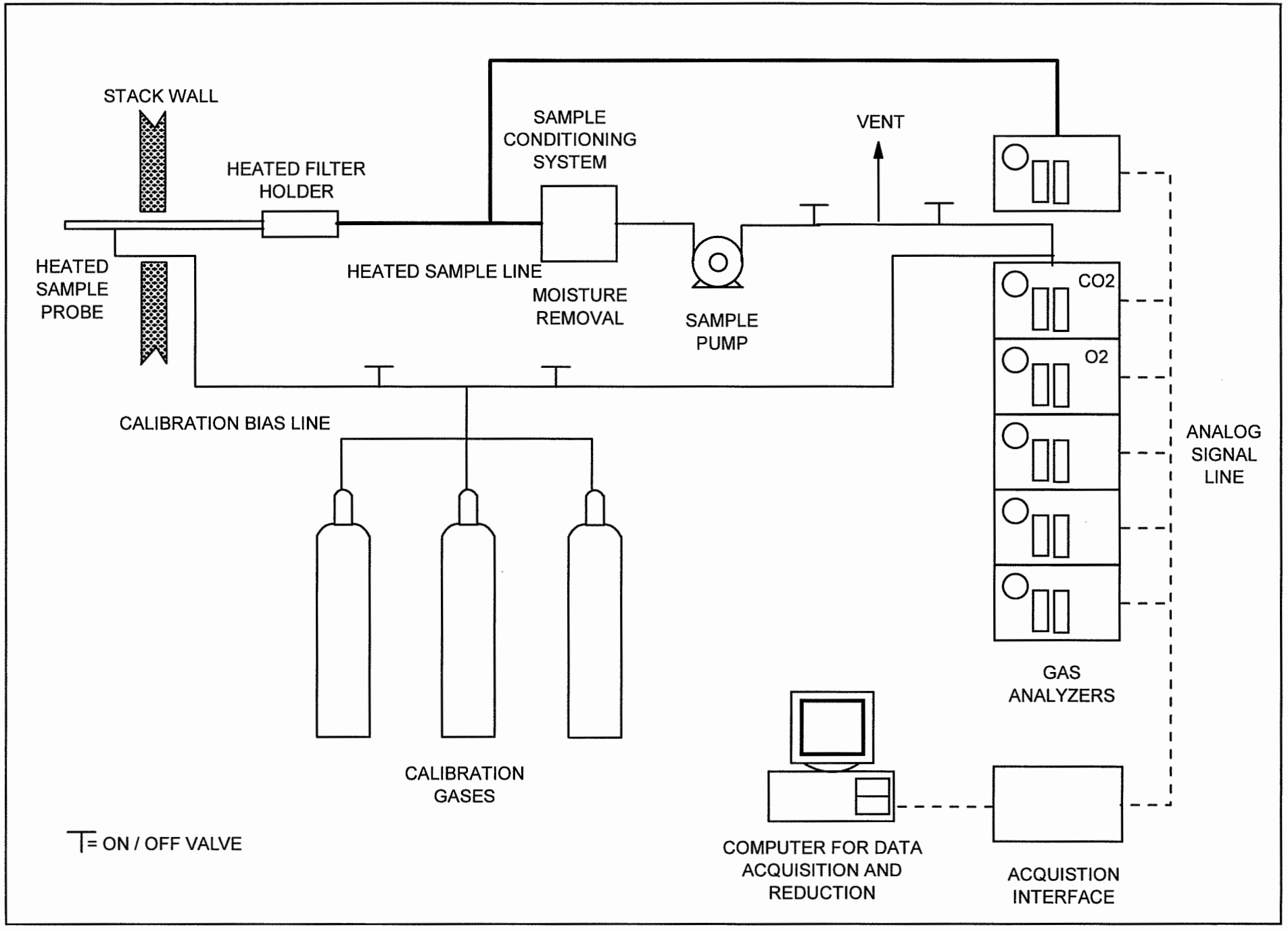


FIGURE 5-1
WESTON SAMPLING SYSTEM

IASDATA\CHEMOURS\15418.002.002\FIGURE 5-1 WESTON SAMPLING SYSTEM

6. DETAILED TEST RESULTS AND DISCUSSION

Tables 6-1, 6-2, 6-3, and 6-4 provide detailed test data and test results for the Division and VE South stacks, respectively.

The Method 3A sampling on all sources indicated that the O_2 and CO_2 concentrations were at ambient air levels (20.9% O_2, 0% CO_2), therefore, 20.9% O_2 and 0% CO_2 values were used in all calculations.

The Modified Method 18 Midget Impinger Sampling Train used to collect HFPO from the Chemours stationary sources is undergoing additional performance audit testing in the laboratory. The VE South and Division stack HFPO stack gas concentration levels are being used to evaluate the standard Data Quality Objectives (DQOs) of recovery and accuracy for the sampling method under controlled conditions. Audits using "known" HFPO gas spikes are being used to challenge the sampling train at the approximate stack concentrations encountered during the field testing.

When the performance audits and final data evaluations are complete, the stack emissions rates for HFPO could be representative and defensible as reported, or additional field sampling could be indicated that would acquire improved data for this analyte using modifications learned through the processing of the audit samples.

Table 6-1
Chemours - Fayetteville, NC
Summary of HFPO Monomer Test Data and Test Results
Division Stack (April 5, 2018)

TEST DATA				
Test run number	1	2	3	
Location	Divison	Divison	Divison	
Test date	4/5/18	4/5/18	4/5/18	
Test time period	0926-1026	1057-1157	1228-1328	
SAMPLING DATA				
Duration, minutes	60	60	60	
Average dry gas meter press. in. H2O	0.49	0.50	0.50	
Average dry gas meter temp. deg. F	59.3	66.5	71.1	
Average absolute meter temp. deg. R	519.3	526.5	531.1	
Sample vol. at meter cond., dcl	14.959	15.002	15.060	
Meter box calibration, Y	1.0150	1.0150	1.0150	
Barometric pressure, in. Hg	30.20	30.25	30.29	
Sample volume, dscl (1)	15.596	15.451	15.398	
Sample volume, dscf (1)	0.551	0.546	0.544	
STACK GAS COMPOSITION				
Temperature, deg F	74.1	78.9	82.8	
Moisture, %	3.07	3.86	3.86	
CO_2 Concentration, %	0.0	0.0	0.0	
O_2 Concentration, %	20.9	20.9	20.9	
Molecular Weight, lb/lb-mole	28.8	28.8	28.8	
VOLUMETRIC FLOW RATE				AVERAGE
Stack/duct cross sectional area, sq.ft.	7.07	7.07	7.07	
Avg. gas stream volumetric flow, wacf/min.	26,959	27,136	27,422	27,173
Avg. gas stream volumetric flow, dscf/min. (1)	26,030	25,774	25,872	25,892
2-MTP (as HFPO) LABORATORY REPORT DATA				
Impingers-1+2, ug.	768	1,330	1,050	
Impinger-3, ug.	627	996	773	
Impinger-4, ug.	469	679	544	
Impinger-5, ug.	304	416	339	
Impinger-6, ug.	178	255	203	
Total catch, ug.	2,346	3,676	2,909	
2-MTP (as HFPO) MONOMER EMISSIONS RESULTS				
HFPO Monomer, ug/sample	2346	3676	2909	2977
Concentration, lb/dscf	9.39E-06	1.49E-05	1.18E-05	1.20E-05
Emission Rate, lb/hr	14.67	22.97	18.31	18.65
Emission Rate, g/sec	1.85	2.89	2.31	2.35

(1) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 inches Hg (760mm Hg).

Table 6-2
Chemours - Fayetteville, NC
Summary of HFPO Monomer Test Data and Test Results
Division Stack (April 25-26, 2018)
Stripper Column Vent Off

TEST DATA				
Test run number	1		2	
Location	Divison		Divison	
Test date	4/25/18		4/26/18	
Test time period	1615-1715		1258-1358	
SAMPLING DATA				
Duration, minutes	60		60	
Average dry gas meter press. in. H2O	0.20		0.20	
Average dry gas meter temp. deg. F	72.6		87.2	
Average absolute meter temp. deg. R	532.6		547.2	
Sample vol. at meter cond., dcl	12.083		12.112	
Meter box calibration, Y	1.0150		1.0150	
Barometric pressure, in. Hg	29.66		29.78	
Sample volume, dscl [(1)]	12.054		11.809	
Sample volume, dscf [(1)]	0.426		0.417	
STACK GAS COMPOSITION				
Temperature, deg F	89.9		95.0	
Moisture, %	4.72		5.49	
CO_2 Concentration, %	0.0		0.0	
O_2 Concentration, %	20.9		20.9	
Molecular Weight, lb/lb-mole	28.8		28.8	
VOLUMETRIC FLOW RATE				AVERAGE
Stack/duct cross sectional area, sq.ft.	7.070		7.070	
Avg. gas stream volumetric flow, wacf/min.	25,693		29,597	27,645
Avg. gas stream volumetric flow, dscf/min. [(1)]	23,233		26,412	24,823
2-MTP (as HFPO) LABORATORY REPORT DATA				
Impinger-1, ug.	287		210	
Impinger-2, ug.	267		106	
Impinger-3, ug.	135		34.0	
Impinger-4, ug.	102		9.08	
Impinger-5, ug.	51.7		3.15	
Impinger-6, ug.	19.4	<	1.62	
Impinger-7, ug.	8.35	<	1.10	
Impinger-8, ug.	2.79	<	1.11	
Total catch, ug.	873.24		362.23	
2-MTP (as HFPO) MONOMER EMISSIONS RESULTS				
HFPO Monomer, ug/sample	873.24		362.23	617.74
Concentration, lb/dscf	4.52E-06		1.92E-06	3.22E-06
Emission Rate, lb/hr	6.30		3.03	4.67
Emission Rate, g/sec	0.79		0.38	0.59

(1) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 inches Hg (760mm Hg).

Table 6-3
Chemours - Fayetteville, NC
Summary of HFPO Monomer Test Data and Test Results
Division Stack (April 26, 2018)
Stripper Column Vent On

TEST DATA			
Test run number	3	4	
Location	Divison	Divison	
Test date	4/26/18	4/26/18	
Test time period	1432-1532	1617-1717	
SAMPLING DATA			
Duration, minutes	60	60	
Average dry gas meter press. in. H2O	0.20	0.20	
Average dry gas meter temp. deg. F	85.1	81.7	
Average absolute meter temp. deg. R	545.1	541.7	
Sample vol. at meter cond., dcl	12.020	12.129	
Meter box calibration, Y	1.0150	1.0150	
Barometric pressure, in. Hg	29.76	29.72	
Sample volume, dscl (1)	11.756	11.921	
Sample volume, dscf (1)	0.415	0.421	
STACK GAS COMPOSITION			
Temperature, deg F	96.7	96.9	
Moisture, %	5.76	5.73	
CO_2 Concentration, %	0.0	0.0	
O_2 Concentration, %	20.9	20.9	
Molecular Weight, lb/lb-mole	28.8	28.8	
VOLUMETRIC FLOW RATE			AVERAGE
Stack/duct cross sectional area, sq.ft.	7.070	7.070	
Avg. gas stream volumetric flow, wacf/min.	27,220	29,394	28,307
Avg. gas stream volumetric flow, dscf/min. (1)	24,139	26,084	25,112
2-MTP (as HFPO) LABORATORY REPORT DATA			
Impinger-1, ug.	372	266	
Impinger-2, ug.	321	417	
Impinger-3, ug.	217	352	
Impinger-4, ug.	113	213	
Impinger-5, ug.	53.5	130	
Impinger-6, ug.	22.1	68.5	
Impinger-7, ug.	7.28	39.1	
Impinger-8, ug.	2.51	22.7	
Total catch, ug.	1,108.39	1,508.30	
2-MTP (as HFPO) MONOMER EMISSIONS RESULTS			
HFPO Monomer, ug/sample	1108.39	1508.30	1308.35
Concentration, lb/dscf	5.89E-06	7.90E-06	6.89E-06
Emission Rate, lb/hr	8.53	12.36	10.44
Emission Rate, g/sec	1.07	1.56	1.32

(1) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 inches Hg (760mm Hg).

Table 6-4
Chemours - Fayetteville, NC
Summary of HFPO Monomer Test Data and Test Results
VE South Stack (April 3-4, 2018)

TEST DATA								
Test run number		1		2		3		
Location		VE South		VE South		VE South		
Test date		4/3/18		4/4/18		4/4/18.		
Test time period		1510-1610		0916-1016		1058-1158		
SAMPLING DATA								
Duration, minutes		60		60		60		
Average dry gas meter press. in. H2O		0.40		0.48		0.50		
Average dry gas meter temp. deg. F		89.8		74.8		80.4		
Average absolute meter temp. deg. R		549.8		534.8		540.4		
Sample vol. at meter cond., dcl		14.945		15.046		15.016		
Meter box calibration, Y		1.0150		1.0150		1.0150		
Barometric pressure, in. Hg		30.05		29.81		29.84		
Sample volume, dscl [(1)]		14.641		15.033		14.863		
Sample volume, dscf [(1)]		0.517		0.531		0.525		
STACK GAS COMPOSITION								
Temperature, deg F		79.7		74.7		76.9		
Moisture, %		3.23		2.80		3.01		
CO_2 Concentration, %		0.0		0.0		0.0		
O_2 Concentration, %		20.9		20.9		20.9		
Molecular Weight, lb/lb-mole		28.8		28.8		28.8		
VOLUMETRIC FLOW RATE								AVERAGE
Stack/duct cross sectional area, sq.ft.		9.620		9.620		9.620		
Avg. gas stream volumetric flow, wacf/min.		12,325		12,478		12,614		12,472
Avg. gas stream volumetric flow, dscf/min. [(1)]		11,728		11,943		12,002		11,891
2-MTP (as HFPO) LABORATORY REPORT DATA								
Impingers-1+2, ug.		3.81		4.70		3.66		
Impinger-3, ug.		1.49		2.74		2.43		
Impinger-4, ug.		0.635		0.801		1.730		
Impinger-5, ug.	<	1.00	<	0.908	<	1.10		
Impinger-6, ug.	<	1.15	<	0.797	<	1.15		
Total catch, ug, (Does not include the "<" fractions)		5.94		8.24		7.82		
2-MTP (as HFPO) MONOMER EMISSIONS RESULTS								
HFPO Monomer, ug/sample		5.9		8.2		7.8		7.3
Concentration, lb/dscf		2.53E-08		3.42E-08		3.28E-08		3.08E-08
Emission Rate, lb/hr		1.78E-02		2.45E-02		2.37E-02		2.20E-02
Emission Rate, g/sec		2.24E-03		3.09E-03		2.98E-03		2.77E-03

(1) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 inches Hg (760mm Hg).

APPENDIX A
PROCESS OPERATIONS DATA

Date	4/5/2018																											
Time	800				900				1000				1100				1200				1300				1400			
Stack Testing							926-1026 (Run 1)						1057-1157 (Run 2)						1228-1328 (Run 3)									
HFPO																												
VEN Product	PPVE																											
VEN Precursor																												
VEN Condensation (HFPO)																												
VEN ABR																												
VEN Refining																												
Stripper Column Vent																												
Division WGS Recirculation Flow	13500 kg/h																											

Date	4/25/2018											
Time	1500				1600				1700			
Stack Testing						1615-1715 (Run 1 - SV-off)						
HFPO												
VEN Product	PPVE											
VEN Precursor												
VEN Condensation (HFPO)												
VEN ABR												
VEN Refining												
Stripper Column Vent												
Division WGS Recirculation Flow	13500 kg/h											

Date	4/26/2018																											
Time	1100				1200				1300				1400				1500				1600				1700			
Stack Testing									1258-1358 (Run 2 - SV - off)					1432-1532 (Run 3 - SV)								1617-1717 (Run 4 - SV)						
HFPO	235 kg/h																											
VEN Product	PPVE																											
VEN Precursor																												
VEN Condensation (HFPO)		60 kg/h				90 kg/h				120 kg/h				150 kg/h								185 kg/h						
VEN ABR																												
VEN Refining																												
Stripper Column Vent														10 kg/h														
Division WGS Recirculation Flow	13500 kg/h																											

Date	4/3/2018															
Time	1400				1500				1600				1700			
Stack Testing						1510-1610 (Run 1)										
VES Product	PMVE/PEVE															
VES Precursor																
VES Condensation (HFPO)																
VES ABR																
VES Refining																
VES WGS Recirculation Flow	18500 kg/h															

Date	4/4/2018															
Time	800				900				1000				1100			1200
Stack Testing						916-1016 (Run 2)							1058-1158 (Run 3)			
VES Product	PMVE/PEVE															
VES Precursor																
VES Condensation (HFPO)																
VES ABR																
VES Refining																
VES WGS Recirculation Flow	18500 kg/h															

APPENDIX B
RAW AND REDUCED TEST DATA

DIVISION

Sample and Velocity Traverse Point Data Sheet - Method 1

Client: CHCMOURS
Loaction/Plant: Fay Hevillc N.C.
Source: Division Stack

Operator: MJ/KS
Date: /22/12
W.O. Number: 15418.002.002

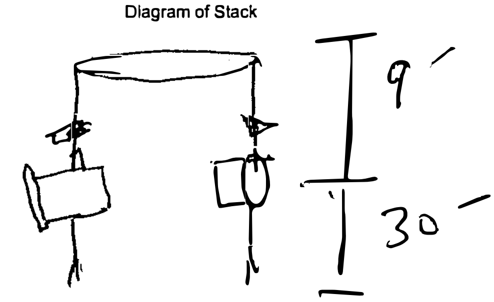
Duct Type	☒ Circular	☐ Rectangular Duct
Traverse Type	☒ Particulate Traverse	☐ Velocity Traverse

Indicate appropriate type: ☐ CEM Traverse

Distance from far wall to outside of port (In.) = C	55
Port Depth (in.) = D	17
Depth of Duct, diameter (in.) = C-D	36
Area of Duct (ft²) 3/27/12 7.07	7.066
Total Traverse Points	12
Total Traverse Points per Port	6
Port Diameter (in.) ---(Flange-Threaded-Hole)	4"
Monorail Length	8'
Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	/
Total Ports (rectangular duct only)	/
Equivalent Diameter = (2*L*W)/(L+W)	/

Flow Disturbances	
Upstream - A (ft)	12 9'
Downstream - B (ft)	30'
Upstream - A (duct diameters)	3
Downstream - B (duct diameters)	10

Diagram of Stack



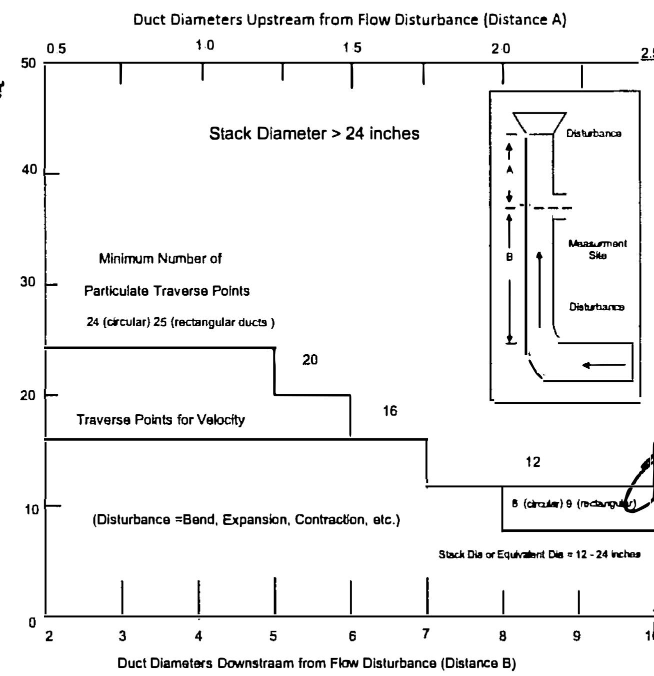
Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	4.4	1.62	~~19 3/8~~ 20 1/8
2	14.6	5.40	~~23 3/4~~ 24 3/8
3	29.6	10.95	~~28 7/8~~ 29 7/8
4	70.4	26.04	~~44.0~~ 45
5	85.4	31.59	~~49 3/8~~ 50 5/8
6	95.6	35.37	~~53 1/4~~ 54 3/8
7			
8			
9			
10			
11			
12			

CEM 3 Point(Long Measurment Line) Stratificaton Point Locations

1	0.167		
2	0.50		
3	0.833		

Note: If stack dia < 12 inch use EPA Method 1A
(Sample port upstream of pitot port)
Note: If stack dia >24" then adjust traverse point to 1 inch from wall
If stack dia <24" then adjust traverse point to 0.5 inch from wall



Traverse Point Location Percent of Stack -Circular

Traverse Point Location	1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25		14.6		10.5		8.2		6.7
3				75		29.6		19.4		14.6		11.8
4				93.3		70.4		32.3		22.6		17.7
5						85.4		67.7		34.2		25
6						95.6		80.6		65.8		35.6
7								89.5		77.4		64.4
8								96.8		85.4		75
9										91.8		82.3
10										97.4		88.2
11												93.3
12												97.9

Traverse Point Location Percent of Stack -Rectangular

Traverse Point Location	1	2	3	4	5	6	7	8	9	10	11	12
1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
7							92.9	81.3	72.2	65.0	59.1	54.2
8								93.8	83.3	75.0	68.2	62.5
9									94.4	85.0	77.3	70.8
10										95.0	86.4	79.2
11											95.5	87.5
12												95.8

WESTON

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	5-Apr-18	**Stack Area, ft² (As)**	7.068
Source	Divison	**W.O. Number**	15418.002.002	**Pitot Tube/Thermo ID**	P698

Run Number	Pre 1	Post 1	
Time	0910-0921	1041-1050	
Barometric Press, in Hg (Pb)	30.20	30.25	
Static Press, in H_20 (Pstatic)	-0.89	-0.88	
Source Moisture, % (BWS)	3.07	3.07	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		Traverse Location		Zero Check good ? Y / N		Zero Check good ? Y / N		Zero Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	1.10	68	0.85	76		
			2	1.60	71	1.33	76		
			3	1.60	72	1.40	76		
			4	1.50	73	1.60	76		
			5	1.20	73	1.40	76		
			6	0.83	74	0.75	76		
			1	1.00	72	0.98	74		
			2	1.30	72	1.50	75		
			3	1.50	73	1.50	75		
			4	1.70	74	1.50	76		
			5	1.50	74	1.40	76		
			6	0.76	75	0.92	76		
		B							
		Avg Delta P & Temp		1.299167	72.6	1.26083	75.67		
		Avg SQRT Delta P		1.13126		1.11493			
		Average gas stream velocity, ft/sec.		63.97		63.17			
		Vol. flow rate @ actual conditions, wacf/min		27128		26791			
		Vol. flow rate at standard conditions, dscf/min		26246		25814			
		Average Vol. flow rate at standard conditions, dscf/min		26030					

Comments _____

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	5-Apr-18	**Stack Area, ft² (As)**	7.068
Source	Divison	**W.O. Number**	15418.002.002	**Pitot Tube/Thermo ID**	P698

Run Number	Pre 2	Post 2	
Time	1041-1050	1212-1220	
Barometric Press, in Hg (Pb)	30.25	30.25	
Static Press, in H_20 (Pstatic)	-0.88	-0.97	
Source Moisture, % (BWS)	3.86	3.86	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		Traverse Location		Zero Check good ? Y / N		Zero Check good ? Y / N		Zero Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	0.85	76	0.95	82		
			2	1.33	76	1.30	81		
			3	1.40	76	1.50	81		
			4	1.60	76	1.40	82		
			5	1.40	76	1.60	82		
			6	0.75	76	1.00	83		
			1	0.98	74	1.10	82		
			2	1.50	75	1.50	82		
			3	1.50	75	1.50	82		
			4	1.50	76	1.50	83		
			5	1.40	76	1.30	83		
			6	0.92	76	0.90	83		
		B							
		Avg Delta P & Temp		1.26083	75.67	1.29583	82.17		
		Avg SQRT Delta P		1.11493		1.13330			
		Average gas stream velocity, ft/sec.		63.27		64.71			
		Vol. flow rate @ actual conditions, wacf/min		26831		27441			
		Vol. flow rate at standard conditions, dscf/min		25643		25906			
		Average Vol. flow rate at standard conditions, dscf/min		25774					

Comments _____

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	5-Apr-18	**Stack Area, ft² (As)**	7.068
Source	Divison	**W.O. Number**	15418.002.002	**Pitot Tube/Thermo ID**	P698

Run Number	Pre 3	Post 3	
Time	1212-1220	1335-1349	
Barometric Press, in Hg (Pb)	30.25	30.29	
Static Press, in H_20 (Pstatic)	-0.97	-0.98	
Source Moisture, % (BWS)	3.86	3.86	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		**Traverse Location**		Zero Check good ? **Y / N**		Zero Check good ? **Y / N**		Zero Check good ? **Y / N**	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	0.95	82.0	1.20	82		
			2	1.30	81.0	1.50	82		
			3	1.50	81.0	1.50	83		
			4	1.40	82.0	1.60	84		
			5	1.60	82.0	1.30	84		
			6	1.00	83.0	0.86	85		
			1	1.10	82.0	0.96	83		
			2	1.50	82.0	1.30	83		
			3	1.50	82.0	1.40	84		
			4	1.50	83.0	1.60	84		
			5	1.30	83.0	1.40	84		
			6	0.90	83.0	0.89	84		
		B							
		Avg Delta P & Temp		1.29583	82.2	1.29250	83.50		
		Avg SQRT Delta P		1.13330		1.13101			
		Average gas stream velocity, ft/sec.		64.71		64.61			
		Vol. flow rate @ actual conditions, wacf/min		27442		27402			
		Vol. flow rate at standard conditions, dscf/min		25905		25838			
		Average Vol. flow rate at standard conditions, dscf/min		25872					

Comments _____

Determination of Moisture Content in Stack Gases - Method 4
Wet Bulb / Dry Bulb

Client	Chemours	**Source**	Division	**Operator**	JM
Location/Plant	Fayetteville, NC	**W.O.**	15418.002.002	**Date**	4/5/2018

Run Number	**1**	**2**	**3**
Location	**Divison**	**Divison**	**Divison**
Barometric Press, in. Hg (Pb)	**30.20**	**30.25**	**30.25**
Static Press, in. H_20 (Pstatic)	**-0.89**	**-0.85**	**-0.97**
Dry Bulb Temperture,°F (Td)	**78.0**	**85.0**	**85.0**
Wet Bulb Temperture,°F (Tw)	**77.0**	**84.0**	**84.0**
Delta T = Td-Tw, (ΔT)	**1**	**1**	**1**
Vapor Press H_20 at Tw (Vp), from table	**0.9352**	**1.175**	**1.175**
Absolute stack static pressure, inches Hg (Ps)	**30.135**	**30.188**	**30.179**
Partial Press of H_2O (PP)	**0.9244**	**1.1642**	**1.1642**
Moisture, % (BWS)	**3.07%**	**3.86%**	**3.86%**

Vapor Pressure of Water

°F	"Hg	°F	"Hg	°F	"Hg	F	"Hg	F	"Hg	°F	"Hg
2	0.0417	47	0.324	80	1.032		2.829		6.85	179	14.96
4	0.0463	48	0.3364	81	1.066		2.911		7.024	180	15.29
6	0.0517	49	0.3493	82	1.102		2.995		7.202	181	15.63
8	0.0571	50	0.3626	83	1.138		3.081		7.384	182	15.98
10	0.0631	51	0.3764	84	1.175		3.169		7.569	183	16.34
12	0.0696	52	0.3906	85	1.213		3.259		7.759	184	16.7
14	0.0768	53	0.4052	86	1.253		3.351		7.952	185	17.07
16	0.0846	54	0.4203	87	1.293		3.446		8.15	186	17.44
18	0.0932	55	0.4359	88	1.335		3.543		8.351	187	17.82
20	0.1205	56	0.452	89	1.378		3.642		8.557	188	18.21
22	0.1127	57	0.4686	90	1.422		3.744		8.767	189	18.61
24	0.1248	58	0.4858	91	1.467		3.848		8.981	190	19.01
26	0.137	59	0.5035	92	1.513		3.954		9.2	191	19.42
27	0.1429	60	0.5218	93	1.561		4.063		9.424	192	19.84
28	0.1502	61	0.5407	94	1.61		4.174		9.652	193	20.27
29	0.1567	62	0.5601	95	1.66		4.289		9.885	194	20.7
30	0.1647	63	0.5802	96	1.712		4.406		10.12	195	21.14
31	0.1716	64	0.6009	97	1.765		4.525		10.36	196	21.59
32	0.1803	65	0.6222	98	1.819		4.647		10.61	197	22.05
33	0.1878	66	0.6442	99	1.875		4.772		10.86	198	22.52
34	0.1955	67	0.6669	100	1.932		4.9		11.12	199	22.99
35	0.2035	68	0.6903	101	1.992		5.031		11.38	200	23.47
36	0.2188	69	0.7144	102	2.052		5.165		11.65	201	23.96
37	0.2203	70	0.7392	103	2.114		5.302		11.92	202	24.46
38	0.2292	71	0.7648	104	2.178		5.442		12.2	203	24.97
39	0.2383	72	0.7912	105	2.243		5.585		12.48	204	25.48
40	0.2478	73	0.8183	106	2.31		5.732		12.77	205	26
41	0.2576	74	0.8462	107	2.379		5.881		13.07	206	26.53
42	0.2677	75	0.875	108	2.449		6.034		13.37	207	27.07
43	0.2782	76	0.9046	109	2.521		6.19		13.67	208	27.62
44	0.2891	77	0.9352	110	2.596		6.35		13.98	209	28.18
45	0.3004	78	0.9666	111	2.672		6.513		14.3	210	28.75
46	0.312	79	0.9989	112	2.749		6.68		14.62	211	29.33
										212	29.92

Ps = Pb + (Pstatic / 13.6)

Comments:

$$PP = Vp - \frac{(Ps - Vp) * T}{2800 - (1.3 * Tw)}$$

BWS = (PP / Ps) * 100

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
Division Stack

Client	CHEMOURS	Run No.	1	Meter Box ID	VOST 8	Leak Checks	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.0150		
Project ID	CHEMOURS	Date	4/5/18	Probe ID/Length	25'	Initial	
Source	DIVISION	Baro. Press (in Hg)	30.20	Probe Material	TFE	TRAIN	0.002 liters/min @ 5 in Hg Vac
Samp. Type.	Stack	Ambient Temp (°F)					
Samp. Location	RUN 1	Operator	M.H.S				
		Sample Time				Final	
Comments:						TRAIN	0.006 liters/min @ 2 in Hg Vac
						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C / °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C / °F)			
	0	0926			0.000								
	5		0.2	0.4	1.23	NA	56	95	<1	-92			
	10		0.2	0.5	2.50		56	102	<1	-103			
	15		0.2	0.5	3.74		57	102	<1	-104			Hg 76
	20		0.2	0.5	5.0		57	100	<1	-105			wet 77
	25		0.2	0.5	6.28		58	100	<1	-103			
	30		0.2	0.5	7.48		59	100	<1	-103			
	35		0.2	0.5	8.67		59	100	<1	-103			
	40		0.2	0.5	10.00		60	100	<1	-101			
	45		0.2	0.5	11.3		61	100	<1	-100			
	50		0.2	0.5	12.6		62	100	<1	-98			
	55		0.2	0.5	13.75		63	100	<1	-99			
	60	1026	0.2	0.5	14.959		63	100	<1	-99			
	65												
	70												
	75												
	80												
	85												
	90												
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp			
			0.20	0.4917	14.959	59.25		102	1.0	-92			

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
Division Stack

Client	CHEMOURS	Run No.	2	Meter Box ID	VOS 8	**Leak Checks**	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.0150		
Project ID	CHEMOURS	Date	4/5/18	Probe ID/Length	25'	**Initial**	
Source	DIVISION	Baro. Press (in Hg)	30.25	Probe Material	FEP	TRAIN	0.002 liters/min @ 3 in Hg Vac
Samp. Type.	Stack	Ambient Temp (°F)					
Samp. Location	RUN 2	Operator	M.ILS				
		Sample Time				**Final**	
Comments:						TRAIN	0.006 liters/min @ 5 in Hg Vac
						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C / °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C / °F)			
	0	1055			0.000		0	0		0			
	5	1057	0.2	0.5	1.3	NA	65	96	<1	-102			
	10		0.2	0.5	2.28		65	102	<1	-102			
	15		0.2	0.5	3.75		65	101	<1	-102			
	20		0.2	0.5	5.02		66	100	<1	-103			Dry 0.4
	25		0.2	0.5	6.3		66	100	<1	-102			
	30		0.2	0.5	7.5		66	100	<1	-103			Wet 0.4
	35		0.2	0.5	8.8		67	100	<1	-103			
	40		0.2	0.5	10.1		67	100	<1	-103			
	45		0.2	0.5	11.25		67	100	<1	-104			
	50		0.2	0.5	12.5		67	100	<1	-104			
	55		0.2	0.5	13.75		68	100	<1	-104			
	60	1157	0.2	0.5	15.002		69	100	<1	-104			
	65												
	70												
	75												
	80												
	85												
	90												
			0.20	Avg Delta H 0.50	Total Volume 15.002	Avg Tm 66.50		Max Temp 102	Max Vac 1.0	Max Temp -102			

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
Division Stack

Client	CHEMOURS	Run No.	3	Meter Box ID	Vost 8	**Leak Checks**	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.0150		
Project ID	CHEMOURS	Date	4/5/18	Probe ID/Length	25'	**Initial**	
Source	DIVISION	Baro. Press (in Hg)	30.29	Probe Material	TFE	TRAIN	0.008 liters/min @ 3 in Hg Vac
Samp. Type.	Stack	Ambient Temp (°F)					
Samp. Location	RUN 3	Operator	M.HS				
		Sample Time				**Final**	
Comments:						TRAIN	0.006 liters/min @ 2 in Hg Vac
						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C / °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C / °F)			
	0	1328			0.000								
	5		0.2	0.5	1.25	NA	71	96	<1	-110			
	10		0.2	0.5	2.48		71	102	<1	-110			dry 83°F
	15		0.2	0.5	3.76		71	101	<1	-108			
	20		0.2	0.5	5.01		71	100	<1	-107			wet 84°F
	25		0.2	0.5	6.25		71	100	1	-107			
	30		0.2	0.5	7.50		70	100	1	-106			
	35		0.2	0.5	8.72		70	100	1	-106			
	40		0.2	0.5	9.98		71	100	1	-106			
	45		0.2	0.5	11.25		71	100	1	-106			
	50		0.2	0.5	12.50		72	100	1	-105			
	55		0.2	0.5	13.8		72	100	1	-105			
	60	1340	0.2	0.5	15.060		72	100	1	-103			
	65												
	70												
	75												
	80												
	85												
	90												
			Avg Delta H		Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp			
			0.20	0.50	15.060	71.08		102	1.0	-103			

Determination of Stack Gas Velocity - Method 2

Client Chemlawn(?) Operator Mills Pitot Coeff (Cp) 0.84 7.068

Location/Plant ____ Date 4/5/18 Stack Area, ft² (As) 7.068 (RWA)

Source Division Stack W.O. Number ____ Pitot Tube/Thermo ID P698

	Run 1	Run 2	Run 3
Run Number	Pre Run 1	Post 1 / Pre 2	Post 2 / Pre 3
Time	0910–0921	1041–1050	1212–1220
Barometric Press, in Hg (Pb)	30.20	30.25	30.28
Static Press, in H_2O (Pstatic)	-0.89	-0.88	-0.97
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination: Delta P at 0°	Angle yeilding zero Delta P	Traverse Location: Port	Point	Leak Check good? (Y) / N: Delta P	Source Temp, F° (Ts)	Leak Check good? (Y) / N: Delta P	Source Temp, F° (Ts)	Leak Check good? (Y) / N: Delta P	Source Temp, F° (Ts)
		X	1	1.1	68	0.85	76	0.95	82
			2	1.6	71	1.33	76	1.3	81
			3	1.6	72	1.4	76	1.5	81
			4	1.5	73	1.6	76	1.4	82
			5	1.2	73	1.4	76	1.6	82
			6	0.83	74	0.75	76	1.0	83
		Y	1	1.0	72	0.98	74	1.1	82
			2	1.3	72	1.5	75	1.5	82
			3	1.5	73	1.5	75	1.5	82
			4	1.7	74	1.5	76	1.5	83
			5	1.5	74	1.4	76	1.3	83
			6	0.76	75	0.92	76	0.90	83

	Run 1		Run 2		Run 3	
Avg Angle						
Avg Delta P & Temp	1.29917	72.58	1.26083	75.67	1.29583	82.17
avg √DeltaP	1.13126		1.1149		1.1333	
Average gas stream velocity, ft/sec.						
Vol. flow rate @ actual conditions, wacf/min						
Vol. flow rate at standard conditions, dscf/min						

$$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$$

$$MWs = (MWd * (1 - (BWS/100))) + (18 * (BWS/100))$$

$$Tsa = Ts + 460$$

$$Ps = Pb + (Pstatic/13.6)$$

$$Vs = 85.49 * Cp * avg\sqrt{DeltaP} * \sqrt{Tsa/(Ps * MWs)}$$

$$Qs(act) = 60 * Vs * As$$

$$Qs(std) = 17.64 * (1 - (BWS/100)) * (Ps/Tsa) * Qs(act)$$

where:
MWd = Dry molecular weight source gas, lb/lb-mole.
MWs = Wet molecular weight source gas, lb/lb-mole.
Tsa = Source Temperature, absolute(oR)
Ps = Absolute stack static pressure, inches Hg.
Vs = Average gas stream velocity, ft/sec.
Qs(act) = Volumetric flow rate of wet stack gas at actual,
Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min

WESTON MANAGERS DESIGNERS/CONSULTANTS

Comments ____

Method2

Determination of Stack Gas Velocity - Method 2

Client: Chemours
Location/Plant:
Source: Division Stack
Operator: Mills
Date: 4/5/18
W.O. Number:
Pitot Coeff (Cp): 0.84
Stack Area, ft^2 (As): ~~7.460~~ 7.068 (Run)
Pitot Tube/Thermo ID: P 698

Run Number	Post 3		
Time	1335-1349		
Barometric Press, in Hg (Pb)	30.29		
Static Press, in H_2O (Pstatic)	-0.98		
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination		Traverse Location		Leak Check good ? (Y) / N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Delta P at 0°	Angle yielding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		X	1	1.2	82				
			2	1.5	82				
			3	1.5	83				
			4	1.6	84				
			5	1.3	84				
			6	0.86	85				
		Y	1	0.96	83				
			2	1.3	83				
			3	1.4	84				
			4	1.6	84				
			5	1.4	84				
			6	0.89	84				

Avg Angle			
Avg Delta P & Temp	1.29250 / 83.50		
avg √DeltaP	1.13100		
Average gas stream velocity, ft/sec.			
Vol. flow rate @ actual conditions, wacf/min			
Vol. flow rate at standard conditions, dscf/min			

$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$

$MWs = (MWd * (1 - (BWS/100))) + (18 * (BWS/100))$

$Tsa = Ts + 460$

$Ps = Pb + (Pstatic/13.6)$

$Vs = 85.49 * Cp * avg \sqrt{DeltaP} * \sqrt{Tsa/(Ps * MWs)}$

$Qs(act) = 60 * Vs * As$

$Qs(std) = 17.64 * (1 - (BWS/100)) * (Ps/Tsa) * Qs(act)$

MWd = Dry molecular weight source gas, lb/lb-mole.
MWs = Wet molecular weight source gas, lb/lb-mole.
Tsa = Source Temperature, absolute(oR)
Ps = Absolute stack static pressure, inches Hg.
Vs = Average gas stream velocity, ft/sec.
Qs(act) = Volumetric flow rate of wet stack gas at actual, wacf/min
Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min

Note: Micromanometer is required if:
(A) The average Delta P readings are less than 0.05 inches of water.
(B) For traverses of 12 or more points, more than 10% of the Delta P readings are below 0.05 inches of water.
(C) For traverses of less than 12 points, more than one Delta P readings is below 0.05 inches of water.

WESTON SOLUTIONS

method2.xls

METHODS AND ANALYZERS

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **Division**

Project Number: **15418.002.002**
Operator: **SR**
Date: **5 Apr 2018**

File: C:\DATA\Chemours\fayetteville\April 3rd\040518 division.cem
Program Version: 2.1, built 19 May 2017 **File Version:** 2.02
Computer: WSWCAIRSERVICES **Trailer:** 27
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	**O_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**25.0**
Span Concentration, %	**21.0**

Channel 2

Analyte	**CO_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**20.0**
Span Concentration, %	**16.6**

CALIBRATION DATA

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **Division**

Project Number: **15418.002.002**
Operator: **SR**
Date: **5 Apr 2018**

Start Time: 07:50

O_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
11.9	CC116156
21.0	SG9169108

Calibration Results

Zero	7 mv
Span, 21.0 %	7999 mv

Curve Coefficients

Slope	Intercept
380.6	7

CO_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
9.0	CC116156
16.6	SG9169108

Calibration Results

Zero	10 mv
Span, 16.6 %	8281 mv

Curve Coefficients

Slope	Intercept
498.9	10

CALIBRATION ERROR DATA

Number 1

Client: **Chemors** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **5 Apr 2018**

Start Time: 07:50

O_2
Method: EPA 3A
Span Conc. 21.0 %
Slope 380.6 **Intercept** 7.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
12.0	11.9	-0.1	-0.5	Pass
21.0	21.0	0.0	0.0	Pass

CO_2
Method: EPA 3A
Span Conc. 16.6 %
Slope 498.9 **Intercept** 10.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
9.0	8.8	-0.2	-1.2	Pass
16.6	16.6	0.0	0.0	Pass

BIAS
Number 1

Client: **Chemors** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **5 Apr 2018**

Start Time: 07:55

O_2
Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	11.9	12.0	0.1	0.5	Pass

CO_2
Method: EPA 3A
Span Conc. 16.6 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.8	8.5	-0.3	-1.8	Pass

RUN DATA

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **5 Apr 2018**

Time	O_2 %	CO_2 %
09:27	20.9	0.0
09:28	20.9	0.0
09:29	20.9	0.0
09:30	20.9	0.0
09:31	20.9	0.0
09:32	20.9	0.0
09:33	20.9	0.0
09:34	20.9	0.0
09:35	20.9	0.0
09:36	20.9	0.0
09:37	20.9	0.0
09:38	20.9	0.0
09:39	20.9	0.0
09:40	20.9	0.0
09:41	20.8	0.0
09:42	20.9	0.0
09:43	20.9	0.0
09:44	20.9	0.0
09:45	20.8	0.0
09:46	20.9	0.0
09:47	20.9	0.0
09:48	20.9	0.0
09:49	20.9	0.0
09:50	20.9	0.0
09:51	20.9	0.0
09:52	20.9	0.0
09:53	20.9	0.0
09:54	20.9	0.0
09:55	20.9	0.0
09:56	20.9	0.0
09:57	20.8	0.0
09:58	20.9	0.0
09:59	20.9	0.0
10:00	20.9	0.0
10:01	20.9	0.0
10:02	20.9	0.0
10:03	20.9	0.0
10:04	20.9	0.0
10:05	20.8	0.0
10:06	20.9	0.0
10:07	20.8	0.0

RUN DATA

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **5 Apr 2018**

Time	O_2 %	CO_2 %
10:08	20.9	0.0
10:09	20.9	0.0
10:10	20.9	0.0
10:11	20.9	0.0
10:12	20.9	0.0
10:13	20.9	0.0
10:14	20.8	0.0
10:15	20.9	0.0
10:16	20.9	0.0
10:17	20.8	0.0
10:18	20.8	0.0
10:19	20.8	0.0
10:20	20.8	0.0
10:21	20.8	0.0
10:22	20.8	0.0
10:23	20.9	0.0
10:24	20.8	0.0
10:25	20.9	0.0
10:26	20.9	0.0
Avgs	**20.9**	**0.0**

RUN SUMMARY

Number 1

Client: **Chemors** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **5 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 09:26 to 10:26

Run Averages

	20.9	0.0

Pre-run Bias at 07:55

Zero Bias	0.1	0.0
Span Bias	12.0	8.5
Span Gas	11.9	9.0

Post-run Bias at 10:39

Zero Bias	0.0	0.0
Span Bias	11.9	8.5
Span Gas	11.9	9.0

Run averages corrected for the average of the pre-run and post-run bias

	20.9	0.0

BIAS AND CALIBRATION DRIFT

Number 2

Client: **Chemors** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **5 Apr 2018**

Start Time: 10:39

O_2
Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.9	11.9	0.0	0.0	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.1	0.0	-0.1	-0.5	Pass
Span	12.0	11.9	-0.1	-0.5	Pass

*Bias No. 1

CO_2
Method: EPA 3A
Span Conc. 16.6 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.8	8.5	-0.3	-1.8	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.5	8.5	0.0	0.0	Pass

*Bias No. 1

RUN DATA

Number 2

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **5 Apr 2018**

Time	O_2 %	CO_2 %
10:58	20.9	0.0
10:59	20.9	0.0
11:00	20.9	0.0
11:01	20.9	0.0
11:02	20.9	0.0
11:03	20.9	0.0
11:04	20.9	0.0
11:05	20.9	0.0
11:06	20.9	0.0
11:07	20.9	0.0
11:08	20.9	0.0
11:09	20.9	0.0
11:10	20.9	0.0
11:11	20.9	0.0
11:12	20.9	0.0
11:13	20.9	0.0
11:14	20.9	0.0
11:15	20.8	0.0
11:16	20.8	0.0
11:17	20.9	0.0
11:18	20.9	0.0
11:19	20.9	0.0
11:20	20.9	0.0
11:21	20.9	0.0
11:22	20.9	0.0
11:23	20.9	0.0
11:24	20.9	0.0
11:25	20.9	0.0
11:26	20.9	0.0
11:27	20.9	0.0
11:28	20.9	0.0
11:29	20.9	0.0
11:30	20.9	0.0
11:31	20.9	0.0
11:32	20.9	0.0
11:33	20.9	0.0
11:34	20.9	0.0
11:35	20.9	0.0
11:36	20.9	0.0
11:37	20.9	0.0
11:38	20.9	0.0

RUN DATA

Number 2

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **5 Apr 2018**

Time	O_2 %	CO_2 %
11:39	20.9	0.0
11:40	20.9	0.0
11:41	20.9	0.0
11:42	20.9	0.0
11:43	20.9	0.0
11:44	20.9	0.0
11:45	20.9	0.0
11:46	20.9	0.0
11:47	20.9	0.0
11:48	20.9	0.0
11:49	20.9	0.0
11:50	20.9	0.0
11:51	20.9	0.0
11:52	20.9	0.0
11:53	20.9	0.0
11:54	20.9	0.0
11:55	20.9	0.0
11:56	20.9	0.0
11:57	20.9	0.0
Avgs	**20.9**	**0.0**

RUN SUMMARY

Number 2

Client: **Chemors** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **5 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 10:57 to 11:57

Run Averages

	20.9	0.0

Pre-run Bias at 10:39

Zero Bias	0.0	0.0
Span Bias	11.9	8.5
Span Gas	11.9	9.0

Post-run Bias at 11:59

Zero Bias	0.0	0.1
Span Bias	12.0	8.5
Span Gas	11.9	9.0

Run averages corrected for the average of the pre-run and post-run bias

	20.9	0.0

BIAS AND CALIBRATION DRIFT

Number 3

Client: **Chemors** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **5 Apr 2018**

Start Time: 11:59

O_2
Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.9	12.0	0.1	0.5	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.9	12.0	0.1	0.5	Pass

*Bias No. 2

CO_2
Method: EPA 3A
Span Conc. 16.6 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.8	8.5	-0.3	-1.8	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.5	8.5	0.0	0.0	Pass

*Bias No. 2

RUN DATA

Number 3

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **5 Apr 2018**

Time	O_2 %	CO_2 %
12:29	20.8	0.1
12:30	20.8	0.1
12:31	20.8	0.1
12:32	20.8	0.1
12:33	20.8	0.1
12:34	20.8	0.1
12:35	20.8	0.1
12:36	20.8	0.1
12:37	20.8	0.0
12:38	20.8	0.0
12:39	20.8	0.0
12:40	20.8	0.0
12:41	20.8	0.1
12:42	20.8	0.1
12:43	20.8	0.1
12:44	20.8	0.1
12:45	20.8	0.1
12:46	20.8	0.1
12:47	20.8	0.1
12:48	20.8	0.1
12:49	20.8	0.1
12:50	20.8	0.1
12:51	20.8	0.0
12:52	20.8	0.0
12:53	20.8	0.0
12:54	20.8	0.0
12:55	20.8	0.0
12:56	20.8	0.0
12:57	20.8	0.0
12:58	20.8	0.1
12:59	20.8	0.1
13:00	20.8	0.1
13:01	20.8	0.1
13:02	20.8	0.1
13:03	20.8	0.1
13:04	20.8	0.1
13:05	20.8	0.1
13:06	20.8	0.1
13:07	20.8	0.0
13:08	20.8	0.0
13:09	20.8	0.1

RUN DATA

Number 3

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **5 Apr 2018**

Time	O_2 %	CO_2 %
13:10	20.8	0.0
13:11	20.8	0.0
13:12	20.8	0.0
13:13	20.8	0.0
13:14	20.8	0.0
13:15	20.8	0.1
13:16	20.8	0.1
13:17	20.8	0.1
13:18	20.8	0.1
13:19	20.8	0.1
13:20	20.8	0.1
13:21	20.8	0.1
13:22	20.8	0.1
13:23	20.8	0.0
13:24	20.8	0.1
13:25	20.8	0.1
13:26	20.8	0.1
13:27	20.8	0.1
13:28	20.8	0.1
Avgs	**20.8**	**0.1**

RUN SUMMARY

Number 3

Client: **Chemors** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **5 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 12:28 to 13:28

Run Averages

	20.8	0.1

Pre-run Bias at 11:59

Zero Bias	0.0	0.1
Span Bias	12.0	8.5
Span Gas	11.9	9.0

Post-run Bias at 13:59

Zero Bias	0.1	0.1
Span Bias	11.9	8.5
Span Gas	11.9	9.0

Run averages corrected for the average of the pre-run and post-run bias

	20.8	0.0

BIAS AND CALIBRATION DRIFT

Number 4

Client: **Chemors** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **5 Apr 2018**

Start Time: 13:59

O_2
Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	11.9	11.9	0.0	0.0	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	12.0	11.9	-0.1	-0.5	Pass

*Bias No. 3

CO_2
Method: EPA 3A
Span Conc. 16.6 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.8	8.5	-0.3	-1.8	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.1	0.1	0.0	0.0	Pass
Span	8.5	8.5	0.0	0.0	Pass

*Bias No. 3

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	25-Apr-18	**Stack Area, ft² (As)**	7.070
Source	Divison	**W.O. Number**		**Pitot Tube/Thermo ID**	

	Pre 1	Post 1	
Run Number	Pre 1	Post 1	
Time	1546-1611	1729-1745	
Barometric Press, in Hg (Pb)	29.66	29.66	
Static Press, in H_20 (Pstatic)	-0.98	-1.04	
Source Moisture, % (BWS)	4.49	4.95	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		Traverse Location		Zero Check good ? Y / N		Zero Check good ? Y / N		Zero Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	0.67	88	0.79	89		
			2	1.41	88	1.23	90		
			3	1.52	89	1.40	91		
			4	1.55	89	1.30	92		
			5	1.30	89	1.10	92		
			6	0.80	89	0.87	92		
			1	0.42	87	0.41	90		
			2	1.10	88	1.10	91		
			3	1.30	89	1.30	91		
			4	1.45	89	1.58	92		
			5	1.30	90	1.30	92		
			6	0.72	89	0.83	92		
		B							
		Avg Delta P & Temp		1.128333	88.67	1.10083	91.17		
		Avg SQRT Delta P		1.04570		1.03669			
		Average gas stream velocity, ft/sec.		60.73		60.41			
		Vol. flow rate @ actual conditions, wacf/min		25763		25624			
		Vol. flow rate at standard conditions, dscf/min		23408		23059			
		Average Vol. flow rate at standard conditions, dscf/min				23233			

Comments _____

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	26-Apr-18	**Stack Area, ft² (As)**	7.700
Source	Divison	**W.O. Number**		**Pitot Tube/Thermo ID**	

	Pre 2	Post 2	
Run Number			
Time	1249-1258	1410-1421	
Barometric Press, in Hg (Pb)	29.78	29.78	
Static Press, in H_20 (Pstatic)	-0.93	-0.98	
Source Moisture, % (BWS)	5.23	5.76	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		Traverse Location		Zero Check good ? Y / N		Zero Check good ? Y / N		Zero Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	0.52	94	0.57	96		
			2	1.20	94	1.10	96		
			3	1.30	94	1.30	96		
			4	1.50	94	1.50	96		
			5	1.30	94	1.30	96		
			6	1.00	94	1.20	97		
			1	0.62	93	0.64	95		
			2	1.20	94	1.40	96		
			3	1.80	94	1.70	96		
			4	1.50	94	1.60	97		
			5	1.50	94	1.40	97		
			6	1.30	93	1.10	97		
		B							
		Avg Delta P & Temp		1.22833	93.83	1.23417	96.25		

Avg SQRT Delta P	1.09465	1.09903	
Average gas stream velocity, ft/sec.	63.83	64.30	
Vol. flow rate @ actual conditions, wacf/min	29490	29705	
Vol. flow rate at standard conditions, dscf/min	26449	26374	
Average Vol. flow rate at standard conditions, dscf/min		26412	

Comments _____

Determination of Moisture Content in Stack Gases - Method 4
Wet Bulb / Dry Bulb

Client: Chemours | Source: Division | Operator: JM

Location/Plant: Fayetteville, NC | W.O.: | Date: 04/25/18-04/26/18

Run Number	Pre-1	Post-1	Pre-2	Post-2
Location	Divison	Divison	Divison	Divison
Barometric Press, in. Hg (Pb)	29.66	29.66	29.78	29.76
Static Press, in. H_20 (Pstatic)	-0.98	-1.04	-0.97	-0.96
Dry Bulb Temperture,°F (Td)	88.7	91.2	93.8	96.3
Wet Bulb Temperture,°F (Tw)	88.0	91.0	93.0	96.0
Delta T = Td-Tw, (ΔT)	0.67	0.17	0.83	0.25
Vapor Press H_20 at Tw (Vp), from table	1.335	1.467	1.561	1.712
Absolute stack static pressure, inches Hg (Ps)	29.588	29.584	29.709	29.689
Partial Press of H_2O (PP)	1.3280	1.4652	1.5523	1.7094
Moisture, % (BWS)	4.49%	4.95%	5.23%	5.76%

Vapor Pressure of Water

°F	"Hg	°F	"Hg	°F	"Hg	F	"Hg	F	"Hg	°F	"Hg
2	0.0417	47	0.324	80	1.032		2.829		6.85	179	14.96
4	0.0463	48	0.3364	81	1.066		2.911		7.024	180	15.29
6	0.0517	49	0.3493	82	1.102		2.995		7.202	181	15.63
8	0.0571	50	0.3626	83	1.138		3.081		7.384	182	15.98
10	0.0631	51	0.3764	84	1.175		3.169		7.569	183	16.34
12	0.0696	52	0.3906	85	1.213		3.259		7.759	184	16.7
14	0.0768	53	0.4052	86	1.253		3.351		7.952	185	17.07
16	0.0846	54	0.4203	87	1.293		3.446		8.15	186	17.44
18	0.0932	55	0.4359	88	1.335		3.543		8.351	187	17.82
20	0.1205	56	0.452	89	1.378		3.642		8.557	188	18.21
22	0.1127	57	0.4686	90	1.422		3.744		8.767	189	18.61
24	0.1248	58	0.4858	91	1.467		3.848		8.981	190	19.01
26	0.137	59	0.5035	92	1.513		3.954		9.2	191	19.42
27	0.1429	60	0.5218	93	1.561		4.063		9.424	192	19.84
28	0.1502	61	0.5407	94	1.61		4.174		9.652	193	20.27
29	0.1567	62	0.5601	95	1.66		4.289		9.885	194	20.7
30	0.1647	63	0.5802	96	1.712		4.406		10.12	195	21.14
31	0.1716	64	0.6009	97	1.765		4.525		10.36	196	21.59
32	0.1803	65	0.6222	98	1.819		4.647		10.61	197	22.05
33	0.1878	66	0.6442	99	1.875		4.772		10.86	198	22.52
34	0.1955	67	0.6669	100	1.932		4.9		11.12	199	22.99
35	0.2035	68	0.6903	101	1.992		5.031		11.38	200	23.47
36	0.2188	69	0.7144	102	2.052		5.165		11.65	201	23.96
37	0.2203	70	0.7392	103	2.114		5.302		11.92	202	24.46
38	0.2292	71	0.7648	104	2.178		5.442		12.2	203	24.97
39	0.2383	72	0.7912	105	2.243		5.585		12.48	204	25.48
40	0.2478	73	0.8183	106	2.31		5.732		12.77	205	26
41	0.2576	74	0.8462	107	2.379		5.881		13.07	206	26.53
42	0.2677	75	0.875	108	2.449		6.034		13.37	207	27.07
43	0.2782	76	0.9046	109	2.521		6.19		13.67	208	27.62
44	0.2891	77	0.9352	110	2.596		6.35		13.98	209	28.18
45	0.3004	78	0.9666	111	2.672		6.513		14.3	210	28.75
46	0.312	79	0.9989	112	2.749		6.68		14.62	211	29.33
										212	29.92

$Ps = Pb + (Pstatic / 13.6)$

Comments:

$$PP = Vp - \frac{(Ps - Vp) * T}{2800 - (1.3 * Tw)}$$

$BWS = (PP / Ps) * 100$

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	26-Apr-18	**Stack Area, ft² (As)**	7.070
Source	Divison	**W.O. Number**		**Pitot Tube/Thermo ID**	

	Pre 3	Post 3	
Run Number			
Time	1410-1421	1545-1601	
Barometric Press, in Hg (Pb)	29.78	29.76	
Static Press, in H_20 (Pstatic)	-0.98	-0.96	
Source Moisture, % (BWS)	5.78	5.75	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		Traverse Location		Zero Check good ? Y / N		Zero Check good ? Y / N		Zero Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	0.57	96	0.62	97		
			2	1.10	96	1.20	97		
			3	1.30	96	1.30	97		
			4	1.50	96	1.50	97		
			5	1.30	96	1.20	97		
			6	1.20	97	1.00	97		
			1	0.64	95	0.73	97		
			2	1.40	96	1.50	97		
			3	1.70	96	1.65	97		
			4	1.60	97	1.50	97		
			5	1.40	97	1.30	98		
			6	1.10	97	1.10	98		
		B							
		Avg Delta P & Temp		1.234167	96.25	1.21667	97.17		
		Avg SQRT Delta P		1.09903		1.09338			
		Average gas stream velocity, ft/sec.		64.30		64.04			
		Vol. flow rate @ actual conditions, wacf/min		27275		27165			
		Vol. flow rate at standard conditions, dscf/min		24212		24067			
		Average Vol. flow rate at standard conditions, dscf/min		24139					

Comments _____

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	26-Apr-18	**Stack Area, ft² (As)**	7.700
Source	Divison	**W.O. Number**		**Pitot Tube/Thermo ID**	

Run Number	Pre 4	Post 4	
Time	1545-1601	1734-1743	
Barometric Press, in Hg (Pb)	29.76	29.82	
Static Press, in H_20 (Pstatic)	-0.96	-0.94	
Source Moisture, % (BWS)	5.72	5.74	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		Traverse Location		Zero Check good ? Y / N		Zero Check good ? Y / N		Zero Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	0.62	97	0.52	96		
			2	1.20	97	1.10	96		
			3	1.30	97	1.30	96		
			4	1.50	97	1.40	97		
			5	1.20	97	1.20	97		
			6	1.00	97	1.10	97		
			1	0.73	97	0.76	96		
			2	1.50	97	1.30	97		
			3	1.65	97	1.60	97		
			4	1.50	97	1.40	97		
			5	1.30	98	1.50	97		
			6	1.10	98	1.10	97		
		B							
		Avg Delta P & Temp		1.21667	97.17	1.19000	96.67		
		Avg SQRT Delta P		1.09338		1.08093			
		Average gas stream velocity, ft/sec.		64.03		63.21			
		Vol. flow rate @ actual conditions, wacf/min		29584		29205			
		Vol. flow rate at standard conditions, dscf/min		26217		25952			
		Average Vol. flow rate at standard conditions, dscf/min				26084			

Comments _____

Determination of Moisture Content in Stack Gases - Method 4
Wet Bulb / Dry Bulb

Client: Chemours | Source: Division | Operator: JM

Location/Plant: Fayetteville, NC | W.O.: | Date: 04/25/18-04/26/18

Run Number	Pre-3	Post-3	Pre-4	Post-4
Location	Divison	Divison	Divison	Divison
Barometric Press, in. Hg (Pb)	29.66	29.66	29.78	29.76
Static Press, in. H_20 (Pstatic)	-0.98	-1.04	-0.97	-0.96
Dry Bulb Temperture,°F (Td)	96.3	97.2	97.2	96.7
Wet Bulb Temperture,°F (Tw)	96.0	96.0	96.0	96.0
Delta T = Td-Tw, (ΔT)	0.25	1.17	1.17	0.67
Vapor Press H_20 at Tw (Vp), from table	1.712	1.712	1.712	1.712
Absolute stack static pressure, inches Hg (Ps)	29.588	29.584	29.709	29.689
Partial Press of H_2O (PP)	1.7094	1.6998	1.6998	1.7050
Moisture, % (BWS)	5.78%	5.75%	5.72%	5.74%

Vapor Pressure of Water

°F	"Hg	°F	"Hg	°F	"Hg	F	"Hg	F	"Hg	°F	"Hg
2	0.0417	47	0.324	80	1.032		2.829		6.85	179	14.96
4	0.0463	48	0.3364	81	1.066		2.911		7.024	180	15.29
6	0.0517	49	0.3493	82	1.102		2.995		7.202	181	15.63
8	0.0571	50	0.3626	83	1.138		3.081		7.384	182	15.98
10	0.0631	51	0.3764	84	1.175		3.169		7.569	183	16.34
12	0.0696	52	0.3906	85	1.213		3.259		7.759	184	16.7
14	0.0768	53	0.4052	86	1.253		3.351		7.952	185	17.07
16	0.0846	54	0.4203	87	1.293		3.446		8.15	186	17.44
18	0.0932	55	0.4359	88	1.335		3.543		8.351	187	17.82
20	0.1205	56	0.452	89	1.378		3.642		8.557	188	18.21
22	0.1127	57	0.4686	90	1.422		3.744		8.767	189	18.61
24	0.1248	58	0.4858	91	1.467		3.848		8.981	190	19.01
26	0.137	59	0.5035	92	1.513		3.954		9.2	191	19.42
27	0.1429	60	0.5218	93	1.561		4.063		9.424	192	19.84
28	0.1502	61	0.5407	94	1.61		4.174		9.652	193	20.27
29	0.1567	62	0.5601	95	1.66		4.289		9.885	194	20.7
30	0.1647	63	0.5802	96	1.712		4.406		10.12	195	21.14
31	0.1716	64	0.6009	97	1.765		4.525		10.36	196	21.59
32	0.1803	65	0.6222	98	1.819		4.647		10.61	197	22.05
33	0.1878	66	0.6442	99	1.875		4.772		10.86	198	22.52
34	0.1955	67	0.6669	100	1.932		4.9		11.12	199	22.99
35	0.2035	68	0.6903	101	1.992		5.031		11.38	200	23.47
36	0.2188	69	0.7144	102	2.052		5.165		11.65	201	23.96
37	0.2203	70	0.7392	103	2.114		5.302		11.92	202	24.46
38	0.2292	71	0.7648	104	2.178		5.442		12.2	203	24.97
39	0.2383	72	0.7912	105	2.243		5.585		12.48	204	25.48
40	0.2478	73	0.8183	106	2.31		5.732		12.77	205	26
41	0.2576	74	0.8462	107	2.379		5.881		13.07	206	26.53
42	0.2677	75	0.875	108	2.449		6.034		13.37	207	27.07
43	0.2782	76	0.9046	109	2.521		6.19		13.67	208	27.62
44	0.2891	77	0.9352	110	2.596		6.35		13.98	209	28.18
45	0.3004	78	0.9666	111	2.672		6.513		14.3	210	28.75
46	0.312	79	0.9989	112	2.749		6.68		14.62	211	29.33
										212	29.92

$Ps = Pb + (Pstatic / 13.6)$

Comments:

$$PP = Vp - \frac{(Ps - Vp) * T}{2800 - (1.3 * Tw)}$$

$BWS = (PP / Ps) * 100$

Determination of Stack Gas Velocity - Method 2

Client	Chemours	Operator	Mills	Pitot Coeff (Cp)	0.84
Location/Plant		Date	4/25/18	Stack Area, ft² (As)	7.07
Source	Division	W.O. Number		Pitot Tube/Thermo ID	P698 P558

Run Number	Pre one	Post one	
Time	1546 - 1611	1729 - 1745	
Barometric Press, In Hg (Pb)	29.66	29.66	
Static Press, In H_2O (Pstatic)	~~-0.82~~ -0.98	-1.04	
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination		Traverse Location		Leak Check good ? (Y) / N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Delta P at 0°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		X	1	0.67	88	0.79	89		
			2	1.41	88	1.23	90		
			3	1.52	89	1.4	91		
			4	1.55	89	1.3	92		
			5	1.3	89	1.4	92		
			6	0.80	89	0.87	92		
		Y	1	0.42	87	0.41	90		
			2	1.1	88	1.1	91		
			3	1.3	89	1.3	91		
			4	1.45	89	1.58	92		
			5	1.3	90	1.3	92		
			6	0.72	89	0.83	92		
				WB	86	WB	91		
				1.2433	SL 5/4/18				
Avg Angle		Avg Delta P & Temp		~~1.1027~~	88.67	1.1008	91.17		
		avg $\sqrt{\text{DeltaP}}$		~~1.057~~	1.0450	1.0369			
Average gas stream velocity, ft/sec.									
Vol. flow rate @ actual conditions, wacf/min									
Vol. flow rate at standard conditions, dscf/min									

$$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$$

$$MWs = (MWd * (1 - (BWS/100))) + (18 * (BWS/100))$$

$$Tsa = Ts + 460$$

$$Ps = Pb + (Pstatic/13.6)$$

$$Vs = 85.49 * Cp * \text{avg}\sqrt{DeltaP} * \sqrt{Tsa/(Ps * MWs)}$$

$$Qs(act) = 60 * Vs * As$$

$$Qs(std) = 17.64 * (1 - (BWS/100)) * (Ps/Tsa) * Qs(act)$$

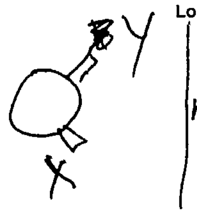
MWd = Dry molecular weight source gas, lb/lb-mole.
MWs = Wet molecular weight source gas, lb/lb-mole.
Tsa = Source Temperature, absolute(oR)
Ps = Absolute stack static pressure, inches Hg.
Vs = Average gas stream velocity, ft/sec.
Qs(act) = Volumetric flow rate of wet stack gas at actual, wacf/min
Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min

Note: Micromanometer is required if:
(A) The average Delta P readings are less than 0.05 inches of water.
(B) For traverses of 12 or more points, more than 10% of the Delta P readings are below 0.05 inches of water.
(C) For traverses of less than 12 points, more than one Delta P readings is below 0.05 inches of water.

WESTON SOLUTIONS

method2.xls

Determination of Stack Gas Velocity - Method 2



piv

Client	Chemours	Operator	M.L.S
Location/Plant		Date	4/26/18
Source	Division Stack	W.O. Number	
Pitot Coeff (Cp)	0.84	Stack Area, ft² (As)	7.07
Pitot Tube/Thermo ID			

Run Number	Pre 2	Post 2 Pre 3	Post 3 / Pre 4
Time	1249 - 1258	1410 1421	1545 - 1601
Barometric Press, in Hg (Pb)	29.78	29.78	29.76
Static Press, in H_2O (Pstatic)	-0.93	-0.98	-0.96
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination: Delta P at 0°	Angle yielding zero Delta P	Traverse Location: Port	Point	Leak Check good? (Y) / N: Delta P	Source Temp, F° (Ts)	Leak Check good? (Y) / N: Delta P	Source Temp, F° (Ts)	Leak Check good? (Y) / N: Delta P	Source Temp, F° (Ts)
		X	1	0.52	94	0.57	96	0.62	97
			2	1.2	94	1.1	96	1.2	97
			3	1.3	94	1.3	96	1.3	97
			4	1.5	94	1.5	96	1.5	97
			5	1.3	94	1.3	96	1.2	97
			6	1.0	94	1.2	97	1.0	97
		Y	1	0.62	93	0.64	95	0.73	97
			2	1.2	94	1.4	96	1.5	97
			3	1.8	94	1.7	96	1.65	97
			4	1.3	94	(4) 1.6	97	1.5	97
			5	1.3	94	(4) ~~1.5~~ 1.4	97	1.3	98
			6	1.3	93	1.1	97	1.1	98
				WB	93				
				WB	96			WB	96
Avg Angle			Avg Delta P & Temp	1.2283	93.83	1.23417	96.25	1.21667	97.17
			avg √DeltaP	1.09465		1.09903		1.09338	
			Average gas stream velocity, ft/sec.						
			Vol. flow rate @ actual conditions, wacf/min						
			Vol. flow rate at standard conditions, dscf/min						

$$MWd = (0.32 \cdot O_2) + (0.44 \cdot CO_2) + (0.28 \cdot (100 - (CO_2 + O_2)))$$

$$MWs = (MWd \cdot (1 - (BWS/100))) + (18 \cdot (BWS/100))$$

$$Tsa = Ts + 460$$

$$Ps = Pb + (Pstatic/13.6)$$

$$Vs = 85.49 \cdot Cp \cdot avg\sqrt{DeltaP} \cdot \sqrt{Tsa/(Ps \cdot MWs)}$$

$$Qs(act) = 60 \cdot Vs \cdot As$$

$$Qs(std) = 17.64 \cdot (1 - (BWS/100)) \cdot (Ps/Tsa) \cdot Qs(act)$$

MWd = Dry molecular weight source gas, lb/lb-mole.
MWs = Wet molecular weight source gas, lb/lb-mole.
Tsa = Source Temperature, absolute(oR)
Ps = Absolute stack static pressure, inches Hg.
Vs = Average gas stream velocity, ft/sec.
Qs(act) = Volumetric flow rate of wet stack gas at actual, wacf/min
Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min

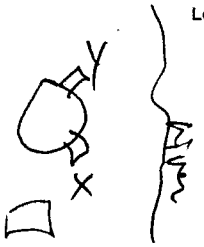
Note: Micromanometer is required if:
(A) The average Delta P readings are less than 0.05 inches of water.
(B) For traverses of 12 or more points, more than 10% of the Delta P readings are below 0.05 inches of water.
(C) For traverses of less than 12 points, more than one Delta P readings is below 0.05 inches of water.

WESTON SOLUTIONS

method2.xls

Determination of Stack Gas Velocity - Method 2

Client: Chemours | Operator: MCG S | Pitot Coeff (Cp): 0.84
Location/Plant: Fayetteville NC | Date: 4/26/18 | Stack Area, ft² (As): 7.07
Source: Division Stack | W.O. Number: | Pitot Tube/Thermo ID:



Run Number	Post 4		
Time	1734-1743		
Barometric Press, in Hg (Pb)	29.82		
Static Press, in H_20 (Pstatic)	-0.94		
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination		Traverse Location		Leak Check good ? Y / N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Delta P at 0°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		X	1	0.52	96				
			2	1.1	96				
			3	1.3	96				
			4	1.4	97				
			5	1.2	97				
			6	1.1	97				
		4	1	0.76	96				
			2	1.3	97				
			3	1.6	97				
			4	1.4	97				
			5	1.5	97				
			6	1.1	97				
				WB	96				
Avg Angle		Avg Delta P & Temp		1.19	96.67				
		avg $\sqrt{DeltaP}$		1.08093					
Average gas stream velocity, ft/sec.									
Vol. flow rate @ actual conditions, wacf/min									
Vol. flow rate at standard conditions, dscf/min									

$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$

$MWs = (MWd * (1 - (BWS/100))) + (18 * (BWS/100))$

$Tsa = Ts + 460$

$Ps = Pb + (Pstatic/13.6)$

$Vs = 85.49 * Cp * avg\sqrt{DeltaP} * \sqrt{Tsa/(Ps * MWs)}$

$Qs(act) = 60 * Vs * As$

$Qs(std) = 17.64 * (1 - (BWS/100)) * (Ps/Tsa) * Qs(act)$

MWd = Dry molecular weight source gas, lb/lb-mole.
MWs = Wet molecular weight source gas, lb/lb-mole.
Tsa = Source Temperature, absolute(oR)
Ps = Absolute stack static pressure, inches Hg.
Vs = Average gas stream velocity, ft/sec.
Qs(act) = Volumetric flow rate of wet stack gas at actual, wacf/min
Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min

Note: Micromanometer is required if:
(A) The average Delta P readings are less than 0.05 inches of water.
(B) For traverses of 12 or more points, more than 10% of the Delta P readings are below 0.05 inches of water.
(C) For traverses of less than 12 points, more than one Delta P readings is below 0.05 inches of water.

WESTON SOLUTIONS

method2.xls

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
Division Stack

Client	CHEMOURS	Run No.	1	Meter Box ID	VOST 8	**Leak Checks**	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.015		
Project ID	CHEMOURS	Date	4/25/18	Probe ID/Length	35'	**Initial**	
Source	DIVISION	Baro. Press (in Hg)	29.66	Probe Material	TFE	TRAIN	0.004 liters/min @ 6 in Hg Vac
Samp. Type.	Stack	Ambient Temp (°F)					
Samp. Location	RUN 1	Operator	Mills				
		Sample Time				**Final**	
Comments:	Stripper column vent off					TRAIN	0.004 liters/min @ 3 in Hg Vac
						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C / °F)			
	0	1615			0.000								
	5		0.2	0.2	0.92	N/A	71	114	<1	-103			
	10		0.2	0.2	1.96		71	112	<1	-102			
	15		0.2	0.2	3.04		72	112	<1	-101			
	20		0.2	0.2	4.1		73	112	<1	-100			
	25		0.2	0.2	5.08		74	112	<1	-101			
	30		0.2	0.2	5.9		74	112	<1	-101			
	35		0.2	0.2	8.0 6.9		73	112	<1	-99			
	40		0.2	0.2	8.0		72	113	<1	-99			
	45		0.2	0.2	9.0		72	112	<1	-99			
	50		0.2	0.2	9.9		72	113	<1	-99			
	55		0.2	0.2	11.1		73	113	<1	-101			
	60	1715	0.2	0.2	12.083		74	112	<1	-102			
	65												
	70												
	75												
	80												
	85												
	90												
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp			

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
Division Stack

Client	CHEMOURS	Run No.	2	Meter Box ID	VOST 8	Leak Checks	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.015		
Project ID	CHEMOURS	Date	4/26/18	Probe ID/Length	35'	Initial	
Source	DIVISION	Baro. Press (in Hg)	29.70	Probe Material	TFE	TRAIN	0.002 liters/min @ 5 in Hg Vac
Samp. Type.	Stack	Ambient Temp (°F)	60				
Samp. Location	RUN 2	Operator	Mills				
		Sample Time				Final	
Comments:	Strip Chart Column vent off					TRAIN	0.002 liters/min @ 2.5 in Hg Vac
						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C / °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C / °F)			
	0	1250			0.000								
	5		0.2	0.2	0.99	NA	85	114	<1	-98			
	10		0.2	0.2	1.98		86	114	<1	-102			
	15		0.2	0.2	3.0		87	114	<1	-104			
	20		0.2	0.2	4.0		87	115	<1	-105			
	25		0.2	0.2	5.0		87	115	<1	-105			
	30		0.2	0.2	6.1		87	115	<1	-105			
	35		0.2	0.2	7.0		87	115	<1	-105			
	40		0.2	0.2	7.9		88	115	<1	-105			
	45		0.2	0.2	8.9		88	115	<1	-106			
	50		0.2	0.2	10.0		88	115	<1	-106			
	55		0.2	0.2	11.1		88	115	<1	-105			
	60	1358	0.2	0.2	12.112		88	115	<1	-105			
	65												
	70												
	75												
	80												
	85												
	90												
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp			

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
Division Stack

Client	CHEMOURS	Run No.	3	Meter Box ID	Vost 8	**Leak Checks**	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.015		
Project ID	CHEMOURS	Date	4/26/18	Probe ID/Length	35'	**Initial**	
Source	DIVISION	Baro. Press (in Hg)	29.76	Probe Material	TFE	TRAIN	0.006 liters/min @ 5 in Hg Vac
Samp. Type.	Stack	Ambient Temp (°F)					
Samp. Location	RUN 3	Operator	M.IS				
		Sample Time	60			**Final**	
Comments:	Stripper tower vent open					TRAIN	0.002 liters/min @ 3 in Hg Vac
						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C / °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C / °F)			
	0	1432			0.000								
	5		0.2	0.2	0.97	NA	85	115	<1	~100			
	10		0.2	0.2	2.1		85	115	<1	~101			
	15		0.2	0.2	3.0		86	115	<1	~100			
	20		0.2	0.2	4.1		85	115	<1	~100			
	25		0.2	0.2	4.9		85	115	<1	~100			
	30		0.2	0.2	6.0		86	115	<1	~100			
	35		0.2	0.2	6.9		86	115	<1	~100			
	40		0.2	0.2	8.0		86	115	<1	~101			
	45		0.2	0.2	9.0		85	114	<1	~101			
	50		0.2	0.2	10.0		84	114	<1	~101			
	55		0.2	0.2	11.1		84	114	<1	~101			
	60	1532	0.2	0.2	12.020		84	114	<1	~101			
	65												
	70												
	75												
	80												
	85												
	90												
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp			

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
Division Stack

Client	CHEMOURS	Run No.	4	Meter Box ID	VOST 8	**Leak Checks**	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.015		
Project ID	CHEMOURS	Date	4/26/18	Probe ID/Length	351	**Initial**	
Source	DIVISION	Baro. Press (in Hg)	29.72	Probe Material	TFE	TRAIN	0.000 liters/min @ 6 in Hg Vac
Samp. Type.	Stack	Ambient Temp (°F)					
Samp. Location	RUN 4	Operator	Mills				
		Sample Time				**Final**	
Comments:	Stripper tower vent open					TRAIN	0.000 liters/min @ 4 in Hg Vac
						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C / °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C / °F)			
	0	1617			0.000								
	5		0.2	0.2	1.9	NA	82	114	<1	-101			
	10		0.2	0.2	1.9		82	114	<1	-103			
	15		0.2	0.2	3.0		82	114	<1	-103			
	20		0.2	0.2	4.1		82	114	<1	-103			
	25		0.2	0.2	5.0		82	114	<1	-103			
	30		0.2	0.2	5.9		82	114	<1	-102			
	35		0.2	0.2	7.0		82	114	<1	-102			
	40		0.2	0.2	8.0		82	114	<1	-102			
	45		0.2	0.2	9.0		81	114	<1	-102			
	50		0.2	0.2	10.0		81	114	<1	-103			
	55		0.2	0.2	11.0		81	114	<1	-103			
	60	1711	0.2	0.2	12.129		81	114	<1	-103			
	65												
	70												
	75												
	80												
	85												
	90												
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp			

METHODS AND ANALYZERS

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Project Number: **15418.002.002**
Operator: **SR**
Date: **25 Apr 2018**

File: C:\Users\Administrator.WSWCEQUIP2\Desktop\DATA\Chemours\042518 division stack.cem
Program Version: 2.0, built 21 Feb 2015 **File Version:** 2.02
Computer: WSWCEQUIP2 **Trailer:** 26
Analog Input Device: MCC USB-1608G

Channel 1

Analyte	**O_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 1440**
Full-Scale Output, mv	**1000**
Analyzer Range, %	**25.0**
Span Concentration, %	**21.0**

Channel 2

Analyte	**CO_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 1440**
Full-Scale Output, mv	**1000**
Analyzer Range, %	**20.0**
Span Concentration, %	**16.8**

CALIBRATION DATA

Number 1

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Project Number: **15418.002.002**
Operator: **SR**
Date: **25 Apr 2018**

Start Time: 10:18

O_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
12.0	CC404228
21.0	CC213729

Calibration Results

Zero	1 mv
Span, 21.0 %	845 mv

Curve Coefficients

Slope	Intercept
40.21	1

CO_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
8.9	CC404228
16.8	CC213729

Calibration Results

Zero	15 mv
Span, 16.8 %	856 mv

Curve Coefficients

Slope	Intercept
50.21	15

CALIBRATION ERROR DATA

Number 1

Client: **Chemours** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **25 Apr 2018**

Start Time: 10:18

O_2
Method: EPA 3A
Span Conc. 21.0 %
Slope 40.21 **Intercept** 1.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
12.0	12.1	0.1	0.5	Pass
21.0	21.0	0.0	0.0	Pass

CO_2
Method: EPA 3A
Span Conc. 16.8 %
Slope 50.21 **Intercept** 15.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
8.9	8.9	0.0	0.0	Pass
16.8	16.8	0.0	0.0	Pass

BIAS

Number 1

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **25 Apr 2018**

Start Time: 13:58

O_2
Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	12.1	12.1	0.0	0.0	Pass

CO_2
Method: EPA 3A
Span Conc. 16.8 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	-0.1	-0.1	-0.6	Pass
Span	8.9	8.8	-0.1	-0.6	Pass

RUN DATA

Number 1

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **25 Apr 2018**

Time	O_2 %	CO_2 %
16:16	20.8	0.0
16:17	20.8	0.0
16:18	20.8	0.0
16:19	20.8	0.0
16:20	20.8	0.0
16:21	20.8	0.0
16:22	20.8	0.0
16:23	20.8	0.0
16:24	20.8	0.0
16:25	20.7	0.0
16:26	20.8	0.0
16:27	20.8	0.0
16:28	20.8	0.0
16:29	20.8	0.0
16:30	20.8	0.0
16:31	20.8	0.0
16:32	20.8	0.0
16:33	20.7	0.0
16:34	20.8	0.0
16:35	20.7	0.0
16:36	20.7	0.0
16:37	20.8	0.0
16:38	20.8	0.0
16:39	20.8	0.0
16:40	20.8	0.0
16:41	20.8	0.0
16:42	20.8	0.0
16:43	20.8	0.0
16:44	20.8	0.0
16:45	20.8	0.0
16:46	20.7	0.0
16:47	20.7	0.0
16:48	20.7	0.0
16:49	20.8	0.0
16:50	20.8	0.0
16:51	20.8	0.0
16:52	20.8	0.0
16:53	20.8	0.0
16:54	20.8	0.0
16:55	20.8	0.0
16:56	20.8	0.0
16:57	20.8	0.0

WESTON

RUN DATA

Number 1

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **25 Apr 2018**

Time	O_2 %	CO_2 %
16:58	20.8	0.0
16:59	20.8	0.0
17:00	20.8	0.0
17:01	20.8	0.0
17:02	20.8	0.0
17:03	20.8	0.0
17:04	20.8	0.0
17:05	20.8	0.0
17:06	20.8	0.0
17:07	20.8	0.0
17:08	20.8	0.0
17:09	20.8	0.0
17:10	20.8	0.0
17:11	20.8	0.0
17:12	20.8	0.0
17:13	20.8	0.0
17:14	20.8	0.0
17:15	20.8	0.0
Avgs	**20.8**	**0.0**

RUN SUMMARY

Number 1

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **25 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 16:15 to 17:15

Run Averages

20.8	0.0

Pre-run Bias at 13:58

Zero Bias	0.1	-0.1
Span Bias	12.1	8.8
Span Gas	12.0	8.9

Post-run Bias at 18:10

Zero Bias	0.1	0.0
Span Bias	12.0	8.8
Span Gas	12.0	8.9

Averages corrected for the average of the pre-run and post-run bias

20.8	0.1

BIAS AND CALIBRATION DRIFT

Number 2

Client: **Chemours** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **25 Apr 2018**

Start Time: 18:10

O_2

Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	12.1	12.0	-0.1	-0.5	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.1	0.1	0.0	0.0	Pass
Span	12.1	12.0	-0.1	-0.5	Pass

*Bias No. 1

CO_2

Method: EPA 3A
Span Conc. 16.8 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.9	8.8	-0.1	-0.6	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	-0.1	0.0	0.1	0.6	Pass
Span	8.8	8.8	0.0	0.0	Pass

*Bias No. 1

METHODS AND ANALYZERS

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Project Number: **15418.002.002**
Operator: **SR**
Date: **26 Apr 2018**

File: C:\Users\Administrator.WSWCEQUIP2\Desktop\DATA\Chemours\042618 division.cem
Program Version: 2.0, built 21 Feb 2015 **File Version:** 2.02
Computer: WSWCEQUIP2 **Trailer:** 26
Analog Input Device: MCC USB-1608G

Channel 1

Analyte	**O_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 1440**
Full-Scale Output, mv	**1000**
Analyzer Range, %	**25.0**
Span Concentration, %	**21.0**

Channel 2

Analyte	**CO_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 1440**
Full-Scale Output, mv	**1000**
Analyzer Range, %	**20.0**
Span Concentration, %	**16.8**

CALIBRATION DATA

Number 1

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Project Number: **15418.002.002**
Operator: **SR**
Date: **26 Apr 2018**

Start Time: 07:49

O_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
12.0	CC404228
21.0	CC213729

Calibration Results

Zero	4 mv
Span, 21.0 %	847 mv

Curve Coefficients

Slope	Intercept
40.16	4

CO_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
8.9	CC404228
16.8	CC213729

Calibration Results

Zero	10 mv
Span, 16.8 %	854 mv

Curve Coefficients

Slope	Intercept
50.39	10

CALIBRATION ERROR DATA

Number 1

Client: **Chemours** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **26 Apr 2018**

Start Time: 07:49

O_2
Method: EPA 3A
Span Conc. 21.0 %
Slope 40.16 **Intercept** 4.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
12.0	12.1	0.1	0.5	Pass
21.0	21.0	0.0	0.0	Pass

CO_2
Method: EPA 3A
Span Conc. 16.8 %
Slope 50.39 **Intercept** 10.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
8.9	8.9	0.0	0.0	Pass
16.8	16.8	0.0	0.0	Pass

BIAS AND CALIBRATION DRIFT

Number 2

Client: **Chemours** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **26 Apr 2018**

Start Time: 12:30

O_2

Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.1	11.9	-0.2	-1.0	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.0	11.9	-0.1	-0.5	Pass

*Bias No. 1

CO_2

Method: EPA 3A
Span Conc. 16.8 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	-0.1	-0.1	-0.6	Pass
Span	8.9	8.6	-0.3	-1.8	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.1	-0.1	-0.2	-1.2	Pass
Span	8.9	8.6	-0.3	-1.8	Pass

*Bias No. 1

RUN DATA

Number 2

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **26 Apr 2018**

Time	O_2 %	CO_2 %
12:59	20.8	0.0
13:00	20.8	0.0
13:01	20.8	0.0
13:02	20.7	0.0
13:03	20.7	0.0
13:04	20.7	0.0
13:05	20.7	0.0
13:06	20.7	0.0
13:07	20.7	0.0
13:08	20.7	0.0
13:09	20.7	0.0
13:10	20.7	0.0
13:11	20.7	0.0
13:12	20.7	0.0
13:13	20.7	0.0
13:14	20.7	0.0
13:15	20.7	0.0
13:16	20.7	0.0
13:17	20.7	0.0
13:18	20.7	0.0
13:19	20.7	0.0
13:20	20.7	0.0
13:21	20.7	0.0
13:22	20.7	0.0
13:23	20.7	0.0
13:24	20.7	0.0
13:25	20.7	0.0
13:26	20.7	0.0
13:27	20.7	0.0
13:28	20.7	0.0
13:29	20.7	0.0
13:30	20.7	0.0
13:31	20.7	0.0
13:32	20.7	0.0
13:33	20.7	0.0
13:34	20.7	0.0
13:35	20.7	0.0
13:36	20.7	0.0
13:37	20.7	0.0
13:38	20.7	0.0
13:39	20.7	0.0
13:40	20.7	0.0

RUN DATA

Number 2

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **26 Apr 2018**

Time	O_2 %	CO_2 %
13:41	20.7	0.0
13:42	20.7	0.0
13:43	20.7	0.0
13:44	20.7	0.0
13:45	20.7	0.0
13:46	20.7	0.0
13:47	20.7	0.0
13:48	20.7	0.0
13:49	20.7	0.0
13:50	20.7	0.0
13:51	20.7	0.0
13:52	20.7	0.0
13:53	20.7	0.0
13:54	20.7	0.0
13:55	20.7	0.0
13:56	20.7	0.0
13:57	20.7	0.0
13:58	20.7	0.0
Avgs	**20.7**	**0.0**

RUN SUMMARY

Number 2

Client: **Chemours** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **26 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 12:58 to 13:58

Run Averages

	20.7	0.0

Pre-run Bias at 12:30

Zero Bias	0.0	-0.1
Span Bias	11.9	8.6
Span Gas	12.0	8.9

Post-run Bias at 14:01

Zero Bias	0.1	-0.1
Span Bias	11.9	8.5
Span Gas	12.0	8.9

Averages corrected for the average of the pre-run and post-run bias

	20.9	0.1

BIAS AND CALIBRATION DRIFT

Number 3

Client: **Chemours** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **26 Apr 2018**

Start Time: 14:01

O_2

Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	12.1	11.9	-0.2	-1.0	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	11.9	11.9	0.0	0.0	Pass

*Bias No. 2

CO_2

Method: EPA 3A
Span Conc. 16.8 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	-0.1	-0.1	-0.6	Pass
Span	8.9	8.5	-0.4	-2.4	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	-0.1	-0.1	0.0	0.0	Pass
Span	8.6	8.5	-0.1	-0.6	Pass

*Bias No. 2

RUN DATA

Number 3

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **26 Apr 2018**

Time	O_2 %	CO_2 %
14:33	20.8	0.0
14:34	20.8	0.0
14:35	20.7	0.0
14:36	20.7	0.0
14:37	20.7	0.0
14:38	20.7	0.0
14:39	20.7	0.0
14:40	20.7	0.0
14:41	20.7	0.0
14:42	20.7	0.0
14:43	20.7	0.0
14:44	20.7	0.0
14:45	20.7	0.0
14:46	20.7	0.0
14:47	20.7	0.0
14:48	20.7	0.0
14:49	20.7	0.0
14:50	20.7	0.0
14:51	20.7	0.0
14:52	20.7	0.0
14:53	20.7	0.0
14:54	20.7	0.0
14:55	20.7	0.0
14:56	20.7	0.0
14:57	20.7	0.0
14:58	20.7	0.0
14:59	20.7	0.0
15:00	20.7	0.0
15:01	20.7	0.0
15:02	20.7	0.0
15:03	20.7	0.0
15:04	20.7	0.0
15:05	20.7	0.0
15:06	20.7	0.0
15:07	20.7	0.0
15:08	20.7	0.0
15:09	20.7	0.0
15:10	20.7	0.0
15:11	20.7	0.0
15:12	20.7	0.0
15:13	20.7	0.0
15:14	20.7	0.0

RUN DATA

Number 3

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **26 Apr 2018**

Time	O_2 %	CO_2 %
15:15	20.7	0.0
15:16	20.7	0.0
15:17	20.7	0.0
15:18	20.7	0.0
15:19	20.7	0.0
15:20	20.7	0.0
15:21	20.7	0.0
15:22	20.7	0.0
15:23	20.7	0.0
15:24	20.7	0.0
15:25	20.7	0.0
15:26	20.7	0.0
15:27	20.7	0.0
15:28	20.7	0.0
15:29	20.7	0.0
15:30	20.7	0.0
15:31	20.7	0.0
15:32	20.7	0.0
Avgs	**20.7**	**0.0**

RUN SUMMARY

Number 3

Client: **Chemours** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **26 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 14:32 to 15:32

Run Averages

	20.7	0.0

Pre-run Bias at 14:01

Zero Bias	0.1	-0.1
Span Bias	11.9	8.5
Span Gas	12.0	8.9

Post-run Bias at 15:56

Zero Bias	0.1	0.0
Span Bias	12.0	8.5
Span Gas	12.0	8.9

Averages corrected for the average of the pre-run and post-run bias

	20.9	0.1

BIAS AND CALIBRATION DRIFT

Number 4

Client: **Chemours** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **26 Apr 2018**

Start Time: 15:56

O_2

Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	12.1	12.0	-0.1	-0.5	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.1	0.1	0.0	0.0	Pass
Span	11.9	12.0	0.1	0.5	Pass

*Bias No. 3

CO_2

Method: EPA 3A
Span Conc. 16.8 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.9	8.5	-0.4	-2.4	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	-0.1	0.0	0.1	0.6	Pass
Span	8.5	8.5	0.0	0.0	Pass

*Bias No. 3

RUN DATA

Number 4

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **26 Apr 2018**

Time	O_2 %	CO_2 %
16:18	20.7	0.0
16:19	20.7	0.0
16:20	20.7	0.0
16:21	20.7	0.0
16:22	20.7	0.0
16:23	20.7	0.0
16:24	20.7	0.0
16:25	20.7	0.0
16:26	20.7	0.0
16:27	20.7	0.0
16:28	20.7	0.0
16:29	20.7	0.0
16:30	20.7	0.0
16:31	20.7	0.0
16:32	20.7	0.0
16:33	20.7	0.0
16:34	20.7	0.0
16:35	20.7	0.0
16:36	20.7	0.0
16:37	20.7	0.0
16:38	20.7	0.0
16:39	20.7	0.0
16:40	20.7	0.0
16:41	20.7	0.0
16:42	20.7	0.0
16:43	20.7	0.0
16:44	20.7	0.0
16:45	20.7	0.0
16:46	20.7	0.0
16:47	20.7	0.0
16:48	20.7	0.0
16:49	20.7	0.0
16:50	20.7	0.0
16:51	20.7	0.0
16:52	20.7	0.0
16:53	20.7	0.0
16:54	20.7	0.0
16:55	20.7	0.0
16:56	20.7	0.0
16:57	20.7	0.0
16:58	20.7	0.0
16:59	20.7	0.0

RUN DATA

Number 4

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **26 Apr 2018**

Time	O_2 %	CO_2 %
17:00	20.7	0.0
17:01	20.7	0.0
17:02	20.7	0.0
17:03	20.7	0.0
17:04	20.7	0.0
17:05	20.7	0.0
17:06	20.7	0.0
17:07	20.7	0.0
17:08	20.7	0.0
17:09	20.7	0.0
17:10	20.7	0.0
17:11	20.7	0.0
17:12	20.7	0.0
17:13	20.7	0.0
17:14	20.7	0.0
17:15	20.7	0.0
17:16	20.7	0.0
17:17	20.7	0.0
Avgs	**20.7**	**0.0**

RUN SUMMARY

Number 4

Client: **Chemours**
Location: **Fayetteville, NC**
Source: **Division**

Calibration **1**

Project Number: **15418.002.002**
Operator: **SR**
Date: **26 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 16:17 to 17:17

Run Averages

	20.7	0.0

Pre-run Bias at 15:56

Zero Bias	0.1	0.0
Span Bias	12.0	8.5
Span Gas	12.0	8.9

Post-run Bias at 17:20

Zero Bias	0.0	-0.1
Span Bias	11.9	8.4
Span Gas	12.0	8.9

Averages corrected for the average of the pre-run and post-run bias

	20.8	0.1

BIAS AND CALIBRATION DRIFT

Number 5

Client: **Chemours** | Project Number: **15418.002.002**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **Division** | Calibration **1** | Date: **26 Apr 2018**

Start Time: 17:20

O_2

Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.1	11.9	-0.2	-1.0	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.1	0.0	-0.1	-0.5	Pass
Span	12.0	11.9	-0.1	-0.5	Pass

*Bias No. 4

CO_2

Method: EPA 3A
Span Conc. 16.8 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	-0.1	-0.1	-0.6	Pass
Span	8.9	8.4	-0.5	-3.0	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	-0.1	-0.1	-0.6	Pass
Span	8.5	8.4	-0.1	-0.6	Pass

*Bias No. 4

VE SOUTH

Sample and Velocity Traverse Point Data Sheet - Method 1

Client: Chemours
Loaction/Plant: Fayetteville, NC
Source: VE South

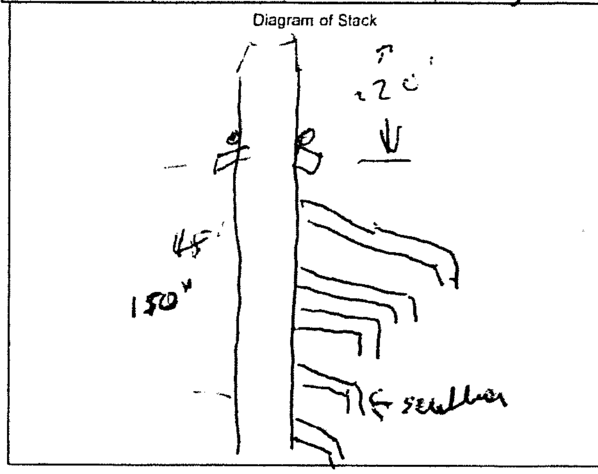
Operator: [illegible]
Date: 1/10/18
W.O. Number: 15418.002.001.0001

Duct Type	☒ Circular	☐ Rectangular Duct	Indicate appropriate type
Traverse Type	☒ Particulate Traverse	☐ Velocity Traverse	☒ CEM Traverse

Distance from far wall to outside of port (in.) = C	61
Port Depth (in.) = D	19"
Depth of Duct, diameter (in.) = C-D	42
Area of Duct (ft²)	9.62
Total Traverse Points	24
Total Traverse Points per Port	12
Port Diameter (in.) ---(Flange-Threaded-Hole)	4"
Monorail Length	
Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	/
Total Ports (rectangular duct only)	/
Equivalent Diameter = (2*L*W)/(L+W)	/

Flow Disturbances	
Upstream - A (ft)	720'
Downstream - B (ft)	12.5'
Upstream - A (duct diameters)	>5
Downstream - B (duct diameters)	~3.6

Diagram of Stack



Traverse Point Locations

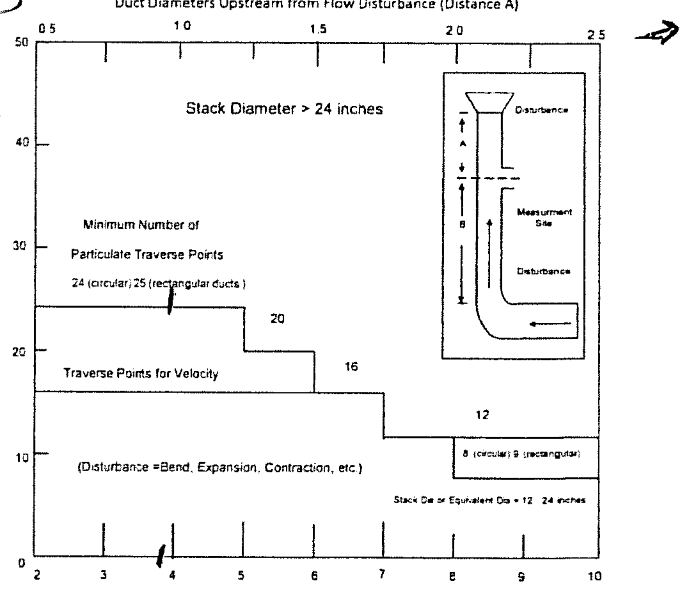
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	2.1	0.88	~~19.9~~ 20.0
2	6.7	2.81	21.0
3	11.8	4.96	23.9 3/8
4	17.7	7.4	26.1
5	25.0	10.5	29 1/2
6	35.6	14.95	~~33 3/4~~ 34
7	64.4	27.0	46.0
8	75	31.5	50.5
9	82.3	34.57	53 5/8
10	88.2	37.0	56.0
11	93.3	39.2	58 1/8
12	97.9	41.1	60.0

CEM 3 Point(Long Measurment Line) Stratificaton Point Locations

1	0.167		
2	0.50		
3	0.833		

Note: If stack dia < 12 inch use EPA Method 1A
(Sample port upstream of pitot port)

Note. If stack dia >24" then adjust traverse point to 1 inch from wall
If stack dia <24" then adjust traverse point to 0.5 inch from wall



Traverse Point Location Percent of Stack -Circular

Traverse Point Location	Number of Traverse Points: 1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25		14.6		10.5		8.2		6.7
3				75		29.6		19.4		14.6		11.8
4				93.3		70.4		32.3		22.6		17.7
5						85.4		67.7		34.2		25
6						95.6		80.6		65.8		35.6
7								89.5		77.4		64.4
8								96.8		85.4		75
9										91.8		82.3
10										97.4		88.2
11												93.3
12												97.9

Traverse Point Location Percent of Stack -Rectangular

Traverse Point Location	Number of Traverse Points: 1	2	3	4	5	6	7	8	9	10	11	12
1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
7							92.9	81.3	72.2	65.0	59.1	54.2
8								93.8	83.3	75.0	68.2	62.5
9									94.4	85.0	77.3	70.8
10										95.0	86.4	79.2
11											95.5	87.5
12												95.8

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MANAGERS DESIGNERS/CONSULTANTS

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	3-Apr-18	**Stack Area, ft² (As)**	9.620
Source	VE South	**W.O. Number**	15418.002.002.0001	**Pitot Tube/Thermo ID**	P698

Run Number	Pre 1	Post 1	
Time	1431-1445	1625-1639	
Barometric Press, in Hg (Pb)	30.05	30.05	
Static Press, in H_20 (Pstatic)	0.48	0.51	
Source Moisture, % (BWS)	3.07	3.39	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		Traverse Location		Zero Check good ? Y / N		Zero Check good ? Y / N		Zero Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	0.13	76	0.13	83		
			2	0.14	76	0.14	83		
			3	0.15	76	0.15	82		
			4	0.15	77	0.16	82		
			5	0.17	77	0.16	82		
			6	0.15	77	0.15	81		
			7	0.16	77	0.16	81		
			8	0.15	77	0.15	81		
			9	0.15	77	0.15	81		
			10	0.13	77	0.15	81		
			11	0.10	77	0.10	82		
			12	0.09	78	0.08	82		
		B	1	0.15	79	0.14	85		
			2	0.16	79	0.15	84		
			3	0.15	79	0.15	84		
			4	0.15	79	0.15	83		
			5	0.16	79	0.15	82		
			6	0.17	78	0.16	82		
			7	0.17	78	0.16	81		
			8	0.17	78	0.17	81		
			9	0.15	77	0.15	81		
			10	0.14	77	0.14	81		
			11	0.09	78	0.11	81		
			12	0.08	77	0.08	81		
		Avg Delta P & Temp		**0.142083**	**77.5**	**0.14125**	**81.96**		
		Avg SQRT Delta P		**0.37514**		**0.37425**			
		Average gas stream velocity, ft/sec.		**21.33**		**21.38**			
		Vol. flow rate @ actual conditions, wacf/min		**12311**		**12339**			
		Vol. flow rate at standard conditions, dscf/min		**11782**		**11674**			
		Average Vol. flow rate at standard conditions, dscf/min		**11728**					

Comments _____

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	4-Apr-18	**Stack Area, ft^2 (As)**	9.620
Source	VE South	**W.O. Number**	15418.002.002.0001	**Pitot Tube/Thermo ID**	P698

Run Number	Pre 2	Post 2/Pre 3	
Time	0902-0913	1035-1046	
Barometric Press, In Hg (Pb)	29.81	29.81	
Static Press, In H_20 (Pstatic)	0.52	0.49	
Source Moisture, % (BWS)	2.71	2.90	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		Traverse Location		Zero Check good ? Y / N		Zero Check good ? Y / N		Zero Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	0.13	72	0.14	77		
			2	0.14	73	0.15	77		
			3	0.15	73	0.16	77		
			4	0.15	73	0.17	77		
			5	0.16	73	0.17	77		
			6	0.17	73	0.17	76		
			7	0.17	73	0.17	77		
			8	0.15	73	0.16	77		
			9	0.14	73	0.16	77		
			10	0.13	73	0.14	77		
			11	0.11	73	0.10	77		
			12	0.08	73	0.08	76		
		B	1	0.14	72	0.14	76		
			2	0.14	73	0.15	76		
			3	0.15	73	0.16	76		
			4	0.16	73	0.16	76		
			5	0.16	73	0.17	76		
			6	0.16	73	0.17	76		
			7	0.17	73	0.18	76		
			8	0.17	73	0.16	76		
			9	0.16	73	0.16	76		
			10	0.13	73	0.15	76		
			11	0.11	73	0.10	76		
			12	0.09	73	0.10	76		
		Avg Delta P & Temp		**0.14250**	**72.92**	**0.14875**	**76.42**		
		Avg SQRT Delta P		**0.37596**		**0.38392**			
		Average gas stream velocity, ft/sec.		**21.35**		**21.89**			
		Vol. flow rate @ actual conditions, wacf/min		**12325**		**12632**			
		Vol. flow rate at standard conditions, dscf/min		**11847**		**12039**			
		Average Vol. flow rate at standard conditions, dscf/min		**11943**					

Comments _____

Determination of Stack Gas Velocity - Method 2

Client	Chemours	**Operator**	JM	**Pitot Coeff (Cp)**	0.84
Location/Plant	Fayetteville NC	**Date**	4-Apr-18	**Stack Area, ft^2 (As)**	9.620
Source	VE South	**W.O. Number**	15418.002.002.0001	**Pitot Tube/Thermo ID**	P698

Run Number	Pre 3	Post 3	
Time	1035-1046	1208-1218	
Barometric Press, in Hg (Pb)	29.81	29.84	
Static Press, in H_20 (Pstatic)	0.49	0.52	
Source Moisture, % (BWS)	2.90	3.13	
O_2, %	20.9	20.9	
CO_2, %	0.0	0.0	

Cyclonic Flow Determination		Traverse Location		Zero Check good ? Y / N		Zero Check good ? Y / N		Zero Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	0.14	77	0.14	78		
			2	0.15	77	0.15	78		
			3	0.16	77	0.15	77		
			4	0.17	77	0.16	78		
			5	0.17	77	0.17	78		
			6	0.17	76	0.16	78		
			7	0.17	77	0.16	78		
			8	0.16	77	0.16	78		
			9	0.16	77	0.16	78		
			10	0.14	77	0.14	78		
			11	0.10	77	0.11	77		
			12	0.08	76	0.08	77		
		B	1	0.14	76	0.14	78		
			2	0.15	76	0.15	78		
			3	0.16	76	0.15	77		
			4	0.16	76	0.16	77		
			5	0.17	76	0.17	77		
			6	0.17	76	0.17	77		
			7	0.18	76	0.17	77		
			8	0.16	76	0.18	77		
			9	0.16	76	0.16	77		
			10	0.15	76	0.15	77		
			11	0.10	76	0.10	77		
			12	0.10	76	0.10	77		
		Avg Delta P & Temp		0.14875	76.42	0.14750	77.46		
		Avg SQRT Delta P		0.38392		0.38248			
		Average gas stream velocity, ft/sec.		21.89		21.82			
		Vol. flow rate @ actual conditions, wacf/min		12632		12596			
		Vol. flow rate at standard conditions, dscf/min		12039		11965			
		Average Vol. flow rate at standard conditions, dscf/min		12002					

Comments _____

Determination of Moisture Content in Stack Gases - Method 4
Wet Bulb / Dry Bulb

Client	Chemours	**Source**	VE South	**Operator**	JM
Location/Plant	Fayetteville, NC	**W.O.**	18.002.002.0001	**Date**	04/03/18-04/04/18

Run Number	Pre-1	Post 1	Pre-2	Post2/Pre-3	Post 3
Location	VE South	VE South	VE South	VE South	VE South
Barometric Press, in. Hg (Pb)	30.05	30.05	29.81	29.81	29.84
Static Press, in. H_20 (Pstatic)	0.48	0.51	0.52	0.49	0.52
Dry Bulb Temperture,°F (Td)	78.0	81.0	74.0	76.0	77.0
Wet Bulb Temperture,°F (Tw)	77.0	80.0	73.0	75.0	77.0
Delta T = Td-Tw, (ΔT)	1	1	1	1	0
Vapor Press H_20 at Tw (Vp), from table	0.9352	1.032	0.8183	0.875	0.9352
Absolute stack static pressure, inches Hg (Ps)	30.085	30.088	29.848	29.846	29.878
Partial Press of H_2O (PP)	0.9244	1.0212	0.8076	0.8643	0.9352
Moisture, % (BWS)	3.07%	3.39%	2.71%	2.90%	3.13%

Vapor Pressure of Water

°F	"Hg	°F	"Hg	°F	"Hg	°F	"Hg	°F	"Hg	°F	"Hg
2	0.0417	47	0.324	80	1.032		2.829		6.85	179	14.96
4	0.0463	48	0.3364	81	1.066		2.911		7.024	180	15.29
6	0.0517	49	0.3493	82	1.102		2.995		7.202	181	15.63
8	0.0571	50	0.3626	83	1.138		3.081		7.384	182	15.98
10	0.0631	51	0.3764	84	1.175		3.169		7.569	183	16.34
12	0.0696	52	0.3906	85	1.213		3.259		7.759	184	16.7
14	0.0768	53	0.4052	86	1.253		3.351		7.952	185	17.07
16	0.0846	54	0.4203	87	1.293		3.446		8.15	186	17.44
18	0.0932	55	0.4359	88	1.335		3.543		8.351	187	17.82
20	0.1205	56	0.452	89	1.378		3.642		8.557	188	18.21
22	0.1127	57	0.4686	90	1.422		3.744		8.767	189	18.61
24	0.1248	58	0.4858	91	1.467		3.848		8.981	190	19.01
26	0.137	59	0.5035	92	1.513		3.954		9.2	191	19.42
27	0.1429	60	0.5218	93	1.561		4.063		9.424	192	19.84
28	0.1502	61	0.5407	94	1.61		4.174		9.652	193	20.27
29	0.1567	62	0.5601	95	1.66		4.289		9.885	194	20.7
30	0.1647	63	0.5802	96	1.712		4.406		10.12	195	21.14
31	0.1716	64	0.6009	97	1.765		4.525		10.36	196	21.59
32	0.1803	65	0.6222	98	1.819		4.647		10.61	197	22.05
33	0.1878	66	0.6442	99	1.875		4.772		10.86	198	22.52
34	0.1955	67	0.6669	100	1.932		4.9		11.12	199	22.99
35	0.2035	68	0.6903	101	1.992		5.031		11.38	200	23.47
36	0.2188	69	0.7144	102	2.052		5.165		11.65	201	23.96
37	0.2203	70	0.7392	103	2.114		5.302		11.92	202	24.46
38	0.2292	71	0.7648	104	2.178		5.442		12.2	203	24.97
39	0.2383	72	0.7912	105	2.243		5.585		12.48	204	25.48
40	0.2478	73	0.8183	106	2.31		5.732		12.77	205	26
41	0.2576	74	0.8462	107	2.379		5.881		13.07	206	26.53
42	0.2677	75	0.875	108	2.449		6.034		13.37	207	27.07
43	0.2782	76	0.9046	109	2.521		6.19		13.67	208	27.62
44	0.2891	77	0.9352	110	2.596		6.35		13.98	209	28.18
45	0.3004	78	0.9666	111	2.672		6.513		14.3	210	28.75
46	0.312	79	0.9989	112	2.749		6.68		14.62	211	29.33
										212	29.92

$Ps = Pb + (Pstatic / 13.6)$

$$PP = Vp - \frac{(Ps - Vp) * T}{2800 - (1.3 * Tw)}$$

$BWS = (PP / Ps) * 100$

Comments:

Determination of Stack Gas Velocity - Method 2

Client: Clemens
Location/Plant:
Source: VE South

Operator: Mi/K
Date: 4/3/18
W.O. Number:

Pitot Coeff (Cp): 0.84
Stack Area, ft^2 (As): 9.62
Pitot Tube/Thermo ID: P698

Run Number	Pre Run 1	Post Run 1	
Time	1431 - 1445	1625 - 1639	
Barometric Press, in Hg (Pb)	30.05	30.05	
Static Press, in H_2O (Pstatic)	+0.48	+0.51	
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination		Traverse Location		Leak Check good ? (Y) / N		Leak Check good ? (Y) / N		Leak Check good ? Y / N	
Delta P at 0°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		X	1	0.13	76	0.13	83		
			2	0.14	76	0.14	83		
			3	0.15	76	0.15	82		
			4	0.15	77	0.16	82		
			5	0.17	77	0.16	82		
			6	0.15	77	0.15	81		
			7	0.16	77	0.16	81		
			8	0.15	78	0.15	81		
			9	0.15	77	0.15	81		
			10	0.13	77	0.15	81		
			11	0.10	77	0.10	82		
			12	0.09	78	0.08	82		
		Y	1	0.15	79	0.14	85		
			2	0.16	79	0.15	84		
			3	0.15	79	0.15	84		
			4	0.15	79	0.15	83		
			5	0.16	79	0.15	82		
			6	0.17	78	0.16	82		
			7	0.17	78	0.16	81		
			8	0.17	78	0.17	81		
			9	0.15	77	0.15	81		
			10	0.14	77	0.14	81		
			11	0.09	78	0.11	81		
			12	0.08	77	0.08	81		
Avg Angle		Avg Delta P & Temp		0.142083	77.5	0.14125	81.96		
		avg √DeltaP		0.37514		0.37425			
		Average gas stream velocity, ft/sec.							
		Vol. flow rate @ actual conditions, wacf/min							
		Vol. flow rate at standard conditions, dscf/min							

$$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$$
$$MWs = (MWd * (1 - (BWS/100))) + (18 * (BWS/100))$$
$$Tsa = Ts + 460$$
$$Ps = Pb + (Pstatic/13.6)$$
$$Vs = 85.49 * Cp * avg \sqrt{DeltaP} * \sqrt{Tsa/(Ps * MWs)}$$
$$Qs(act) = 60 * Vs * As$$
$$Qs(std) = 17.64 * (1 - (BWS/100)) * (Ps/Tsa) * Qs(act)$$

MWd = Dry molecular weight source gas, lb/lb-mole.
MWs = Wet molecular weight source gas, lb/lb-mole.
Tsa = Source Temperature, absolute(oR)
Ps = Absolute stack static pressure, inches Hg.
Vs = Average gas stream velocity, ft/sec.
Qs(act) = Volumetric flow rate of wet stack gas at actual, wacf/min
Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min

Note: Micromanometer is required if:
(A) The average Delta P readings are less than 0.05 inches of water.
(B) For traverses of 12 or more points, more than 10% of the Delta P readings are below 0.05 inches of water.
(C) For traverses of less than 12 points, more than one Delta P readings is below 0.05 inches of water.

WESTON SOLUTIONS

method2.xls

Determination of Stack Gas Velocity - Method 2

Client: Monarch | Operator: Mike | Pitot Coeff (Cp): 0.84
Location/Plant: | Date: 4/4/18 | Stack Area, ft² (As): 96.2
Source: VE South | W.O. Number: | Pitot Tube/Thermo ID: 1698

Run Number	Pre Run 2	Post 2 / Pre 3	Post 3
Time	0902 - 0913	1035 - 1046	1208 - 1218
Barometric Press, in Hg (Pb)	29.81	29.81	29.84
Static Press, in H_2O (Pstatic)	+0.52	+0.49	+0.52
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination: Delta P at 0°	Angle yielding zero Delta P	Traverse Location: Port	Point	Leak Check good? (Y) N: Delta P	Source Temp, F° (Ts)	Leak Check good? (Y) N: Delta P	Source Temp, F° (Ts)	Leak Check good? (Y) N: Delta P	Source Temp, F° (Ts)
		X	1	0.13	72	0.14	77	0.14	78
			2	0.14	73	0.15	77	0.15	78
			3	0.15	73	0.16	77	0.15	77
			4	0.15	73	0.17	77	0.16	78
			5	0.16	73	0.17	77	0.17	78
			6	0.17	73	0.17	76	0.16	78
			7	0.17	73	0.17	77	0.16	78
			8	0.15	73	0.16	77	0.16	78
			9	0.14	73	0.16	77	0.16	78
			10	0.13	73	0.14	77	0.14	78
			11	0.11	73	~~0.10~~ 0.10	77	0.11	77
			12	0.08	73	0.08	76	0.08	77
		Y	1	0.14	72	0.14	76	0.14	78
			2	0.14	73	0.15	76	0.15	78
			3	0.15	73	0.16	76	0.15	77
			4	0.16	73	0.16	76	0.16	77
			5	0.16	73	0.17	76	0.17	77
			6	0.16	73	0.17	76	0.17	77
			7	0.17	73	0.18	76	0.17	77
			8	0.17	73	0.16	76	0.18	77
			9	0.16	73	0.16	76	0.16	77
			10	0.13	73	0.15	76	0.15	77
			11	0.16	73	0.10	76	0.10	77
			12	0.09	73	0.10	76	0.10	77
Avg Angle		Avg Delta P & Temp		0.14250	72.92	0.14875	76.42	0.14750	77.46
		avg √DeltaP		0.375955		0.38592		0.3824713	
Average gas stream velocity, ft/sec.									
Vol. flow rate @ actual conditions, wacf/min									
Vol. flow rate at standard conditions, dscf/min									

$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$

$MWs = (MWd * (1 - (BWS/100))) + (18 * (BWS/100))$

$Tsa = Ts + 460$

$Ps = Pb + (Pstatic/13.6)$

$Vs = 85.49 * Cp * avg\sqrt{DeltaP} * \sqrt{Tsa/(Ps * MWs)}$

$Qs(act) = 60 * Vs * As$

$Qs(std) = 17.64 * (1 - (BWS/100)) * (Ps/Tsa) * Qs(act)$

MWd = Dry molecular weight source gas, lb/lb-mole.
MWs = Wet molecular weight source gas, lb/lb-mole.
Tsa = Source Temperature, absolute(oR)
Ps = Absolute stack static pressure, inches Hg.
Vs = Average gas stream velocity, ft/sec.
Qs(act) = Volumetric flow rate of wet stack gas at actual, wacf/min
Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min

Note: Micromanometer is required if:
(A) The average Delta P readings are less than 0.05 inches of water.
(B) For traverses of 12 or more points, more than 10% of the Delta P readings are below 0.05 inches of water.
(C) For traverses of less than 12 points, more than one Delta P readings is below 0.05 inches of water.

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method2.xls

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
VE SOUTH

Client	CHEMOURS	Run No.	1	Meter Box ID	VOST 8	Leak Checks	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.0150		
Project ID	CHEMOURS	Date	4/3/18	Probe ID/Length	15'	Initial	
Source	VE SOUTH	Baro. Press (in Hg)	30.05	Probe Material	TFE	TRAIN	0.010 liters/min @ 6 in Hg Vac
Samp. Type	Stack	Ambient Temp (°F)					
Samp. Location	RUN 1	Operator	Mills				
		Sample Time				Final	
Comments:						TRAIN	20.004 liters/min @ 25 in Hg Vac
						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C / °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C °F)			
	0	1457			0.000								
	5		0.2	0.5	1.126	NA	88	99	<1	-63			Dry 78
	10	1510	0.2	0.4	2.241		88	100	<1	-62			Pre 1
	15	0	0.2	0.4	3.265/0.000		88	100	<1	-61			WET 77
	20	5	0.2	0.4	1.43		88	100	<1	-59			
	25	10	0.2	0.4	2.62		89	100	<1	-58			
	30	15	0.2	0.4	3.73		89	100	<1	-57			
	35	20	0.2	0.4	5.17		89	100	<1	-100			
	40	25	0.2	0.4	6.54		90	100	<1	-103			
	45	30	0.2	0.4	7.35		90	100	<1	-104			
	50	35	0.2	0.4	8.87		90	100	<1	-102			
	55	40	0.2	0.4	10.16		90	100	<1	-101			
	60	45	0.2	0.4	11.32		90	100	<1	-101			
	65	50	0.2	0.4	12.67		90	100	<1	-101			Dry 81
	70	55	0.2	0.4	13.75		91	100	<1	-102			wet 80 Post 1
	75	60	0.2	0.4	14.945		91	100	<1	-102			
	80	1610											
	85												
	90												
				Avg Delta H	Total Volume	SD	Avg Tm	Max Temp	Max Vac	Min/Max Temp			
				0.4	14.945		89.6 89.75	100	<1	-104/-58			

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
VE SOUTH

Client	CHEMOURS	Run No.	2	Meter Box ID	VOS18	Leak Checks	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.0150		
Project ID	CHEMOURS	Date	4/4/18	Probe ID/Length		Initial	0.007
Source	VE SOUTH	Baro. Press (in Hg)	29.81	Probe Material		TRAIN	0.002 liters/min @ 3 in Hg Vac
Samp. Type.	Stack	Ambient Temp (°F)					
Samp. Location	RUN 2	Operator	MILLS				
		Sample Time				Final	
Comments:						TRAIN	0.002 liters/min @ 2 in Hg Vac
						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C / °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C / °F)			
	0	0916			0.000								
	5		0.2	0.4	1.26	NA	73	101	<1	-10			
	10		0.2	0.5	2.51		74	101	<1	-10			Dry 74°F PTC 2
	15		0.2	0.5	3.72		74	100	<1	-10			WET 73°F
	20		0.2	0.4	4.97		74	100	<1	-10			
	25		0.2	0.5	6.31		74	100	<1	-10			
	30		0.2	0.5	7.55		75	100	<1	-10			
	35		0.2	0.5	8.75		75	100	<1	-10			
	40		0.2	0.5	10.04		75	100	<1	-10			
	45		0.2	0.5	11.26		76	100	<1	-10			
	50		0.2	0.5	12.57		76	100	<1	-10			
	55		0.2	0.5	13.82		76	100	<1	-10			
	60	1016	0.2	0.5	15.046		76	100	<1	-10			Dry 76°F Post 2 PTC 3 WET 75°F
	65												
	70												
	75												
	80												
	85												
	90												
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp			
				0.483	15.046	74.83		101	1.0	-10			

FIELD DATA SHEET

Modified Method 18-HFPO Monomer
VE SOUTH

Client	CHEMOURS	Run No.	3	Meter Box ID	1085T 8	**Leak Checks**	
W.O.#	15418.002.002.0001	Test Method	M18	Meter Box Y	1.0150		
Project ID	CHEMOURS	Date	4/4/18	Probe ID/Length	15'	**Initial**	
Source	VE SOUTH	Baro. Press (in Hg)	29.84	Probe Material	TFE	TRAIN	0.000 liters/min @ 3 in Hg Vac
Samp. Type.	Stack	Ambient Temp (°F)					
Samp. Location	RUN 3	Operator	Mills			**Final**	
		Sample Time				TRAIN	0.000 liters/min @ 2 in Hg Vac
Comments:						Post Test Purge	YES/NO

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING ON CONSOLE	ORIFICE PRESSURE Delta H (in H_2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C / °F)	DGM OUTLET TEMP (°C / °F)	PROBE TEMPERATURE (°C / °F)	SAMPLE TRAIN VAC in Hg	ICE BATH TEMPERATURE (°C / °F)			
	0	1056			0.000								
	5		0.2	0.5	1.23	NA	79	101	<1	-99	100		
	10		0.2	0.5	2.50		80	100	<1	-99			Dry 77
	15		0.2	0.5	3.77		80	100	<1	-99			
	20		0.2	0.5	5.20		80	100	<1	-98			wet 77
	25		0.2	0.5	6.43		80	100	<1	-98			
	30		0.2	0.5	7.54		80	100	<1	-97			
	35		0.2	0.5	8.56		80	100	<1	-97			
	40		0.2	0.5	9.89		81	100	<1	-96			
	45		0.2	0.5	11.23		81	100	<1	-101			
	50		0.2	0.5	12.71		81	100	<1	-104			
	55		0.2	0.5	13.80		81	100	<1	-104			
	60	1150	0.2	0.5	~~14.25~~ (2w)		82	100	<1	-103			
	65				15.016								
	70												
	75												
	80												
	85												
	90												
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp			
				0.50	15.016	80.42		100	1.0	-96			

Post 3

METHODS AND ANALYZERS

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Project Number:
Operator: **SR**
Date: **3 Apr 2018**

File: C:\DATA\Chemours\fayetteville\April 3rd\040318 VE south 1.cem
Program Version: 2.0, built 21 Feb 2015 **File Version:** 2.02
Computer: WSWCAIRSERVICES **Trailer:** 27
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	**O_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**25.0**
Span Concentration, %	**21.0**

Channel 2

Analyte	**CO_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**20.0**
Span Concentration, %	**16.6**

CALIBRATION DATA

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Project Number:
Operator: **SR**
Date: **3 Apr 2018**

Start Time: 13:15

O_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	**Cylinder ID**
11.9	CC116156
21.0	SG9169108

Calibration Results

Zero	5 mv
Span, 21.0 %	7990 mv

Curve Coefficients

Slope	**Intercept**
380.2	5

CO_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	**Cylinder ID**
9.0	CC116156
16.6	SG9169108

Calibration Results

Zero	-1 mv
Span, 16.6 %	8286 mv

Curve Coefficients

Slope	**Intercept**
499.8	-1

CALIBRATION ERROR DATA

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **3 Apr 2018**

Start Time: 13:15

O_2
Method: EPA 3A
Span Conc. 21.0 %
Slope 380.2 **Intercept** 5.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
12.0	12.0	0.0	0.0	Pass
21.0	21.0	0.0	0.0	Pass

CO_2
Method: EPA 3A
Span Conc. 16.6 %
Slope 499.8 **Intercept** -1.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
9.0	8.8	-0.2	-1.2	Pass
16.6	16.6	0.0	0.0	Pass

BIAS

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **3 Apr 2018**

Start Time: 13:21

O_2
Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	12.0	11.9	-0.1	-0.5	Pass

CO_2
Method: EPA 3A
Span Conc. 16.6 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.8	8.4	-0.4	-2.4	Pass

RUN DATA

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **3 Apr 2018**

Time	O_2 %	CO_2 %
15:11	20.7	0.0
15:12	20.7	0.0
15:13	20.7	0.0
15:14	20.7	0.0
15:15	20.7	0.0
15:16	20.7	0.0
15:17	20.7	0.0
15:18	20.7	0.0
15:19	20.7	0.0
15:20	20.7	0.0
15:21	20.7	0.0
15:22	20.7	0.0
15:23	20.7	0.0
15:24	20.7	0.0
15:25	20.7	0.0
15:26	20.7	0.0
15:27	20.7	0.0
15:28	20.7	0.0
15:29	20.7	0.0
15:30	20.7	0.0
15:31	20.7	0.0
15:32	20.7	0.0
15:33	20.7	0.0
15:34	20.7	0.0
15:35	20.7	0.0
15:36	20.7	0.0
15:37	20.7	0.0
15:38	20.7	0.0
15:39	20.7	0.0
15:40	20.7	0.0
15:41	20.7	0.0
15:42	20.7	0.0
15:43	20.7	0.0
15:44	20.7	0.0
15:45	20.7	0.0
15:46	20.7	0.0
15:47	20.7	0.0
15:48	20.7	0.0
15:49	20.7	0.0
15:50	20.7	0.0
15:51	20.7	0.0
15:52	20.7	0.0

WESTON

RUN DATA

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **3 Apr 2018**

Time	O_2 %	CO_2 %
15:53	20.7	0.0
15:54	20.7	0.0
15:55	20.6	0.0
15:56	20.6	0.0
15:57	20.6	0.0
15:58	20.6	0.0
15:59	20.6	0.0
16:00	20.6	0.0
16:01	20.6	0.1
16:02	20.6	0.1
16:03	20.6	0.1
16:04	20.6	0.1
16:05	20.6	0.1
16:06	20.6	0.1
16:07	20.6	0.1
16:08	20.6	0.1
16:09	20.6	0.1
16:10	20.6	0.1
Avgs	**20.7**	**0.0**

RUN SUMMARY

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **3 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 15:10 to 16:10

Run Averages

	20.7	0.0

Pre-run Bias at 13:21

Zero Bias	0.1	0.1
Span Bias	11.9	8.4
Span Gas	11.9	9.0

Post-run Bias at 16:32

Zero Bias	0.0	0.0
Span Bias	11.8	8.5
Span Gas	11.9	9.0

Averages corrected for the average of the pre-run and post-run bias

	20.9	0.0

BIAS AND CALIBRATION DRIFT

Number 2

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **3 Apr 2018**

Start Time: 16:32

O_2
Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.0	11.8	-0.2	-1.0	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.1	0.0	-0.1	-0.5	Pass
Span	11.9	11.8	-0.1	-0.5	Pass

*Bias No. 1

CO_2
Method: EPA 3A
Span Conc. 16.6 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.8	8.5	-0.3	-1.8	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.1	0.0	-0.1	-0.6	Pass
Span	8.4	8.5	0.1	0.6	Pass

*Bias No. 1

METHODS AND ANALYZERS

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

File: C:\DATA\Chemours\fayetteville\April 3rd\040418 VE South 2.cem
Program Version: 2.0, built 21 Feb 2015 **File Version:** 2.02
Computer: WSWCAIRSERVICES **Trailer:** 27
Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	**O_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**25.0**
Span Concentration, %	**21.0**

Channel 2

Analyte	**CO_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**20.0**
Span Concentration, %	**16.6**

CALIBRATION DATA

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

Start Time: 08:06

O_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	**Cylinder ID**
11.9	CC116156
21.0	SG9169108

Calibration Results

Zero	21 mv
Span, 21.0 %	8001 mv

Curve Coefficients

Slope	**Intercept**
380.0	21

CO_2

Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

%	**Cylinder ID**
9.0	CC116156
16.6	SG9169108

Calibration Results

Zero	23 mv
Span, 16.6 %	8293 mv

Curve Coefficients

Slope	**Intercept**
498.8	23

CALIBRATION ERROR DATA

Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

Start Time: 08:06

O_2
Method: EPA 3A
Span Conc. 21.0 %
Slope 380.0 **Intercept** 21.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
12.0	11.9	-0.1	-0.5	Pass
21.0	21.0	0.0	0.0	Pass

CO_2
Method: EPA 3A
Span Conc. 16.6 %
Slope 498.8 **Intercept** 23.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
9.0	8.8	-0.2	-1.2	Pass
16.6	16.6	0.0	0.0	Pass

BIAS
Number 1

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

Start Time: 08:11

O_2
Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.9	11.8	-0.1	-0.5	Pass

CO_2
Method: EPA 3A
Span Conc. 16.6 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.8	8.5	-0.3	-1.8	Pass

RUN DATA

Number 2

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

Time	O_2 %	CO_2 %
09:17	20.6	0.0
09:18	20.7	0.2
09:19	20.7	0.1
09:20	20.7	0.1
09:21	20.7	0.2
09:22	20.7	0.2
09:23	20.7	0.2
09:24	20.7	0.2
09:25	20.7	0.1
09:26	20.7	0.2
09:27	20.7	0.2
09:28	20.7	0.1
09:29	20.7	0.2
09:30	20.7	0.1
09:31	20.7	0.2
09:32	20.7	0.1
09:33	20.7	0.1
09:34	20.7	0.2
09:35	20.7	0.1
09:36	20.7	0.1
09:37	20.7	0.2
09:38	20.7	0.1
09:39	20.7	0.1
09:40	20.7	0.2
09:41	20.7	0.2
09:42	20.7	0.1
09:43	20.7	0.1
09:44	20.7	0.1
09:45	20.7	0.2
09:46	20.7	0.2
09:47	20.7	0.2
09:48	20.7	0.1
09:49	20.7	0.2
09:50	20.7	0.2
09:51	20.7	0.1
09:52	20.7	0.1
09:53	20.7	0.2
09:54	20.7	0.2
09:55	20.7	0.2
09:56	20.7	0.1
09:57	20.7	0.1
09:58	20.7	0.1

RUN DATA

Number 2

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

Time	O_2 %	CO_2 %
09:59	20.7	0.2
10:00	20.7	0.2
10:01	20.7	0.1
10:02	20.7	0.1
10:03	20.7	0.1
10:04	20.7	0.1
10:05	20.7	0.1
10:06	20.7	0.1
10:07	20.7	0.2
10:08	20.7	0.2
10:09	20.7	0.2
10:10	20.7	0.1
10:11	20.7	0.2
10:12	20.7	0.1
10:13	20.7	0.1
10:14	20.7	0.1
10:15	20.7	0.1
10:16	20.7	0.1
Avgs	**20.7**	**0.1**

RUN SUMMARY

Number 2

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 09:16 to 10:16

Run Averages

	20.7	0.1

Pre-run Bias at 08:11

Zero Bias	0.0	0.0
Span Bias	11.8	8.5
Span Gas	11.9	9.0

Post-run Bias at 10:22

Zero Bias	0.0	0.0
Span Bias	11.8	8.5
Span Gas	11.9	9.0

Averages corrected for the average of the pre-run and post-run bias

	21.0	0.2

BIAS AND CALIBRATION DRIFT

Number 2

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

Start Time: 10:22

O_2

Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.9	11.8	-0.1	-0.5	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.8	11.8	0.0	0.0	Pass

*Bias No. 1

CO_2

Method: EPA 3A
Span Conc. 16.6 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.8	8.5	-0.3	-1.8	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.5	8.5	0.0	0.0	Pass

*Bias No. 1

RUN DATA

Number 3

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

Time	O_2 %	CO_2 %
10:59	20.7	0.1
11:00	20.7	0.1
11:01	20.7	0.1
11:02	20.7	0.1
11:03	20.7	0.1
11:04	20.7	0.1
11:05	20.7	0.1
11:06	20.7	0.1
11:07	20.7	0.1
11:08	20.7	0.1
11:09	20.7	0.1
11:10	20.7	0.1
11:11	20.7	0.1
11:12	20.7	0.1
11:13	20.7	0.1
11:14	20.7	0.1
11:15	20.7	0.1
11:16	20.7	0.1
11:17	20.7	0.1
11:18	20.7	0.1
11:19	20.7	0.1
11:20	20.7	0.1
11:21	20.7	0.1
11:22	20.7	0.1
11:23	20.7	0.1
11:24	20.7	0.1
11:25	20.7	0.1
11:26	20.7	0.1
11:27	20.7	0.1
11:28	20.7	0.1
11:29	20.7	0.1
11:30	20.7	0.1
11:31	20.7	0.1
11:32	20.7	0.1
11:33	20.7	0.1
11:34	20.7	0.1
11:35	20.7	0.1
11:36	20.7	0.1
11:37	20.7	0.1
11:38	20.7	0.1
11:39	20.7	0.1
11:40	20.7	0.1

RUN DATA

Number 3

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

Time	O_2 %	CO_2 %
11:41	20.7	0.1
11:42	20.7	0.1
11:43	20.7	0.1
11:44	20.7	0.1
11:45	20.7	0.1
11:46	20.7	0.1
11:47	20.7	0.1
11:48	20.7	0.1
11:49	20.7	0.1
11:50	20.7	0.1
11:51	20.7	0.1
11:52	20.7	0.1
11:53	20.7	0.1
11:54	20.7	0.1
11:55	20.7	0.1
11:56	20.7	0.1
11:57	20.7	0.1
11:58	20.7	0.1
Avgs	**20.7**	**0.1**

RUN SUMMARY

Number 3

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

	O_2	CO_2
Method	EPA 3A	EPA 3A
Conc. Units	%	%

Time: 10:58 to 11:58

Run Averages

	20.7	0.1

Pre-run Bias at 10:22

Zero Bias	0.0	0.0
Span Bias	11.8	8.5
Span Gas	11.9	9.0

Post-run Bias at 12:25

Zero Bias	0.0	0.1
Span Bias	11.8	8.5
Span Gas	11.9	9.0

Averages corrected for the average of the pre-run and post-run bias

	21.0	0.1

BIAS AND CALIBRATION DRIFT

Number 3

Client: **Chemors**
Location: **Fayetteville, NC**
Source: **VE South**

Calibration **1**

Project Number:
Operator: **SR**
Date: **4 Apr 2018**

Start Time: 12:25

O_2

Method: EPA 3A
Span Conc. 21.0 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.9	11.8	-0.1	-0.5	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.8	11.8	0.0	0.0	Pass

*Bias No. 2

CO_2

Method: EPA 3A
Span Conc. 16.6 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.8	8.5	-0.3	-1.8	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.5	8.5	0.0	0.0	Pass

*Bias No. 2

APPENDIX C
LABORATORY ANALYTICAL DESCRIPTION AND ANALYTICAL REPORTS

Note: The full analytical reports are included on the attached CD.

ANALYTICAL REPORT

Job Number: 140-11220-1

Job Description: HFPO Division Stack Original Field Test

Contract Number: LBIO-67048

For:
Chemours Company FC, LLC The
c/o AECOM
Sabre Building, Suite 300
4051 Ogletown Road
Newark, DE 19713

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager I
5/21/2018 3:46 PM

Courtney M Adkins, Project Manager I
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
05/21/2018

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Chemours Company FC, LLC The
Project/Site: M18 HFPO Monomer Division Stack Test

TestAmerica Job ID: 140-11220-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL KNX
MeOH Prep	Methanol Impinger Preparation	None	TAL KNX

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: Chemours Company FC, LLC The
Project/Site: M18 HFPO Monomer Division Stack Test

TestAmerica Job ID: 140-11220-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-11220-1	C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-2	C-2021 R1 IMPINGERS #3 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-3	C-2022 R1 IMPINGERS #4 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-4	C-2023 R1 IMPINGERS #5 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-5	C-2024 R1 IMPINGERS #6 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-6	C-2025 R2 IMPINGERS #1 & #2 WITH FH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-7	C-2026 R2 IMPINGERS #3 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-8	C-2027 R2 IMPINGERS #4 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-9	C-2028 R2 IMPINGERS #5 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-10	C-2029 R2 IMPINGERS #6 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-11	C-2030 R3 IMPINGERS #1 & #2 WITH FH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-12	C-2031 R3 IMPINGERS #3 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-13	C-2032 R3 IMPINGERS #4 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-14	C-2033 R3 IMPINGERS #5 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-15	C-2034 R3 IMPINGERS #6 WITH MEOH RINSES	Air	04/05/18 00:00	04/06/18 11:50
140-11220-16	C-2035 QC IMPINGERS #1 & #2 WITH FH MEOH RINSES BT	Air	04/05/18 00:00	04/06/18 11:50
140-11220-17	C-2036 QC IMPINGERS #3 WITH MEOH RINSES BT	Air	04/05/18 00:00	04/06/18 11:50
140-11220-18	C-2037 QC IMPINGERS #4 WITH MEOH RINSES BT	Air	04/05/18 00:00	04/06/18 11:50
140-11220-19	C-2038 QC IMPINGERS #5 WITH MEOH RINSES BT	Air	04/05/18 00:00	04/06/18 11:50
140-11220-20	C-2039 QC IMPINGERS #6 WITH MEOH RINSES BT	Air	04/05/18 00:00	04/06/18 11:50
140-11220-21	C-2040 QC MEOH RB	Air	04/05/18 00:00	04/06/18 11:50
140-11220-22	C-2041 QC MEOH TB	Air	04/05/18 00:00	04/06/18 11:50

Job Narrative
140-11220-1

Sample Receipt

The samples were received on April 6, 2018 at 11:50 AM in good condition and properly preserved. The temperature of the cooler at receipt was 0.1ºC.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

HFPO Division Stack Original Field Test

The source gas was pulled through six (6) midget impingers containing methanol using a peristaltic pump. The first impinger had only a short drop tube that was not long enough to enter the methanol added to the collection tube of the impinger. Only methanol was used for the collection fluid in the impingers (no base was added). The sampling trains were sealed and then rapidly warmed to approximately 45 ºC to accelerate and enhance the conversion of HFPO to 2-MTP.

GC/MS VOA

Impinger Sample Preparation and Analysis: Impinger samples were analyzed for the volatile organic target analytes by purge and trap GCMS using TestAmerica Knoxville standard operating procedure KNOX-MS-0015, based on the following method:

- SW-846 8260B, “Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)”

Each sample is prepared by adding a known amount of sample to the purge water in a purge and trap vessel and spiking with internal standards, surrogates, and matrix spike analytes (as needed). Volatile compounds are introduced into the gas chromatograph by the purge and trap method. The components are separated using the chromatograph and detected using a mass spectrometer, which provides both qualitative and quantitative information.

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:

C	= On-column concentration, µg/L
DF	= Dilution factor
W	= Volume of water purged, L
Vt	= Methanol extract final volume, µL
Va	= Volume of extract analyzed, µL

Method 8260B: The following samples were diluted to bring the concentration of target analytes within the calibration range: C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES (140-11220-1), C-2021 R1 IMPINGERS #3 WITH MEOH RINSES (140-11220-2), C-2022 R1 IMPINGERS #4 WITH MEOH RINSES (140-11220-3), C-2023 R1 IMPINGERS #5 WITH MEOH RINSES (140-11220-4), C-2025 R2 IMPINGERS #1 & #2 WITH FH MEOH RINSES (140-11220-6), C-2026 R2 IMPINGERS #3 WITH MEOH RINSES (140-11220-7), C-2027 R2 IMPINGERS #4 WITH MEOH RINSES (140-11220-8), C-2028 R2 IMPINGERS #5 WITH MEOH RINSES (140-11220-9), C-2030 R3 IMPINGERS #1 & #2 WITH FH MEOH RINSES (140-11220-11), C-2031 R3 IMPINGERS #3 WITH MEOH RINSES (140-11220-12), C-2032 R3 IMPINGERS #4 WITH MEOH RINSES (140-11220-13) and C-2033 R3 IMPINGERS #5 WITH MEOH RINSES (140-11220-14). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS VOA

Analysis Batch: 19428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11220-1	C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19452
140-11220-2	C-2021 R1 IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-3	C-2022 R1 IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-4	C-2023 R1 IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-5	C-2024 R1 IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-6	C-2025 R2 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19452
140-11220-7	C-2026 R2 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	8260B	19452
140-11220-8	C-2027 R2 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	8260B	19452
140-11220-9	C-2028 R2 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	8260B	19452
140-11220-10	C-2029 R2 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	8260B	19452
140-11220-11	C-2030 R3 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19452
140-11220-12	C-2031 R3 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	8260B	19452
140-11220-13	C-2032 R3 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	8260B	19452
140-11220-14	C-2033 R3 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	8260B	19452
140-11220-15	C-2034 R3 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	8260B	19452
140-11220-16	C-2035 QC IMPINGERS #1 & #2 WITH FH MEO	Total/NA	Air	8260B	19452
140-11220-17	C-2036 QC IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-18	C-2037 QC IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-19	C-2038 QC IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-20	C-2039 QC IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	8260B	19452
MB 140-19452/34-A	Method Blank	Total/NA	Air	8260B	19452
LCS 140-19452/33-A	Lab Control Sample	Total/NA	Air	8260B	19452
140-11220-1 MS	C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19452
140-11220-1 MSD	C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19452
140-11220-2 MS	C-2021 R1 IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-2 MSD	C-2021 R1 IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-3 MS	C-2022 R1 IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	8260B	19452

Prep Batch: 19452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11220-1	C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11220-2	C-2021 R1 IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-3	C-2022 R1 IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-4	C-2023 R1 IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-5	C-2024 R1 IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-6	C-2025 R2 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11220-7	C-2026 R2 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11220-8	C-2027 R2 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11220-9	C-2028 R2 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11220-10	C-2029 R2 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11220-11	C-2030 R3 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11220-12	C-2031 R3 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11220-13	C-2032 R3 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11220-14	C-2033 R3 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11220-15	C-2034 R3 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11220-16	C-2035 QC IMPINGERS #1 & #2 WITH FH MEO	Total/NA	Air	MeOH Prep	
140-11220-17	C-2036 QC IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-18	C-2037 QC IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-19	C-2038 QC IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-20	C-2039 QC IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-21	C-2040 QC MEOH RB	Total/NA	Air	MeOH Prep	

GC/MS VOA (Continued)

Prep Batch: 19452 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11220-22	C-2041 QC MEOH TB	Total/NA	Air	MeOH Prep	
MB 140-19452/34-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-19452/33-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-11220-1 MS	C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11220-1 MSD	C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11220-2 MS	C-2021 R1 IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-2 MSD	C-2021 R1 IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-3 MS	C-2022 R1 IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-3 MSD	C-2022 R1 IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-4 MS	C-2023 R1 IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-4 MSD	C-2023 R1 IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-5 MS	C-2024 R1 IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11220-5 MSD	C-2024 R1 IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	

Analysis Batch: 19483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11220-21	C-2040 QC MEOH RB	Total/NA	Air	8260B	19452
140-11220-22	C-2041 QC MEOH TB	Total/NA	Air	8260B	19452
140-11220-3 MSD	C-2022 R1 IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-4 MS	C-2023 R1 IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-4 MSD	C-2023 R1 IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-5 MS	C-2024 R1 IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	8260B	19452
140-11220-5 MSD	C-2024 R1 IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	8260B	19452

Client Sample ID: C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11220-1

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	768		15.5	15.5	ug/Sample		04/10/18 09:46	04/10/18 12:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 160*	*04/10/18 09:46*	*04/10/18 12:59*	*1*
4-Bromofluorobenzene (Surr)	*104*		*57 - 152*	*04/10/18 09:46*	*04/10/18 12:59*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/10/18 09:46*	*04/10/18 12:59*	*1*
Toluene-d8 (Surr)	*98*		*71 - 139*	*04/10/18 09:46*	*04/10/18 12:59*	*1*

Client Sample ID: C-2021 R1 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11220-2

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	627		13.4	13.4	ug/Sample		04/10/18 09:46	04/10/18 13:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 160*	*04/10/18 09:46*	*04/10/18 13:24*	*1*
4-Bromofluorobenzene (Surr)	*105*		*57 - 152*	*04/10/18 09:46*	*04/10/18 13:24*	*1*
Dibromofluoromethane (Surr)	*98*		*62 - 134*	*04/10/18 09:46*	*04/10/18 13:24*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*04/10/18 09:46*	*04/10/18 13:24*	*1*

Client Sample ID: C-2022 R1 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11220-3

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	469		7.97	7.97	ug/Sample		04/10/18 09:46	04/10/18 13:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 160*	*04/10/18 09:46*	*04/10/18 13:48*	*1*
4-Bromofluorobenzene (Surr)	*106*		*57 - 152*	*04/10/18 09:46*	*04/10/18 13:48*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/10/18 09:46*	*04/10/18 13:48*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*04/10/18 09:46*	*04/10/18 13:48*	*1*

Client Sample ID: C-2023 R1 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11220-4

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	304		7.07	7.07	ug/Sample		04/10/18 09:46	04/10/18 14:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 160*	*04/10/18 09:46*	*04/10/18 14:13*	*1*
4-Bromofluorobenzene (Surr)	*104*		*57 - 152*	*04/10/18 09:46*	*04/10/18 14:13*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/10/18 09:46*	*04/10/18 14:13*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*04/10/18 09:46*	*04/10/18 14:13*	*1*

Client Sample ID: C-2024 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-5

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	178		5.58	5.58	ug/Sample		04/10/18 09:46	04/10/18 14:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 160*	*04/10/18 09:46*	*04/10/18 14:37*	*1*
4-Bromofluorobenzene (Surr)	*107*		*57 - 152*	*04/10/18 09:46*	*04/10/18 14:37*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/10/18 09:46*	*04/10/18 14:37*	*1*
Toluene-d8 (Surr)	*98*		*71 - 139*	*04/10/18 09:46*	*04/10/18 14:37*	*1*

Client Sample ID: C-2025 R2 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11220-6

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	1330		22.9	22.9	ug/Sample		04/10/18 09:46	04/10/18 15:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 160*	*04/10/18 09:46*	*04/10/18 15:01*	*1*
4-Bromofluorobenzene (Surr)	*109*		*57 - 152*	*04/10/18 09:46*	*04/10/18 15:01*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/10/18 09:46*	*04/10/18 15:01*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*04/10/18 09:46*	*04/10/18 15:01*	*1*

Client Sample ID: C-2026 R2 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11220-7

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	996		18.3	18.3	ug/Sample		04/10/18 09:46	04/10/18 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 160*	*04/10/18 09:46*	*04/10/18 15:26*	*1*
4-Bromofluorobenzene (Surr)	*106*		*57 - 152*	*04/10/18 09:46*	*04/10/18 15:26*	*1*
Dibromofluoromethane (Surr)	*95*		*62 - 134*	*04/10/18 09:46*	*04/10/18 15:26*	*1*
Toluene-d8 (Surr)	*101*		*71 - 139*	*04/10/18 09:46*	*04/10/18 15:26*	*1*

Client Sample ID: C-2027 R2 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11220-8

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	679		14.1	14.1	ug/Sample		04/10/18 09:46	04/10/18 15:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 160*	*04/10/18 09:46*	*04/10/18 15:50*	*1*
4-Bromofluorobenzene (Surr)	*106*		*57 - 152*	*04/10/18 09:46*	*04/10/18 15:50*	*1*
Dibromofluoromethane (Surr)	*97*		*62 - 134*	*04/10/18 09:46*	*04/10/18 15:50*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*04/10/18 09:46*	*04/10/18 15:50*	*1*

Client Sample ID: C-2028 R2 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11220-9

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	416		8.50	8.50	ug/Sample		04/10/18 09:46	04/10/18 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 160*	*04/10/18 09:46*	*04/10/18 16:15*	*1*
4-Bromofluorobenzene (Surr)	*104*		*57 - 152*	*04/10/18 09:46*	*04/10/18 16:15*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/10/18 09:46*	*04/10/18 16:15*	*1*
Toluene-d8 (Surr)	*98*		*71 - 139*	*04/10/18 09:46*	*04/10/18 16:15*	*1*

Client Sample ID: C-2029 R2 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-10

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	255		5.37	5.37	ug/Sample		04/10/18 09:46	04/10/18 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 160*	*04/10/18 09:46*	*04/10/18 16:39*	*1*
4-Bromofluorobenzene (Surr)	*106*		*57 - 152*	*04/10/18 09:46*	*04/10/18 16:39*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/10/18 09:46*	*04/10/18 16:39*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*04/10/18 09:46*	*04/10/18 16:39*	*1*

Client Sample ID: C-2030 R3 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11220-11

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	1050		18.3	18.3	ug/Sample		04/10/18 09:46	04/10/18 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 160*	*04/10/18 09:46*	*04/10/18 17:06*	*1*
4-Bromofluorobenzene (Surr)	*105*		*57 - 152*	*04/10/18 09:46*	*04/10/18 17:06*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/10/18 09:46*	*04/10/18 17:06*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*04/10/18 09:46*	*04/10/18 17:06*	*1*

Client Sample ID: C-2031 R3 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11220-12

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	773		14.4	14.4	ug/Sample		04/10/18 09:46	04/10/18 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 160*	*04/10/18 09:46*	*04/10/18 17:30*	*1*
4-Bromofluorobenzene (Surr)	*107*		*57 - 152*	*04/10/18 09:46*	*04/10/18 17:30*	*1*
Dibromofluoromethane (Surr)	*95*		*62 - 134*	*04/10/18 09:46*	*04/10/18 17:30*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*04/10/18 09:46*	*04/10/18 17:30*	*1*

Client Sample ID: C-2032 R3 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11220-13

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	544		10.9	10.9	ug/Sample		04/10/18 09:46	04/10/18 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 160*	*04/10/18 09:46*	*04/10/18 17:55*	*1*
4-Bromofluorobenzene (Surr)	*105*		*57 - 152*	*04/10/18 09:46*	*04/10/18 17:55*	*1*
Dibromofluoromethane (Surr)	*97*		*62 - 134*	*04/10/18 09:46*	*04/10/18 17:55*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*04/10/18 09:46*	*04/10/18 17:55*	*1*

Client Sample ID: C-2033 R3 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11220-14

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	339		6.53	6.53	ug/Sample		04/10/18 09:46	04/10/18 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*70 - 160*	*04/10/18 09:46*	*04/10/18 18:19*	*1*
4-Bromofluorobenzene (Surr)	*106*		*57 - 152*	*04/10/18 09:46*	*04/10/18 18:19*	*1*
Dibromofluoromethane (Surr)	*96*		*62 - 134*	*04/10/18 09:46*	*04/10/18 18:19*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*04/10/18 09:46*	*04/10/18 18:19*	*1*

Client Sample ID: C-2034 R3 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-15

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	203		5.25	5.25	ug/Sample		04/10/18 09:46	04/10/18 18:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 160*	*04/10/18 09:46*	*04/10/18 18:43*	*1*
4-Bromofluorobenzene (Surr)	*106*		*57 - 152*	*04/10/18 09:46*	*04/10/18 18:43*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/10/18 09:46*	*04/10/18 18:43*	*1*
Toluene-d8 (Surr)	*98*		*71 - 139*	*04/10/18 09:46*	*04/10/18 18:43*	*1*

Client Sample ID: C-2035 QC IMPINGERS #1 & #2 WITH FH MEOH RINSES BT

Lab Sample ID: 140-11220-16

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	20.8		10.5	10.5	ug/Sample		04/10/18 09:46	04/10/18 19:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 160*	*04/10/18 09:46*	*04/10/18 19:08*	*1*
4-Bromofluorobenzene (Surr)	*108*		*57 - 152*	*04/10/18 09:46*	*04/10/18 19:08*	*1*
Dibromofluoromethane (Surr)	*95*		*62 - 134*	*04/10/18 09:46*	*04/10/18 19:08*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*04/10/18 09:46*	*04/10/18 19:08*	*1*

Client Sample ID: C-2036 QC IMPINGERS #3 WITH MEOH RINSES BT

Lab Sample ID: 140-11220-17

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	24.2		6.45	6.45	ug/Sample		04/10/18 09:46	04/10/18 19:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 160*	*04/10/18 09:46*	*04/10/18 19:32*	*1*
4-Bromofluorobenzene (Surr)	*104*		*57 - 152*	*04/10/18 09:46*	*04/10/18 19:32*	*1*
Dibromofluoromethane (Surr)	*94*		*62 - 134*	*04/10/18 09:46*	*04/10/18 19:32*	*1*
Toluene-d8 (Surr)	*98*		*71 - 139*	*04/10/18 09:46*	*04/10/18 19:32*	*1*

Client Sample ID: C-2037 QC IMPINGERS #4 WITH MEOH RINSES BT

Lab Sample ID: 140-11220-18

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	21.6		6.10	6.10	ug/Sample		04/10/18 09:46	04/10/18 19:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 160*	*04/10/18 09:46*	*04/10/18 19:57*	*1*
4-Bromofluorobenzene (Surr)	*108*		*57 - 152*	*04/10/18 09:46*	*04/10/18 19:57*	*1*
Dibromofluoromethane (Surr)	*98*		*62 - 134*	*04/10/18 09:46*	*04/10/18 19:57*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*04/10/18 09:46*	*04/10/18 19:57*	*1*

Client Sample ID: C-2038 QC IMPINGERS #5 WITH MEOH RINSES BT

Lab Sample ID: 140-11220-19

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	15.6		6.61	6.61	ug/Sample		04/10/18 09:46	04/10/18 20:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 160*	*04/10/18 09:46*	*04/10/18 20:21*	*1*
4-Bromofluorobenzene (Surr)	*110*		*57 - 152*	*04/10/18 09:46*	*04/10/18 20:21*	*1*
Dibromofluoromethane (Surr)	*95*		*62 - 134*	*04/10/18 09:46*	*04/10/18 20:21*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*04/10/18 09:46*	*04/10/18 20:21*	*1*

Client Sample ID: C-2039 QC IMPINGERS #6 WITH MEOH RINSES BT

Lab Sample ID: 140-11220-20

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	5.92		5.91	5.91	ug/Sample		04/10/18 09:46	04/10/18 20:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 160*	*04/10/18 09:46*	*04/10/18 20:46*	*1*
4-Bromofluorobenzene (Surr)	*109*		*57 - 152*	*04/10/18 09:46*	*04/10/18 20:46*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*04/10/18 09:46*	*04/10/18 20:46*	*1*
Toluene-d8 (Surr)	*101*		*71 - 139*	*04/10/18 09:46*	*04/10/18 20:46*	*1*

Client Sample ID: C-2040 QC MEOH RB

Lab Sample ID: 140-11220-21

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		9.35	9.35	ug/Sample		04/10/18 09:46	04/12/18 12:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 160*	*04/10/18 09:46*	*04/12/18 12:50*	*1*
4-Bromofluorobenzene (Surr)	*106*		*57 - 152*	*04/10/18 09:46*	*04/12/18 12:50*	*1*
Dibromofluoromethane (Surr)	*98*		*62 - 134*	*04/10/18 09:46*	*04/12/18 12:50*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*04/10/18 09:46*	*04/12/18 12:50*	*1*

Client Sample ID: C-2041 QC MEOH TB

Lab Sample ID: 140-11220-22

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		8.14	8.14	ug/Sample		04/10/18 09:46	04/12/18 13:14	1

Client Sample ID: C-2041 QC MEOH TB
Lab Sample ID: 140-11220-22

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		70 - 160	04/10/18 09:46	04/12/18 13:14	1
4-Bromofluorobenzene (Surr)	105		57 - 152	04/10/18 09:46	04/12/18 13:14	1
Dibromofluoromethane (Surr)	97		62 - 134	04/10/18 09:46	04/12/18 13:14	1
Toluene-d8 (Surr)	98		71 - 139	04/10/18 09:46	04/12/18 13:14	1

Default Detection Limits

Client: Chemours Company FC, LLC The
Project/Site: M18 HFPO Monomer Division Stack Test

TestAmerica Job ID: 140-11220-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Prep: MeOH Prep

Analyte	RL	MDL	Units	Method
2-MTP as HFPO	2.50	2.50	ug/Sample	8260B

Surrogate Summary

Client: Chemours Company FC, LLC The
Project/Site: M18 HFPO Monomer Division Stack Test

TestAmerica Job ID: 140-11220-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(70-160)	(57-152)	(62-134)	(71-139)
140-11220-1	C-2020 R1 IMPINGERS #1 & #2	107	104	100	98
140-11220-1 MS	C-2020 R1 IMPINGERS #1 & #2	104	99	100	98
140-11220-1 MSD	C-2020 R1 IMPINGERS #1 & #2	105	99	102	100
140-11220-2	C-2021 R1 IMPINGERS #3 WIT	108	105	98	102
140-11220-2 MS	C-2021 R1 IMPINGERS #3 WIT	99	102	99	99
140-11220-2 MSD	C-2021 R1 IMPINGERS #3 WIT	104	98	100	101
140-11220-3	C-2022 R1 IMPINGERS #4 WIT	105	106	100	100
140-11220-3 MS	C-2022 R1 IMPINGERS #4 WIT	99	100	99	99
140-11220-3 MSD	C-2022 R1 IMPINGERS #4 WIT	104	99	101	99
140-11220-4	C-2023 R1 IMPINGERS #5 WIT	106	104	100	99
140-11220-4 MS	C-2023 R1 IMPINGERS #5 WIT	103	97	102	99
140-11220-4 MSD	C-2023 R1 IMPINGERS #5 WIT	103	100	101	97
140-11220-5	C-2024 R1 IMPINGERS #6 WIT	105	107	101	98
140-11220-5 MS	C-2024 R1 IMPINGERS #6 WIT	100	98	102	98
140-11220-5 MSD	C-2024 R1 IMPINGERS #6 WIT	100	99	99	98
140-11220-6	C-2025 R2 IMPINGERS #1 & #2	105	109	99	103
140-11220-7	C-2026 R2 IMPINGERS #3 WIT	107	106	95	101
140-11220-8	C-2027 R2 IMPINGERS #4 WIT	104	106	97	102
140-11220-9	C-2028 R2 IMPINGERS #5 WIT	106	104	100	98
140-11220-10	C-2029 R2 IMPINGERS #6 WIT	106	106	99	97
140-11220-11	C-2030 R3 IMPINGERS #1 & #2	106	105	99	99
140-11220-12	C-2031 R3 IMPINGERS #3 WIT	105	107	95	100
140-11220-13	C-2032 R3 IMPINGERS #4 WIT	105	105	97	100
140-11220-14	C-2033 R3 IMPINGERS #5 WIT	107	106	96	99
140-11220-15	C-2034 R3 IMPINGERS #6 WIT	105	106	99	98
140-11220-16	C-2035 QC IMPINGERS #1 & #2	105	108	95	99
140-11220-17	C-2036 QC IMPINGERS #3 WIT	105	104	94	98
140-11220-18	C-2037 QC IMPINGERS #4 WIT	104	108	98	100
140-11220-19	C-2038 QC IMPINGERS #5 WIT	104	110	95	99
140-11220-20	C-2039 QC IMPINGERS #6 WIT	103	109	90	101
140-11220-21	C-2040 QC MEOH RB	102	106	98	100
140-11220-22	C-2041 QC MEOH TB	102	105	97	98
LCS 140-19452/33-A	Lab Control Sample	104	99	99	99
MB 140-19452/34-A	Method Blank	103	107	98	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 140-19452/34-A
Matrix: Air
Analysis Batch: 19428

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 19452

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	5 D		2.18	2.18	ug/Sample		04/10/18 11:19	04/10/18 12:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*60 - 1/ 0*	*048108/19 11:17*	*048108/19 12:10*	*1*
4-5roB orhuorof enbene (Surr)	*106*		*z6 - 1z2*	*048108/19 11:17*	*048108/19 12:10*	*1*
Dif roB orhuoroB ethane (Surr)	*39*		*/ 2 - 174*	*048108/19 11:17*	*048108/19 12:10*	*1*
Toluene-d9 (Surr)	*33*		*61 - 173*	*048108/19 11:17*	*048108/19 12:10*	*1*

Lab Sample ID: LCS 140-19452/33-A
Matrix: Air
Analysis Batch: 19428

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 19452

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-MTP as HFPO			26.0	26.63		ug/Sample		102			

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*33*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*33*		*/ 2 - 174*
Toluene-d9 (Surr)	*33*		*61 - 173*

Lab Sample ID: 140-11220-1 MS
Matrix: Air
Analysis Batch: 19428

Client Sample ID: C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES
Prep Type: Total/NA
Prep Batch: 19452

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-MTP as HFPO	738		178	840.2	4	ug/Sample		41			

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*33*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*100*		*/ 2 - 174*
Toluene-d9 (Surr)	*39*		*61 - 173*

Lab Sample ID: 140-11220-1 MSD
Matrix: Air
Analysis Batch: 19428

Client Sample ID: C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES
Prep Type: Total/NA
Prep Batch: 19452

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	738		178	891.1	4	ug/Sample		93		1	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*10z*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*33*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*102*		*/ 2 - 174*
Toluene-d9 (Surr)	*100*		*61 - 173*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-11220-2 MS — **Client Sample ID: C-2021 R1 IMPINGERS #3 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 19428 — **Prep Batch: 19452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	327		169	394.2	4	ug/Sample		6	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*33*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*102*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*33*		*/ 2 - 174*
Toluene-d9 (Surr)	*33*		*61 - 173*

Lab Sample ID: 140-11220-2 MSD — **Client Sample ID: C-2021 R1 IMPINGERS #3 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 19428 — **Prep Batch: 19452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	327		169	30N8	4	ug/Sample		-11		4	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*39*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*100*		*/ 2 - 174*
Toluene-d9 (Surr)	*101*		*61 - 173*

Lab Sample ID: 140-11220-3 MS — **Client Sample ID: C-2022 R1 IMPINGERS #4 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 19428 — **Prep Batch: 19452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	43N		N1.9	9N2.0	4	ug/Sample		-84	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*33*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*100*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*33*		*/ 2 - 174*
Toluene-d9 (Surr)	*33*		*61 - 173*

Lab Sample ID: 140-11220-3 MSD — **Client Sample ID: C-2022 R1 IMPINGERS #4 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 19483 — **Prep Batch: 19452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	43N		N1.9	6N8.1	4	ug/Sample		141		42	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*33*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*101*		*/ 2 - 174*
Toluene-d9 (Surr)	*33*		*61 - 173*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-11220-4 MS — **Client Sample ID: C-2023 R1 IMPINGERS #5 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 19483 — **Prep Batch: 19452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	904		80.N	278.3		ug/Sample		-91	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*36*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*102*		*/ 2 - 174*
Toluene-d9 (Surr)	*33*		*61 - 173*

Lab Sample ID: 140-11220-4 MSD — **Client Sample ID: C-2023 R1 IMPINGERS #5 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 19483 — **Prep Batch: 19452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	904		80.N	286.2		ug/Sample		-29		2	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*107*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*100*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*101*		*/ 2 - 174*
Toluene-d9 (Surr)	*36*		*61 - 173*

Lab Sample ID: 140-11220-5 MS — **Client Sample ID: C-2024 R1 IMPINGERS #6 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 19483 — **Prep Batch: 19452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	178		39.N	298.2		ug/Sample		N4	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*39*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*102*		*/ 2 - 174*
Toluene-d9 (Surr)	*39*		*61 - 173*

Lab Sample ID: 140-11220-5 MSD — **Client Sample ID: C-2024 R1 IMPINGERS #6 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 19483 — **Prep Batch: 19452**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	178		39.N	290.1		ug/Sample		81		9	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*60 - 1/ 0*
4-5roB orhuorof enbene (Surr)	*33*		*z6 - 1z2*
Dif roB orhuoroB ethane (Surr)	*33*		*/ 2 - 174*
Toluene-d9 (Surr)	*39*		*61 - 173*

Client Sample ID: C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11220-1

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	56.93 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	80 uL	5 mL	19428	04/10/18 12:59	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2021 R1 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11220-2

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.53 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	40 uL	5 mL	19428	04/10/18 13:24	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2022 R1 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11220-3

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.57 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	70 uL	5 mL	19428	04/10/18 13:48	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2023 R1 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11220-4

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.90 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	80 uL	5 mL	19428	04/10/18 14:13	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2024 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-5

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.56 mL	19452	04/10/18 09:46	BKK	TAL KNX

Client Sample ID: C-2024 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-5

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 14:37	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2025 R2 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11220-6

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	52.37 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	19428	04/10/18 15:01	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2026 R2 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11220-7

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.15 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	30 uL	5 mL	19428	04/10/18 15:26	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2027 R2 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11220-8

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.77 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	40 uL	5 mL	19428	04/10/18 15:50	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2028 R2 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11220-9

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	31.12 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	80 uL	5 mL	19428	04/10/18 16:15	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2029 R2 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-10

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.61 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 16:39	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2030 R3 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11220-11

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	50.37 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	60 uL	5 mL	19428	04/10/18 17:06	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2031 R3 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11220-12

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	26.34 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	40 uL	5 mL	19428	04/10/18 17:30	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2032 R3 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11220-13

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.99 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	19428	04/10/18 17:55	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2033 R3 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11220-14

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	23.94 mL	19452	04/10/18 09:46	BKK	TAL KNX

Client Sample ID: C-2033 R3 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11220-14

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	80 uL	5 mL	19428	04/10/18 18:19	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2034 R3 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-15

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.03 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 18:43	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2035 QC IMPINGERS #1 & #2 WITH FH MEOH RINSES BT

Lab Sample ID: 140-11220-16

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	47.89 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 19:08	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2036 QC IMPINGERS #3 WITH MEOH RINSES BT

Lab Sample ID: 140-11220-17

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	29.55 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 19:32	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2037 QC IMPINGERS #4 WITH MEOH RINSES BT

Lab Sample ID: 140-11220-18

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	27.94 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 19:57	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2038 QC IMPINGERS #5 WITH MEOH RINSES BT

Lab Sample ID: 140-11220-19

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	30.29 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 20:21	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2039 QC IMPINGERS #6 WITH MEOH RINSES BT

Lab Sample ID: 140-11220-20

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	27.07 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 20:46	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2040 QC MEOH RB

Lab Sample ID: 140-11220-21

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	42.68 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19483	04/12/18 12:50	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2041 QC MEOH TB

Lab Sample ID: 140-11220-22

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	37.26 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19483	04/12/18 13:14	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-19452/34-A

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19452	04/10/18 11:13	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 12:10	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-19452/33-A

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19452	04/10/18 11:13	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19428	04/10/18 11:46	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES
Lab Sample ID: 140-11220-1 MS

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	56.93 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	80 uL	5 mL	19428	04/10/18 21:10	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2020 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES
Lab Sample ID: 140-11220-1 MSD

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	56.93 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	80 uL	5 mL	19428	04/10/18 21:35	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2021 R1 IMPINGERS #3 WITH MEOH RINSES
Lab Sample ID: 140-11220-2 MS

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.53 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	40 uL	5 mL	19428	04/10/18 21:59	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2021 R1 IMPINGERS #3 WITH MEOH RINSES
Lab Sample ID: 140-11220-2 MSD

Date Collected: 04/05/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.53 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	40 uL	5 mL	19428	04/10/18 22:23	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2022 R1 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11220-3 MS

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.57 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	70 uL	5 mL	19428	04/10/18 22:48	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2022 R1 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11220-3 MSD

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.57 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	70 uL	5 mL	19483	04/12/18 14:27	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2023 R1 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11220-4 MS

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.90 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	80 uL	5 mL	19483	04/12/18 14:52	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2023 R1 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11220-4 MSD

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.90 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	80 uL	5 mL	19483	04/12/18 15:17	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2024 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-5 MS

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.56 mL	19452	04/10/18 09:46	BKK	TAL KNX

Client Sample ID: C-2024 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-5 MS

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	19483	04/12/18 15:41	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: C-2024 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11220-5 MSD

Date Collected: 04/05/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.56 mL	19452	04/10/18 09:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	19483	04/12/18 16:06	BKK	TAL KNX
	Instrument ID: MK									

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Chemours Company FC, LLC The
TestAmerica Job ID: 140-11220-1
Project/Site: M18 HFPO Monomer Division Stack Test

Laboratory: TestAmerica Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		N/A	
ANAB	DoD ELAP		L2311	02-13-19
Arkansas DEQ	State Program	6	88-0688	06-16-18
California	State Program	9	2423	06-30-18
Colorado	State Program	8	TN00009	02-28-19
Connecticut	State Program	1	PH-0223	09-30-19
Florida	NELAP	4	E87177	06-30-18
Georgia	State Program	4	906	04-13-20
Hawaii	State Program	9	N/A	04-13-19
Kansas	NELAP	7	E-10349	10-31-18
Kentucky (DW)	State Program	4	90101	12-31-18
Louisiana	NELAP	6	83979	06-30-18
Louisiana (DW)	NELAP	6	LA160005	12-31-18
Maryland	State Program	3	277	03-31-19
Michigan	State Program	5	9933	04-13-20
Nevada	State Program	9	TN00009	07-31-18
New Jersey	NELAP	2	TN001	06-30-18
New York	NELAP	2	10781	03-31-19
North Carolina (DW)	State Program	4	21705	07-31-18
North Carolina (WW/SW)	State Program	4	64	12-31-18
Ohio VAP	State Program	5	CL0059	11-22-18
Oklahoma	State Program	6	9415	08-31-18
Oregon	NELAP	10	TNI0189	01-01-19
Pennsylvania	NELAP	3	68-00576	12-31-18
Tennessee	State Program	4	2014	04-13-20
Texas	NELAP	6	T104704380-16-9	08-31-18
US Fish & Wildlife	Federal		LE-058448-0	07-31-18
USDA	Federal		P330-16-00262	08-20-19
Utah	NELAP	8	TN00009	07-31-18
Virginia	NELAP	3	460176	09-14-18
Washington	State Program	10	C593	01-19-19
West Virginia (DW)	State Program	3	9955C	12-31-18
West Virginia DEP	State Program	3	345	04-30-18
Wisconsin	State Program	5	998044300	08-31-18

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-11220-1

SDG No.:

Instrument ID: MK Analysis Batch Number: 18417

Lab Sample ID: IC 140-18417/3 Client Sample ID:

Date Analyzed: 02/23/18 18:04 Lab File ID: KB23IC101.D GC Column: Rxi-

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	D
Tetrahydrofuran	4.46	Incomplete Integration	barlozhetskayaa	02/27/
1,1,2,2-Tetrachloroethane	9.15	Incomplete Integration	barlozhetskayaa	02/27/
1,2,3-Trichloropropane		Invalid Compound ID	barlozhetskayaa	02/27/
1,2-Dibromo-3-Chloropropane		Invalid Compound ID	barlozhetskayaa	02/27/
1,4-Dioxane		Invalid Compound ID	barlozhetskayaa	02/27/
cis-1,4-Dichloro-2-butene		Invalid Compound ID	barlozhetskayaa	02/27/
trans-1,4-Dichloro-2-butene		Invalid Compound ID	barlozhetskayaa	02/27/
Vinyl acetate		Invalid Compound ID	barlozhetskayaa	02/27/
1,4-Dichlorobenzene	10.61	Wrong peak	barlozhetskayaa	02/27/

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-11220-1

SDG No.:

Instrument ID: MK Analysis Batch Number: 18558

Lab Sample ID: IC 140-18558/3 Client Sample ID:

Date Analyzed: 03/02/18 11:06 Lab File ID: KC02C201.D GC Column: Rxi-

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	D
2-Nitropropane		Invalid Compound ID	barlozhetskayaa	03/06/
Ethyl acetate		Invalid Compound ID	barlozhetskayaa	03/06/
n-Butanol		Invalid Compound ID	barlozhetskayaa	03/06/

Lab Sample ID: IC 140-18558/4 Client Sample ID:

Date Analyzed: 03/02/18 11:31 Lab File ID: KC02C202.D GC Column: Rxi-

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	D
2-Nitropropane		Invalid Compound ID	barlozhetskayaa	03/06/

ANALYTICAL REPORT

Job Number: 140-11221-1

Job Description: HFPO VE South Original Field Test

Contract Number: LBIO-67048

For:
Chemours Company FC, LLC The
c/o AECOM
Sabre Building, Suite 300
4051 Ogletown Road
Newark, DE 19713

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager I
5/21/2018 3:44 PM

Courtney M Adkins, Project Manager I
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
05/21/2018

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Chemours Company FC, LLC The
Project/Site: HFPO VE South Original Field Test

TestAmerica Job ID: 140-11221-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL KNX
MeOH Prep	Methanol Impinger Preparation	None	TAL KNX

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: Chemours Company FC, LLC The
Project/Site: HFPO VE South Original Field Test

TestAmerica Job ID: 140-11221-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-11221-1	H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES	Air	04/03/18 00:00	04/06/18 11:50
140-11221-2	H-2421 R1 IMPINGERS #3 WITH MEOH RINSES	Air	04/03/18 00:00	04/06/18 11:50
140-11221-3	H-2422 R1 IMPINGERS #4 WITH MEOH RINSES	Air	04/03/18 00:00	04/06/18 11:50
140-11221-4	H-2423 R1 IMPINGERS #5 WITH MEOH RINSES	Air	04/03/18 00:00	04/06/18 11:50
140-11221-5	H-2424 R1 IMPINGERS #6 WITH MEOH RINSES	Air	04/03/18 00:00	04/06/18 11:50
140-11221-6	H-2425 R2 IMPINGERS #1 & #2 WITH FH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-7	H-2426 R2 IMPINGERS #3 WITH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-8	H-2427 R2 IMPINGERS #4 WITH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-9	H-2428 R2 IMPINGERS #5 WITH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-10	H-2429 R2 IMPINGERS #6 WITH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-11	H-2430 R3 IMPINGERS #1 & #2 WITH FH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-12	H-2431 R3 IMPINGERS #3 WITH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-13	H-2432 R3 IMPINGERS #4 WITH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-14	H-2433 R3 IMPINGERS #5 WITH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-15	H-2434 R3 IMPINGERS #6 WITH MEOH RINSES	Air	04/04/18 00:00	04/06/18 11:50
140-11221-16	H-2435 QC IMPINGERS #1 & #2 WITH FH MEOH RINSES BT	Air	04/04/18 00:00	04/06/18 11:50
140-11221-17	H-2436 QC IMPINGERS #3 WITH MEOH RINSES BT	Air	04/04/18 00:00	04/06/18 11:50
140-11221-18	H-2437 QC IMPINGERS #4 WITH MEOH RINSES BT	Air	04/04/18 00:00	04/06/18 11:50
140-11221-19	H-2438 QC IMPINGERS #5 WITH MEOH RINSES BT	Air	04/04/18 00:00	04/06/18 11:50
140-11221-20	H-2439 QC IMPINGERS #6 WITH MEOH RINSES BT	Air	04/04/18 00:00	04/06/18 11:50
140-11221-21	H-2440 QC MEOH RB	Air	04/03/18 00:00	04/06/18 11:50
140-11221-22	H-2441 QC MEOH TB	Air	04/03/18 00:00	04/06/18 11:50

Job Narrative
140-11221-1

Sample Receipt

The samples were received on April 6, 2018 at 11:50 AM in good condition and properly preserved. The temperature of the cooler at receipt was 0.1º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

HFPO VE South Stack Original Field Test

The source gas was pulled through six (6) midget impingers containing methanol using a peristaltic pump. The first impinger had only a short drop tube that was not long enough to enter the methanol added to the collection tube of the impinger. Only methanol was used for the collection fluid in the impingers (no base was added). The sampling trains were sealed and then rapidly warmed to approximately 45º C to accelerate and enhance the conversion of HFPO to 2-MTP.

GC/MS VOA

Impinger Sample Preparation and Analysis: Impinger samples were analyzed for the volatile organic target analytes by purge and trap GCMS using TestAmerica Knoxville standard operating procedure KNOX-MS-0015, based on the following method:

- SW-846 8260B, “Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)”

Each sample is prepared by adding a known amount of sample to the purge water in a purge and trap vessel and spiking with internal standards, surrogates, and matrix spike analytes (as needed). Volatile compounds are introduced into the gas chromatograph by the purge and trap method. The components are separated using the chromatograph and detected using a mass spectrometer, which provides both qualitative and quantitative information.

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS VOA

Prep Batch: 19459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11221-1	H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11221-2	H-2421 R1 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-3	H-2422 R1 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-4	H-2423 R1 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-5	H-2424 R1 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-6	H-2425 R2 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11221-7	H-2426 R2 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-8	H-2427 R2 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-9	H-2428 R2 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-10	H-2429 R2 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-11	H-2430 R3 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11221-12	H-2431 R3 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-13	H-2432 R3 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-14	H-2433 R3 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-15	H-2434 R3 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-16	H-2435 QC IMPINGERS #1 & #2 WITH FH MEO	Total/NA	Air	MeOH Prep	
140-11221-17	H-2436 QC IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11221-18	H-2437 QC IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11221-19	H-2438 QC IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11221-20	H-2439 QC IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	MeOH Prep	
140-11221-21	H-2440 QC MEOH RB	Total/NA	Air	MeOH Prep	
140-11221-22	H-2441 QC MEOH TB	Total/NA	Air	MeOH Prep	
MB 140-19459/34-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-19459/33-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-11221-1 MS	H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11221-1 MSD	H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	MeOH Prep	
140-11221-2 MS	H-2421 R1 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-2 MSD	H-2421 R1 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-3 MS	H-2422 R1 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-3 MSD	H-2422 R1 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-4 MS	H-2423 R1 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-4 MSD	H-2423 R1 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-5 MS	H-2424 R1 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11221-5 MSD	H-2424 R1 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	

Analysis Batch: 20155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11221-21	H-2440 QC MEOH RB	Total/NA	Air	8260B	19459
140-11221-22	H-2441 QC MEOH TB	Total/NA	Air	8260B	19459

Analysis Batch: 20191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11221-1	H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19459
140-11221-2	H-2421 R1 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-3	H-2422 R1 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-4	H-2423 R1 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-5	H-2424 R1 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-6	H-2425 R2 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19459
140-11221-7	H-2426 R2 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-8	H-2427 R2 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-9	H-2428 R2 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	8260B	19459

GC/MS VOA (Continued)

Analysis Batch: 20191 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11221-10	H-2429 R2 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-11	H-2430 R3 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19459
140-11221-12	H-2431 R3 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-13	H-2432 R3 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-14	H-2433 R3 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-15	H-2434 R3 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	8260B	19459
MB 140-19459/34-A	Method Blank	Total/NA	Air	8260B	19459
LCS 140-19459/33-A	Lab Control Sample	Total/NA	Air	8260B	19459

Analysis Batch: 20206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11221-16	H-2435 QC IMPINGERS #1 & #2 WITH FH MEO	Total/NA	Air	8260B	19459
140-11221-17	H-2436 QC IMPINGERS #3 WITH MEOH RINSE	Total/NA	Air	8260B	19459
140-11221-18	H-2437 QC IMPINGERS #4 WITH MEOH RINSE	Total/NA	Air	8260B	19459
140-11221-19	H-2438 QC IMPINGERS #5 WITH MEOH RINSE	Total/NA	Air	8260B	19459
140-11221-20	H-2439 QC IMPINGERS #6 WITH MEOH RINSE	Total/NA	Air	8260B	19459

Analysis Batch: 20265

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11221-1 MS	H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19459
140-11221-1 MSD	H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH	Total/NA	Air	8260B	19459
140-11221-2 MS	H-2421 R1 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-2 MSD	H-2421 R1 IMPINGERS #3 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-3 MS	H-2422 R1 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-3 MSD	H-2422 R1 IMPINGERS #4 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-4 MS	H-2423 R1 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-4 MSD	H-2423 R1 IMPINGERS #5 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-5 MS	H-2424 R1 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	8260B	19459
140-11221-5 MSD	H-2424 R1 IMPINGERS #6 WITH MEOH RINSES	Total/NA	Air	8260B	19459

Client Sample ID: H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11221-1

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	3.81	H	2.47	2.47	ug/Sample		04/11/18 10:10	05/09/18 12:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/11/18 10:10*	*05/09/18 12:05*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/09/18 12:05*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/11/18 10:10*	*05/09/18 12:05*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/11/18 10:10*	*05/09/18 12:05*	*1*

Client Sample ID: H-2421 R1 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11221-2

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	1.49	H	1.07	1.07	ug/Sample		04/11/18 10:10	05/09/18 12:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/11/18 10:10*	*05/09/18 12:30*	*1*
4-Bromofluorobenzene (Surr)	*90*		*57 - 152*	*04/11/18 10:10*	*05/09/18 12:30*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/11/18 10:10*	*05/09/18 12:30*	*1*
Toluene-d8 (Surr)	*91*		*71 - 139*	*04/11/18 10:10*	*05/09/18 12:30*	*1*

Client Sample ID: H-2422 R1 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11221-3

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	0.635	H	0.555	0.555	ug/Sample		04/11/18 10:10	05/09/18 12:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*04/11/18 10:10*	*05/09/18 12:54*	*1*
4-Bromofluorobenzene (Surr)	*89*		*57 - 152*	*04/11/18 10:10*	*05/09/18 12:54*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/11/18 10:10*	*05/09/18 12:54*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 12:54*	*1*

Client Sample ID: H-2423 R1 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11221-4

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	1.00	1.00	ug/Sample		04/11/18 10:10	05/09/18 13:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/11/18 10:10*	*05/09/18 13:19*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/09/18 13:19*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/11/18 10:10*	*05/09/18 13:19*	*1*
Toluene-d8 (Surr)	*91*		*71 - 139*	*04/11/18 10:10*	*05/09/18 13:19*	*1*

Client Sample ID: H-2424 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-5

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	1.15	1.15	ug/Sample		04/11/18 10:10	05/09/18 13:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/11/18 10:10*	*05/09/18 13:43*	*1*
4-Bromofluorobenzene (Surr)	*89*		*57 - 152*	*04/11/18 10:10*	*05/09/18 13:43*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/11/18 10:10*	*05/09/18 13:43*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 13:43*	*1*

Client Sample ID: H-2425 R2 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11221-6

Date Collected: 04/04/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**4.70**	**H**	3.28	3.28	ug/Sample		04/11/18 10:10	05/09/18 14:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/11/18 10:10*	*05/09/18 14:07*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/09/18 14:07*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/11/18 10:10*	*05/09/18 14:07*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 14:07*	*1*

Client Sample ID: H-2426 R2 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11221-7

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	2.74	H	1.48	1.48	ug/Sample		04/11/18 10:10	05/09/18 14:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/11/18 10:10*	*05/09/18 14:32*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/09/18 14:32*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/11/18 10:10*	*05/09/18 14:32*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 14:32*	*1*

Client Sample ID: H-2427 R2 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11221-8

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	0.801	H	0.722	0.722	ug/Sample		04/11/18 10:10	05/09/18 14:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/11/18 10:10*	*05/09/18 14:56*	*1*
4-Bromofluorobenzene (Surr)	*89*		*57 - 152*	*04/11/18 10:10*	*05/09/18 14:56*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/11/18 10:10*	*05/09/18 14:56*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 14:56*	*1*

Client Sample ID: H-2428 R2 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11221-9

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	0.908	0.908	ug/Sample		04/11/18 10:10	05/09/18 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*04/11/18 10:10*	*05/09/18 15:21*	*1*
4-Bromofluorobenzene (Surr)	*89*		*57 - 152*	*04/11/18 10:10*	*05/09/18 15:21*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/11/18 10:10*	*05/09/18 15:21*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 15:21*	*1*

Client Sample ID: H-2429 R2 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-10

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	0.797	0.797	ug/Sample		04/11/18 10:10	05/09/18 15:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*04/11/18 10:10*	*05/09/18 15:45*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/09/18 15:45*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/11/18 10:10*	*05/09/18 15:45*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 15:45*	*1*

Client Sample ID: H-2430 R3 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11221-11

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**3.66**	**H**	2.68	2.68	ug/Sample		04/11/18 10:10	05/09/18 16:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/11/18 10:10*	*05/09/18 16:10*	*1*
4-Bromofluorobenzene (Surr)	*87*		*57 - 152*	*04/11/18 10:10*	*05/09/18 16:10*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/11/18 10:10*	*05/09/18 16:10*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 16:10*	*1*

Client Sample ID: H-2431 R3 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11221-12

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**2.43**	**H**	1.10	1.10	ug/Sample		04/11/18 10:10	05/09/18 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 160*	*04/11/18 10:10*	*05/09/18 16:35*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/09/18 16:35*	*1*
Dibromofluoromethane (Surr)	*98*		*62 - 134*	*04/11/18 10:10*	*05/09/18 16:35*	*1*
Toluene-d8 (Surr)	*91*		*71 - 139*	*04/11/18 10:10*	*05/09/18 16:35*	*1*

Client Sample ID: H-2432 R3 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11221-13

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	1.73	H	1.05	1.05	ug/Sample		04/11/18 10:10	05/09/18 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*04/11/18 10:10*	*05/09/18 16:59*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/09/18 16:59*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/11/18 10:10*	*05/09/18 16:59*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 16:59*	*1*

Client Sample ID: H-2433 R3 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11221-14

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	1.10	1.10	ug/Sample		04/11/18 10:10	05/09/18 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*04/11/18 10:10*	*05/09/18 17:24*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/09/18 17:24*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/11/18 10:10*	*05/09/18 17:24*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 17:24*	*1*

Client Sample ID: H-2434 R3 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-15

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	1.15	1.15	ug/Sample		04/11/18 10:10	05/09/18 17:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*04/11/18 10:10*	*05/09/18 17:48*	*1*
4-Bromofluorobenzene (Surr)	*89*		*57 - 152*	*04/11/18 10:10*	*05/09/18 17:48*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/11/18 10:10*	*05/09/18 17:48*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/09/18 17:48*	*1*

Client Sample ID: H-2435 QC IMPINGERS #1 & #2 WITH FH MEOH RINSES BT

Lab Sample ID: 140-11221-16

Date Collected: 04/04/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	2.08	2.08	ug/Sample		04/11/18 10:10	05/10/18 13:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/11/18 10:10*	*05/10/18 13:04*	*1*
4-Bromofluorobenzene (Surr)	*87*		*57 - 152*	*04/11/18 10:10*	*05/10/18 13:04*	*1*
Dibromofluoromethane (Surr)	*102*		*62 - 134*	*04/11/18 10:10*	*05/10/18 13:04*	*1*
Toluene-d8 (Surr)	*91*		*71 - 139*	*04/11/18 10:10*	*05/10/18 13:04*	*1*

Client Sample ID: H-2436 QC IMPINGERS #3 WITH MEOH RINSES BT

Lab Sample ID: 140-11221-17

Date Collected: 04/04/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	1.08	1.08	ug/Sample		04/11/18 10:10	05/10/18 13:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/11/18 10:10*	*05/10/18 13:28*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/10/18 13:28*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/11/18 10:10*	*05/10/18 13:28*	*1*
Toluene-d8 (Surr)	*91*		*71 - 139*	*04/11/18 10:10*	*05/10/18 13:28*	*1*

Client Sample ID: H-2437 QC IMPINGERS #4 WITH MEOH RINSES BT

Lab Sample ID: 140-11221-18

Date Collected: 04/04/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	0.996	0.996	ug/Sample		04/11/18 10:10	05/10/18 13:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/11/18 10:10*	*05/10/18 13:53*	*1*
4-Bromofluorobenzene (Surr)	*89*		*57 - 152*	*04/11/18 10:10*	*05/10/18 13:53*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/11/18 10:10*	*05/10/18 13:53*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/10/18 13:53*	*1*

Client Sample ID: H-2438 QC IMPINGERS #5 WITH MEOH RINSES BT

Lab Sample ID: 140-11221-19

Date Collected: 04/04/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	0.987	0.987	ug/Sample		04/11/18 10:10	05/10/18 14:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*04/11/18 10:10*	*05/10/18 14:17*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/10/18 14:17*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/11/18 10:10*	*05/10/18 14:17*	*1*
Toluene-d8 (Surr)	*91*		*71 - 139*	*04/11/18 10:10*	*05/10/18 14:17*	*1*

Client Sample ID: H-2439 QC IMPINGERS #6 WITH MEOH RINSES BT

Lab Sample ID: 140-11221-20

Date Collected: 04/04/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	1.27	1.27	ug/Sample		04/11/18 10:10	05/10/18 14:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/11/18 10:10*	*05/10/18 14:42*	*1*
4-Bromofluorobenzene (Surr)	*88*		*57 - 152*	*04/11/18 10:10*	*05/10/18 14:42*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/11/18 10:10*	*05/10/18 14:42*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/11/18 10:10*	*05/10/18 14:42*	*1*

Client Sample ID: H-2440 QC MEOH RB

Lab Sample ID: 140-11221-21

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	1.51	1.51	ug/Sample		04/11/18 10:10	05/08/18 19:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/11/18 10:10*	*05/08/18 19:32*	*1*
4-Bromofluorobenzene (Surr)	*90*		*57 - 152*	*04/11/18 10:10*	*05/08/18 19:32*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/11/18 10:10*	*05/08/18 19:32*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/11/18 10:10*	*05/08/18 19:32*	*1*

Client Sample ID: H-2441 QC MEOH TB

Lab Sample ID: 140-11221-22

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND	H	1.49	1.49	ug/Sample		04/11/18 10:10	05/08/18 19:57	1

Client: Chemours Company FC, LLC The
Project/Site: HFPO VE South Original Field Test

TestAmerica Job ID: 140-11221-1

Client Sample ID: H-2441 QC MEOH TB
Lab Sample ID: 140-11221-22
Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50
Sample Container: Other Client Container - unpreserved

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		70 - 160	04/11/18 10:10	05/08/18 19:57	1
4-Bromofluorobenzene (Surr)	90		57 - 152	04/11/18 10:10	05/08/18 19:57	1
Dibromofluoromethane (Surr)	102		62 - 134	04/11/18 10:10	05/08/18 19:57	1
Toluene-d8 (Surr)	93		71 - 139	04/11/18 10:10	05/08/18 19:57	1

Default Detection Limits

Client: Chemours Company FC, LLC The
Project/Site: HFPO VE South Original Field Test

TestAmerica Job ID: 140-11221-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Prep: MeOH Prep

Analyte	RL	MDL	Units	Method
2-MTP as HFPO	0.500	0.500	ug/Sample	8260B

Surrogate Summary

Client: Chemours Company FC, LLC The
Project/Site: HFPO VE South Original Field Test

TestAmerica Job ID: 140-11221-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(70-160)	(57-152)	(62-134)	(71-139)
140-11221-1	H-2420 R1 IMPINGERS #1 & #2	93	88	101	93
140-11221-1 MS	H-2420 R1 IMPINGERS #1 & #2	92	87	109	92
140-11221-1 MSD	H-2420 R1 IMPINGERS #1 & #2	93	89	107	92
140-11221-2	H-2421 R1 IMPINGERS #3 WIT	93	90	101	91
140-11221-2 MS	H-2421 R1 IMPINGERS #3 WIT	92	89	107	93
140-11221-2 MSD	H-2421 R1 IMPINGERS #3 WIT	93	89	107	93
140-11221-3	H-2422 R1 IMPINGERS #4 WIT	92	89	100	92
140-11221-3 MS	H-2422 R1 IMPINGERS #4 WIT	92	90	106	92
140-11221-3 MSD	H-2422 R1 IMPINGERS #4 WIT	92	89	106	92
140-11221-4	H-2423 R1 IMPINGERS #5 WIT	93	88	100	91
140-11221-4 MS	H-2423 R1 IMPINGERS #5 WIT	90	89	105	92
140-11221-4 MSD	H-2423 R1 IMPINGERS #5 WIT	93	90	106	93
140-11221-5	H-2424 R1 IMPINGERS #6 WIT	93	89	99	92
140-11221-5 MS	H-2424 R1 IMPINGERS #6 WIT	92	89	106	92
140-11221-5 MSD	H-2424 R1 IMPINGERS #6 WIT	92	90	105	93
140-11221-6	H-2425 R2 IMPINGERS #1 & #2	93	88	100	92
140-11221-7	H-2426 R2 IMPINGERS #3 WIT	93	88	101	92
140-11221-8	H-2427 R2 IMPINGERS #4 WIT	93	89	100	92
140-11221-9	H-2428 R2 IMPINGERS #5 WIT	92	89	99	92
140-11221-10	H-2429 R2 IMPINGERS #6 WIT	92	88	99	92
140-11221-11	H-2430 R3 IMPINGERS #1 & #2	94	87	100	92
140-11221-12	H-2431 R3 IMPINGERS #3 WIT	91	88	98	91
140-11221-13	H-2432 R3 IMPINGERS #4 WIT	92	88	99	92
140-11221-14	H-2433 R3 IMPINGERS #5 WIT	92	88	99	92
140-11221-15	H-2434 R3 IMPINGERS #6 WIT	92	89	99	92
140-11221-16	H-2435 QC IMPINGERS #1 & #3	94	87	102	91
140-11221-17	H-2436 QC IMPINGERS #3 WIT	94	88	101	91
140-11221-18	H-2437 QC IMPINGERS #4 WIT	94	89	101	92
140-11221-19	H-2438 QC IMPINGERS #5 WIT	92	88	99	91
140-11221-20	H-2439 QC IMPINGERS #6 WIT	93	88	100	92
140-11221-21	H-2440 QC MEOH RB	93	90	101	93
140-11221-22	H-2441 QC MEOH TB	94	90	102	93
LCS 140-19459/33-A	Lab Control Sample	92	89	106	92
MB 140-19459/34-A	Method Blank	92	90	101	91

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 140-19459/34-A
Matrix: Air
Analysis Batch: 20191

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 19459

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		0.437	0.437	ug/Sample		04/10/18 11:34	05/09/18 11:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*37 - 107*	*74/17/18 11:54*	*76/79/18 11:41*	*1*
4-Bromofluorobenzene (Surr)	*97*		*63 - 162*	*74/17/18 11:54*	*76/79/18 11:41*	*1*
Dibromofluoromethane (Surr)	*171*		*02 - 154*	*74/17/18 11:54*	*76/79/18 11:41*	*1*
Toluene-d8 (Surr)	*91*		*31 - 159*	*74/17/18 11:54*	*76/79/18 11:41*	*1*

Lab Sample ID: LCS 140-19459/33-A
Matrix: Air
Analysis Batch: 20191

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 19459

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-MTP as HFPO			25.0	26.46		ug/Sample		106			

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*37 - 107*
4-Bromofluorobenzene (Surr)	*89*		*63 - 162*
Dibromofluoromethane (Surr)	*170*		*02 - 154*
Toluene-d8 (Surr)	*92*		*31 - 159*

Lab Sample ID: 140-11221-1 MS
Matrix: Air
Analysis Batch: 20265

Client Sample ID: H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES
Prep Type: Total/NA
Prep Batch: 19459

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-MTP as HFPO	3.81	H	141	163.2	H	ug/Sample		113			

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*37 - 107*
4-Bromofluorobenzene (Surr)	*83*		*63 - 162*
Dibromofluoromethane (Surr)	*179*		*02 - 154*
Toluene-d8 (Surr)	*92*		*31 - 159*

Lab Sample ID: 140-11221-1 MSD
Matrix: Air
Analysis Batch: 20265

Client Sample ID: H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES
Prep Type: Total/NA
Prep Batch: 19459

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	3.81	H	141	162.0	H	ug/Sample		112		1	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*37 - 107*
4-Bromofluorobenzene (Surr)	*89*		*63 - 162*
Dibromofluoromethane (Surr)	*173*		*02 - 154*
Toluene-d8 (Surr)	*92*		*31 - 159*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-11221-2 MS — **Client Sample ID: H-2421 R1 IMPINGERS #3 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20265 — **Prep Batch: 19459**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	1.49	H	61.5	69.14	H	ug/Sample		110	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*37 - 107*
4-Bromofluorobenzene (Surr)	*89*		*63 - 162*
Dibromofluoromethane (Surr)	*173*		*02 - 154*
Toluene-d8 (Surr)	*95*		*31 - 159*

Lab Sample ID: 140-11221-2 MSD — **Client Sample ID: H-2421 R1 IMPINGERS #3 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20265 — **Prep Batch: 19459**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	1.49	H	61.5	62.23	H	ug/Sample		99		11	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*37 - 107*
4-Bromofluorobenzene (Surr)	*89*		*63 - 162*
Dibromofluoromethane (Surr)	*173*		*02 - 154*
Toluene-d8 (Surr)	*95*		*31 - 159*

Lab Sample ID: 140-11221-3 MS — **Client Sample ID: H-2422 R1 IMPINGERS #4 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20265 — **Prep Batch: 19459**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	0.635	H	31.7	34.66	H	ug/Sample		107	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*37 - 107*
4-Bromofluorobenzene (Surr)	*97*		*63 - 162*
Dibromofluoromethane (Surr)	*170*		*02 - 154*
Toluene-d8 (Surr)	*92*		*31 - 159*

Lab Sample ID: 140-11221-3 MSD — **Client Sample ID: H-2422 R1 IMPINGERS #4 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20265 — **Prep Batch: 19459**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	0.635	H	31.7	35.20	H	ug/Sample		109		2	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*37 - 107*
4-Bromofluorobenzene (Surr)	*89*		*63 - 162*
Dibromofluoromethane (Surr)	*170*		*02 - 154*
Toluene-d8 (Surr)	*92*		*31 - 159*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-11221-4 MS — **Client Sample ID: H-2423 R1 IMPINGERS #5 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20265 — **Prep Batch: 19459**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	ND	H	57.3	62.46	H	ug/Sample		109	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*37 - 107*
4-Bromofluorobenzene (Surr)	*89*		*63 - 162*
Dibromofluoromethane (Surr)	*176*		*02 - 154*
Toluene-d8 (Surr)	*92*		*31 - 159*

Lab Sample ID: 140-11221-4 MSD — **Client Sample ID: H-2423 R1 IMPINGERS #5 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20265 — **Prep Batch: 19459**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	ND	H	57.3	61.68	H	ug/Sample		108		1	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*37 - 107*
4-Bromofluorobenzene (Surr)	*97*		*63 - 162*
Dibromofluoromethane (Surr)	*170*		*02 - 154*
Toluene-d8 (Surr)	*95*		*31 - 159*

Lab Sample ID: 140-11221-5 MS — **Client Sample ID: H-2424 R1 IMPINGERS #6 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20265 — **Prep Batch: 19459**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	ND	H	65.9	71.04	H	ug/Sample		108	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*37 - 107*
4-Bromofluorobenzene (Surr)	*89*		*63 - 162*
Dibromofluoromethane (Surr)	*170*		*02 - 154*
Toluene-d8 (Surr)	*92*		*31 - 159*

Lab Sample ID: 140-11221-5 MSD — **Client Sample ID: H-2424 R1 IMPINGERS #6 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20265 — **Prep Batch: 19459**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	ND	H	65.9	69.46	H	ug/Sample		105		2	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*37 - 107*
4-Bromofluorobenzene (Surr)	*97*		*63 - 162*
Dibromofluoromethane (Surr)	*176*		*02 - 154*
Toluene-d8 (Surr)	*95*		*31 - 159*

Client Sample ID: H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11221-1

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	56.57 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 12:05	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2421 R1 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11221-2

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.60 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 12:30	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2422 R1 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11221-3

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	12.69 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 12:54	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2423 R1 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11221-4

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	22.93 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 13:19	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2424 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-5

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	26.34 mL	19459	04/11/18 10:10	BKK	TAL KNX

Client Sample ID: H-2424 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-5

Date Collected: 04/03/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 13:43	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2425 R2 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11221-6

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	75.18 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 14:07	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2426 R2 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11221-7

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.89 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 14:32	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2427 R2 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11221-8

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	16.53 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 14:56	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2428 R2 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11221-9

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	20.71 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 15:21	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2429 R2 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-10

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	18.24 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 15:45	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2430 R3 IMPINGERS #1 & #2 WITH FH MEOH RINSES

Lab Sample ID: 140-11221-11

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	61.46 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 16:10	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2431 R3 IMPINGERS #3 WITH MEOH RINSES

Lab Sample ID: 140-11221-12

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.20 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 16:35	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2432 R3 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11221-13

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.05 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 16:59	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2433 R3 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11221-14

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.21 mL	19459	04/11/18 10:10	BKK	TAL KNX

Client Sample ID: H-2433 R3 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11221-14

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 17:24	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2434 R3 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-15

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	26.39 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 17:48	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2435 QC IMPINGERS #1 & #2 WITH FH MEOH RINSES BT

Lab Sample ID: 140-11221-16

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	47.68 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20206	05/10/18 13:04	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2436 QC IMPINGERS #3 WITH MEOH RINSES BT

Lab Sample ID: 140-11221-17

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.76 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20206	05/10/18 13:28	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2437 QC IMPINGERS #4 WITH MEOH RINSES BT

Lab Sample ID: 140-11221-18

Date Collected: 04/04/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	22.83 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20206	05/10/18 13:53	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2438 QC IMPINGERS #5 WITH MEOH RINSES BT

Lab Sample ID: 140-11221-19

Date Collected: 04/04/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	22.63 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20206	05/10/18 14:17	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2439 QC IMPINGERS #6 WITH MEOH RINSES BT

Lab Sample ID: 140-11221-20

Date Collected: 04/04/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	28.91 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20206	05/10/18 14:42	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2440 QC MEOH RB

Lab Sample ID: 140-11221-21

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	34.60 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 19:32	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2441 QC MEOH TB

Lab Sample ID: 140-11221-22

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	34.18 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 19:57	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-19459/34-A

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19459	04/10/18 11:34	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 11:41	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-19459/33-A

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19459	04/10/18 11:34	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20191	05/09/18 11:16	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES
Lab Sample ID: 140-11221-1 MS

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	56.57 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 11:04	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2420 R1 IMPINGERS #1 & #2 WITH FH MEOH RINSES
Lab Sample ID: 140-11221-1 MSD

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	56.57 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 11:29	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2421 R1 IMPINGERS #3 WITH MEOH RINSES
Lab Sample ID: 140-11221-2 MS

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.60 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 11:53	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2421 R1 IMPINGERS #3 WITH MEOH RINSES
Lab Sample ID: 140-11221-2 MSD

Date Collected: 04/03/18 00:00
Matrix: Air
Date Received: 04/06/18 11:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	24.60 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 12:18	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2422 R1 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11221-3 MS

Date Collected: 04/03/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	12.69 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 12:42	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2422 R1 IMPINGERS #4 WITH MEOH RINSES

Lab Sample ID: 140-11221-3 MSD

Date Collected: 04/03/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	12.69 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 13:07	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2423 R1 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11221-4 MS

Date Collected: 04/03/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	22.93 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 13:31	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2423 R1 IMPINGERS #5 WITH MEOH RINSES

Lab Sample ID: 140-11221-4 MSD

Date Collected: 04/03/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	22.93 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 13:56	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2424 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-5 MS

Date Collected: 04/03/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	26.34 mL	19459	04/11/18 10:10	BKK	TAL KNX

Client Sample ID: H-2424 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-5 MS

Date Collected: 04/03/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 14:20	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: H-2424 R1 IMPINGERS #6 WITH MEOH RINSES

Lab Sample ID: 140-11221-5 MSD

Date Collected: 04/03/18 00:00
Date Received: 04/06/18 11:50

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	26.34 mL	19459	04/11/18 10:10	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20265	05/11/18 14:44	BKK	TAL KNX
	Instrument ID: MK									

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Chemours Company FC, LLC The
TestAmerica Job ID: 140-11221-1
Project/Site: HFPO VE South Original Field Test

Laboratory: TestAmerica Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		N/A	
ANAB	DoD ELAP		L2311	02-13-19
Arkansas DEQ	State Program	6	88-0688	06-16-19
California	State Program	9	2423	06-30-18
Colorado	State Program	8	TN00009	02-28-19
Connecticut	State Program	1	PH-0223	09-30-19
Florida	NELAP	4	E87177	06-30-18
Georgia	State Program	4	906	04-13-20
Hawaii	State Program	9	N/A	04-13-19
Kansas	NELAP	7	E-10349	10-31-18
Kentucky (DW)	State Program	4	90101	12-31-18
Louisiana	NELAP	6	83979	06-30-18
Louisiana (DW)	NELAP	6	LA160005	12-31-18
Maryland	State Program	3	277	03-31-19
Michigan	State Program	5	9933	04-13-20
Nevada	State Program	9	TN00009	07-31-18
New Jersey	NELAP	2	TN001	06-30-18
New York	NELAP	2	10781	03-31-19
North Carolina (DW)	State Program	4	21705	07-31-18
North Carolina (WW/SW)	State Program	4	64	12-31-18
Ohio VAP	State Program	5	CL0059	11-22-18
Oklahoma	State Program	6	9415	08-31-18
Oregon	NELAP	10	TNI0189	01-01-19
Pennsylvania	NELAP	3	68-00576	12-31-18
Tennessee	State Program	4	2014	04-13-20
Texas	NELAP	6	T104704380-16-9	08-31-18
US Fish & Wildlife	Federal		LE-058448-0	07-31-18
USDA	Federal		P330-16-00262	08-20-19
Utah	NELAP	8	TN00009	07-31-18
Virginia	NELAP	3	460176	09-14-18
Washington	State Program	10	C593	01-19-19
West Virginia (DW)	State Program	3	9955C	12-31-18
West Virginia DEP	State Program	3	345	04-30-18 *
Wisconsin	State Program	5	998044300	08-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-11221-1

SDG No.:

Instrument ID: MK Analysis Batch Number: 18417

Lab Sample ID: IC 140-18417/3 Client Sample ID:

Date Analyzed: 02/23/18 18:04 Lab File ID: KB23IC101.D GC Column: Rxi-

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	D
Tetrahydrofuran	4.46	Incomplete Integration	barlozhetskayaa	02/27/
1,1,2,2-Tetrachloroethane	9.15	Incomplete Integration	barlozhetskayaa	02/27/
1,2,3-Trichloropropane		Invalid Compound ID	barlozhetskayaa	02/27/
1,2-Dibromo-3-Chloropropane		Invalid Compound ID	barlozhetskayaa	02/27/
1,4-Dioxane		Invalid Compound ID	barlozhetskayaa	02/27/
cis-1,4-Dichloro-2-butene		Invalid Compound ID	barlozhetskayaa	02/27/
trans-1,4-Dichloro-2-butene		Invalid Compound ID	barlozhetskayaa	02/27/
Vinyl acetate		Invalid Compound ID	barlozhetskayaa	02/27/
1,4-Dichlorobenzene	10.61	Wrong peak	barlozhetskayaa	02/27/

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-11221-1

SDG No.:

Instrument ID: MK Analysis Batch Number: 18558

Lab Sample ID: IC 140-18558/3 Client Sample ID:

Date Analyzed: 03/02/18 11:06 Lab File ID: KC02C201.D GC Column: Rxi-

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	D
2-Nitropropane		Invalid Compound ID	barlozhetskayaa	03/06/
Ethyl acetate		Invalid Compound ID	barlozhetskayaa	03/06/
n-Butanol		Invalid Compound ID	barlozhetskayaa	03/06/

Lab Sample ID: IC 140-18558/4 Client Sample ID:

Date Analyzed: 03/02/18 11:31 Lab File ID: KC02C202.D GC Column: Rxi-

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	D
2-Nitropropane		Invalid Compound ID	barlozhetskayaa	03/06/

ANALYTICAL REPORT

Job Number: 140-11412-1

Job Description: Stripper Column - HFPO Field Test

Contract Number: LBIO-67048

For:
Chemours Company FC, LLC The
c/o AECOM
Sabre Building, Suite 300
4051 Ogletown Road
Newark, DE 19713

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager I
5/21/2018 11:02 AM

Courtney M Adkins, Project Manager I
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
05/21/2018

Table of Contents

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Chemours Company FC, LLC The
Project/Site: Stripper Column - HFPO Field Test

TestAmerica Job ID: 140-11412-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL KNX
MeOH Prep	Methanol Impinger Preparation	None	TAL KNX

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: Chemours Company FC, LLC The
Project/Site: Stripper Column - HFPO Field Test

TestAmerica Job ID: 140-11412-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-11412-1	K-2240 R1 IMPINGER #1 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-2	K-2241 R1 IMPINGER #2 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-3	K-2242 R1 IMPINGER #3 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-4	K-2243 R1 IMPINGER #4 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-5	K-2244 R1 IMPINGER #5 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-6	K-2245 R1 IMPINGER #6 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-7	K-2246 R1 IMPINGER #7 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-8	K-2247 R1 IMPINGER #8 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-9	K-2248 R2 IMPINGER #1 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-10	K-2249 R2 IMPINGER #2 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-11	K-2250 R2 IMPINGER #3 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-12	K-2251 R2 IMPINGER #4 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-13	K-2252 R2 IMPINGER #5 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-14	K-2253 R2 IMPINGER #6 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-15	K-2254 R2 IMPINGER #7 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-16	K-2255 R2 IMPINGER #8 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-17	K-2256 R1 IMPINGER #1 WITH MEOH RINSES	Air	04/25/18 00:00	04/27/18 14:00
140-11412-18	K-2257 R1 IMPINGER #2 WITH MEOH RINSES	Air	04/25/18 00:00	04/27/18 14:00
140-11412-19	K-2258 R1 IMPINGER #3 WITH MEOH RINSES	Air	04/25/18 00:00	04/27/18 14:00
140-11412-20	K-2259 R1 IMPINGER #4 WITH MEOH RINSES	Air	04/25/18 00:00	04/27/18 14:00
140-11412-21	K-2260 R1 IMPINGER #5 WITH MEOH RINSES	Air	04/25/18 00:00	04/27/18 14:00
140-11412-22	K-2261 R1 IMPINGER #6 WITH MEOH RINSES	Air	04/25/18 00:00	04/27/18 14:00
140-11412-23	K-2262 R1 IMPINGER #7 WITH MEOH RINSES	Air	04/25/18 00:00	04/27/18 14:00
140-11412-24	K-2263 R1 IMPINGER #8 WITH MEOH RINSES	Air	04/25/18 00:00	04/27/18 14:00
140-11412-25	K-2264 R2 IMPINGER #1 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-26	K-2265 R2 IMPINGER #2 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-27	K-2266 R2 IMPINGER #3 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-28	K-2267 R2 IMPINGER #4 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-29	K-2268 R2 IMPINGER #5 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-30	K-2269 R2 IMPINGER #6 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-31	K-2270 R2 IMPINGER #7 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-32	K-2271 R2 IMPINGER #8 WITH MEOH RINSES	Air	04/26/18 00:00	04/27/18 14:00
140-11412-33	K-2272 QC IMPINGER #1 WITH MEOH RINSES BT	Air	04/26/18 00:00	04/27/18 14:00
140-11412-34	K-2273 QC IMPINGER #2 WITH MEOH RINSES BT	Air	04/26/18 00:00	04/27/18 14:00
140-11412-35	K-2274 QC IMPINGER #3 WITH MEOH RINSES BT	Air	04/26/18 00:00	04/27/18 14:00
140-11412-36	K-2275 QC IMPINGER #4 WITH MEOH RINSES BT	Air	04/26/18 00:00	04/27/18 14:00
140-11412-37	K-2276 QC IMPINGER #5 WITH MEOH RINSES BT	Air	04/26/18 00:00	04/27/18 14:00
140-11412-38	K-2277 QC IMPINGER #6 WITH MEOH RINSES BT	Air	04/26/18 00:00	04/27/18 14:00
140-11412-39	K-2278 QC IMPINGER #7 WITH MEOH RINSES BT	Air	04/26/18 00:00	04/27/18 14:00
140-11412-40	K-2279 QC IMPINGER #8 WITH MEOH RINSES BT	Air	04/26/18 00:00	04/27/18 14:00
140-11412-41	K-2280 QC MEOH RB	Air	04/26/18 00:00	04/27/18 14:00
140-11412-42	K-2281 QC MEOH TB	Air	04/26/18 00:00	04/27/18 14:00
140-11412-43	K-2282 QC PROOF BLANK	Air	04/25/18 00:00	04/27/18 14:00

Job Narrative
140-11412-1

Sample Receipt

The samples were received on April 27, 2018 at 2:00 PM in good condition and properly preserved. The temperature of the cooler at receipt was 0.6º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

GC/MS VOA

Impinger Sample Preparation and Analysis: Impinger samples were analyzed for the volatile organic target analytes by purge and trap GCMS using TestAmerica Knoxville standard operating procedure KNOX-MS-0015, based on the following method:

· SW-846 8260B, "Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)"

Each sample is prepared by adding a known amount of sample to the purge water in a purge and trap vessel and spiking with internal standards, surrogates, and matrix spike analytes (as needed). Volatile compounds are introduced into the gas chromatograph by the purge and trap method. The components are separated using the chromatograph and detected using a mass spectrometer, which provides both qualitative and quantitative information.

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL

Method 8260B: The following samples were diluted to bring the concentration of target analytes within the calibration range: K-2240 R1 IMPINGER #1 WITH MEOH RINSES (140-11412-1), K-2241 R1 IMPINGER #2 WITH MEOH RINSES (140-11412-2), K-2242 R1 IMPINGER #3 WITH MEOH RINSES (140-11412-3), K-2243 R1 IMPINGER #4 WITH MEOH RINSES (140-11412-4), K-2248 R2 IMPINGER #1 WITH MEOH RINSES (140-11412-9), K-2249 R2 IMPINGER #2 WITH MEOH RINSES (140-11412-10), K-2250 R2 IMPINGER #3 WITH MEOH RINSES (140-11412-11), K-2251 R2 IMPINGER #4 WITH MEOH RINSES (140-11412-12), K-2256 R1 IMPINGER #1 WITH MEOH RINSES (140-11412-17), K-2257 R1 IMPINGER #2 WITH MEOH RINSES (140-11412-18), K-2258 R1 IMPINGER #3 WITH MEOH RINSES (140-11412-19), K-2259 R1 IMPINGER #4 WITH MEOH RINSES (140-11412-20), K-2264 R2 IMPINGER #1 WITH MEOH RINSES (140-11412-25), K-2265 R2 IMPINGER #2 WITH MEOH RINSES (140-11412-26), K-2266 R2 IMPINGER #3 WITH MEOH RINSES (140-11412-27) and K-2267 R2 IMPINGER #4 WITH MEOH RINSES (140-11412-28). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS VOA

Prep Batch: 19947

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11412-1	K-2240 R1 IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-2	K-2241 R1 IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-3	K-2242 R1 IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-4	K-2243 R1 IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-5	K-2244 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-6	K-2245 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-7	K-2246 R1 IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-8	K-2247 R1 IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-9	K-2248 R2 IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-10	K-2249 R2 IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-11	K-2250 R2 IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-12	K-2251 R2 IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-13	K-2252 R2 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-14	K-2253 R2 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-15	K-2254 R2 IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-16	K-2255 R2 IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-17	K-2256 R1 IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-18	K-2257 R1 IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-19	K-2258 R1 IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-20	K-2259 R1 IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
MB 140-19947/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-19947/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-11412-5 MS	K-2244 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-5 MSD	K-2244 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-6 MS	K-2245 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-6 MSD	K-2245 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	

Prep Batch: 19948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11412-21	K-2260 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-22	K-2261 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-23	K-2262 R1 IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-24	K-2263 R1 IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-25	K-2264 R2 IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-26	K-2265 R2 IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-27	K-2266 R2 IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-28	K-2267 R2 IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-29	K-2268 R2 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-30	K-2269 R2 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-31	K-2270 R2 IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-32	K-2271 R2 IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-33	K-2272 QC IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-34	K-2273 QC IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-35	K-2274 QC IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-36	K-2275 QC IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-37	K-2276 QC IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-38	K-2277 QC IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-39	K-2278 QC IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-40	K-2279 QC IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
MB 140-19948/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-19948/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	

GC/MS VOA (Continued)

Prep Batch: 19948 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11412-21 MS	K-2260 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-21 MSD	K-2260 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-22 MS	K-2261 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	
140-11412-22 MSD	K-2261 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	MeOH Prep	

Prep Batch: 19949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11412-41	K-2280 QC MEOH RB	Total/NA	Air	MeOH Prep	
140-11412-42	K-2281 QC MEOH TB	Total/NA	Air	MeOH Prep	
140-11412-43	K-2282 QC PROOF BLANK	Total/NA	Air	MeOH Prep	
MB 140-19949/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-19949/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-11412-43 MS	K-2282 QC PROOF BLANK	Total/NA	Air	MeOH Prep	
140-11412-43 MSD	K-2282 QC PROOF BLANK	Total/NA	Air	MeOH Prep	

Analysis Batch: 20088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11412-1	K-2240 R1 IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-2	K-2241 R1 IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-3	K-2242 R1 IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-4	K-2243 R1 IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-5	K-2244 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-6	K-2245 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-7	K-2246 R1 IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-8	K-2247 R1 IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	8260B	19947
MB 140-19947/2-A	Method Blank	Total/NA	Air	8260B	19947
LCS 140-19947/1-A	Lab Control Sample	Total/NA	Air	8260B	19947
140-11412-5 MS	K-2244 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-5 MSD	K-2244 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-6 MS	K-2245 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-6 MSD	K-2245 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	8260B	19947

Analysis Batch: 20143

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11412-9	K-2248 R2 IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-10	K-2249 R2 IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-11	K-2250 R2 IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-12	K-2251 R2 IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-13	K-2252 R2 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-14	K-2253 R2 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-15	K-2254 R2 IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-16	K-2255 R2 IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-17	K-2256 R1 IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-18	K-2257 R1 IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-19	K-2258 R1 IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-20	K-2259 R1 IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	8260B	19947
140-11412-21	K-2260 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-22	K-2261 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-23	K-2262 R1 IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-24	K-2263 R1 IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-25	K-2264 R2 IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	8260B	19948

GC/MS VOA (Continued)

Analysis Batch: 20143 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11412-26	K-2265 R2 IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-27	K-2266 R2 IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-28	K-2267 R2 IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	8260B	19948
MB 140-19948/2-A	Method Blank	Total/NA	Air	8260B	19948
140-11412-21 MS	K-2260 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-21 MSD	K-2260 R1 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-22 MS	K-2261 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-22 MSD	K-2261 R1 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	8260B	19948

Analysis Batch: 20155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-11412-29	K-2268 R2 IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-30	K-2269 R2 IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-31	K-2270 R2 IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-32	K-2271 R2 IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-33	K-2272 QC IMPINGER #1 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-34	K-2273 QC IMPINGER #2 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-35	K-2274 QC IMPINGER #3 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-36	K-2275 QC IMPINGER #4 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-37	K-2276 QC IMPINGER #5 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-38	K-2277 QC IMPINGER #6 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-39	K-2278 QC IMPINGER #7 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-40	K-2279 QC IMPINGER #8 WITH MEOH RINSES	Total/NA	Air	8260B	19948
140-11412-41	K-2280 QC MEOH RB	Total/NA	Air	8260B	19949
140-11412-42	K-2281 QC MEOH TB	Total/NA	Air	8260B	19949
140-11412-43	K-2282 QC PROOF BLANK	Total/NA	Air	8260B	19949
MB 140-19949/2-A	Method Blank	Total/NA	Air	8260B	19949
LCS 140-19948/1-A	Lab Control Sample	Total/NA	Air	8260B	19948
LCS 140-19949/1-A	Lab Control Sample	Total/NA	Air	8260B	19949
140-11412-43 MS	K-2282 QC PROOF BLANK	Total/NA	Air	8260B	19949
140-11412-43 MSD	K-2282 QC PROOF BLANK	Total/NA	Air	8260B	19949

Client Sample ID: K-2240 R1 IMPINGER #1 WITH MEOH RINSES

Lab Sample ID: 140-11412-1

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	372		3.48	3.48	ug/Sample		04/30/18 10:57	05/04/18 13:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*04/30/18 10:57*	*05/04/18 13:15*	*1*
4-Bromofluorobenzene (Surr)	*105*		*57 - 152*	*04/30/18 10:57*	*05/04/18 13:15*	*1*
Dibromofluoromethane (Surr)	*97*		*62 - 134*	*04/30/18 10:57*	*05/04/18 13:15*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*04/30/18 10:57*	*05/04/18 13:15*	*1*

Client Sample ID: K-2241 R1 IMPINGER #2 WITH MEOH RINSES

Lab Sample ID: 140-11412-2

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	321		2.63	2.63	ug/Sample		04/30/18 10:57	05/04/18 13:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*04/30/18 10:57*	*05/04/18 13:39*	*1*
4-Bromofluorobenzene (Surr)	*104*		*57 - 152*	*04/30/18 10:57*	*05/04/18 13:39*	*1*
Dibromofluoromethane (Surr)	*96*		*62 - 134*	*04/30/18 10:57*	*05/04/18 13:39*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*04/30/18 10:57*	*05/04/18 13:39*	*1*

Client Sample ID: K-2242 R1 IMPINGER #3 WITH MEOH RINSES

Lab Sample ID: 140-11412-3

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	217		2.72	2.72	ug/Sample		04/30/18 10:57	05/04/18 14:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*04/30/18 10:57*	*05/04/18 14:04*	*1*
4-Bromofluorobenzene (Surr)	*104*		*57 - 152*	*04/30/18 10:57*	*05/04/18 14:04*	*1*
Dibromofluoromethane (Surr)	*96*		*62 - 134*	*04/30/18 10:57*	*05/04/18 14:04*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*04/30/18 10:57*	*05/04/18 14:04*	*1*

Client Sample ID: K-2243 R1 IMPINGER #4 WITH MEOH RINSES

Lab Sample ID: 140-11412-4

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	113		3.20	3.20	ug/Sample		04/30/18 10:57	05/04/18 16:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*04/30/18 10:57*	*05/04/18 16:30*	*1*
4-Bromofluorobenzene (Surr)	*105*		*57 - 152*	*04/30/18 10:57*	*05/04/18 16:30*	*1*
Dibromofluoromethane (Surr)	*95*		*62 - 134*	*04/30/18 10:57*	*05/04/18 16:30*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*04/30/18 10:57*	*05/04/18 16:30*	*1*

Client Sample ID: K-2244 R1 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-5

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	53.5		1.52	1.52	ug/Sample		04/30/18 10:57	05/04/18 14:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*04/30/18 10:57*	*05/04/18 14:52*	*1*
4-Bromofluorobenzene (Surr)	*102*		*57 - 152*	*04/30/18 10:57*	*05/04/18 14:52*	*1*
Dibromofluoromethane (Surr)	*95*		*62 - 134*	*04/30/18 10:57*	*05/04/18 14:52*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*04/30/18 10:57*	*05/04/18 14:52*	*1*

Client Sample ID: K-2245 R1 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-6

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	22.1		1.47	1.47	ug/Sample		04/30/18 10:57	05/04/18 15:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:57*	*05/04/18 15:17*	*1*
4-Bromofluorobenzene (Surr)	*105*		*57 - 152*	*04/30/18 10:57*	*05/04/18 15:17*	*1*
Dibromofluoromethane (Surr)	*94*		*62 - 134*	*04/30/18 10:57*	*05/04/18 15:17*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*04/30/18 10:57*	*05/04/18 15:17*	*1*

Client Sample ID: K-2246 R1 IMPINGER #7 WITH MEOH RINSES

Lab Sample ID: 140-11412-7

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	7.28		1.48	1.48	ug/Sample		04/30/18 10:57	05/04/18 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 160*	*04/30/18 10:57*	*05/04/18 15:41*	*1*
4-Bromofluorobenzene (Surr)	*107*		*57 - 152*	*04/30/18 10:57*	*05/04/18 15:41*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*04/30/18 10:57*	*05/04/18 15:41*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*04/30/18 10:57*	*05/04/18 15:41*	*1*

Client Sample ID: K-2247 R1 IMPINGER #8 WITH MEOH RINSES

Lab Sample ID: 140-11412-8

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	2.51		1.39	1.39	ug/Sample		04/30/18 10:57	05/04/18 16:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:57*	*05/04/18 16:06*	*1*
4-Bromofluorobenzene (Surr)	*104*		*57 - 152*	*04/30/18 10:57*	*05/04/18 16:06*	*1*
Dibromofluoromethane (Surr)	*96*		*62 - 134*	*04/30/18 10:57*	*05/04/18 16:06*	*1*
Toluene-d8 (Surr)	*98*		*71 - 139*	*04/30/18 10:57*	*05/04/18 16:06*	*1*

Client Sample ID: K-2248 R2 IMPINGER #1 WITH MEOH RINSES

Lab Sample ID: 140-11412-9

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	266		3.77	3.77	ug/Sample		04/30/18 10:57	05/07/18 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*04/30/18 10:57*	*05/07/18 16:15*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*04/30/18 10:57*	*05/07/18 16:15*	*1*
Dibromofluoromethane (Surr)	*102*		*62 - 134*	*04/30/18 10:57*	*05/07/18 16:15*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*04/30/18 10:57*	*05/07/18 16:15*	*1*

Client Sample ID: K-2249 R2 IMPINGER #2 WITH MEOH RINSES

Lab Sample ID: 140-11412-10

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	417		2.73	2.73	ug/Sample		04/30/18 10:57	05/07/18 16:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*04/30/18 10:57*	*05/07/18 16:41*	*1*
4-Bromofluorobenzene (Surr)	*99*		*57 - 152*	*04/30/18 10:57*	*05/07/18 16:41*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/30/18 10:57*	*05/07/18 16:41*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:57*	*05/07/18 16:41*	*1*

Client Sample ID: K-2250 R2 IMPINGER #3 WITH MEOH RINSES

Lab Sample ID: 140-11412-11

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	352		3.28	3.28	ug/Sample		04/30/18 10:57	05/07/18 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*04/30/18 10:57*	*05/07/18 17:06*	*1*
4-Bromofluorobenzene (Surr)	*99*		*57 - 152*	*04/30/18 10:57*	*05/07/18 17:06*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:57*	*05/07/18 17:06*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:57*	*05/07/18 17:06*	*1*

Client Sample ID: K-2251 R2 IMPINGER #4 WITH MEOH RINSES

Lab Sample ID: 140-11412-12

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	213		2.72	2.72	ug/Sample		04/30/18 10:57	05/07/18 17:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*04/30/18 10:57*	*05/07/18 17:31*	*1*
4-Bromofluorobenzene (Surr)	*99*		*57 - 152*	*04/30/18 10:57*	*05/07/18 17:31*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:57*	*05/07/18 17:31*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:57*	*05/07/18 17:31*	*1*

Client Sample ID: K-2252 R2 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-13

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	130		1.38	1.38	ug/Sample		04/30/18 10:57	05/07/18 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:57*	*05/07/18 17:56*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*04/30/18 10:57*	*05/07/18 17:56*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/30/18 10:57*	*05/07/18 17:56*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*04/30/18 10:57*	*05/07/18 17:56*	*1*

Client Sample ID: K-2253 R2 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-14

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	68.5		1.45	1.45	ug/Sample		04/30/18 10:57	05/07/18 18:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*04/30/18 10:57*	*05/07/18 18:22*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*04/30/18 10:57*	*05/07/18 18:22*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:57*	*05/07/18 18:22*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*04/30/18 10:57*	*05/07/18 18:22*	*1*

Client Sample ID: K-2254 R2 IMPINGER #7 WITH MEOH RINSES

Lab Sample ID: 140-11412-15

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	39.1		1.45	1.45	ug/Sample		04/30/18 10:57	05/07/18 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:57*	*05/07/18 18:47*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*04/30/18 10:57*	*05/07/18 18:47*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:57*	*05/07/18 18:47*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*04/30/18 10:57*	*05/07/18 18:47*	*1*

Client Sample ID: K-2255 R2 IMPINGER #8 WITH MEOH RINSES

Lab Sample ID: 140-11412-16

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	22.7		1.43	1.43	ug/Sample		04/30/18 10:57	05/07/18 19:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*04/30/18 10:57*	*05/07/18 19:12*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*04/30/18 10:57*	*05/07/18 19:12*	*1*
Dibromofluoromethane (Surr)	*98*		*62 - 134*	*04/30/18 10:57*	*05/07/18 19:12*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:57*	*05/07/18 19:12*	*1*

Client Sample ID: K-2256 R1 IMPINGER #1 WITH MEOH RINSES

Lab Sample ID: 140-11412-17

Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	287		2.94	2.94	ug/Sample		04/30/18 10:57	05/07/18 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*04/30/18 10:57*	*05/07/18 19:38*	*1*
4-Bromofluorobenzene (Surr)	*99*		*57 - 152*	*04/30/18 10:57*	*05/07/18 19:38*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/30/18 10:57*	*05/07/18 19:38*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:57*	*05/07/18 19:38*	*1*

Client Sample ID: K-2257 R1 IMPINGER #2 WITH MEOH RINSES

Lab Sample ID: 140-11412-18

Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	267		3.36	3.36	ug/Sample		04/30/18 10:57	05/07/18 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:57*	*05/07/18 20:03*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*04/30/18 10:57*	*05/07/18 20:03*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:57*	*05/07/18 20:03*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:57*	*05/07/18 20:03*	*1*

Client Sample ID: K-2258 R1 IMPINGER #3 WITH MEOH RINSES

Lab Sample ID: 140-11412-19

Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	135		2.93	2.93	ug/Sample		04/30/18 10:57	05/07/18 20:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/30/18 10:57*	*05/07/18 20:28*	*1*
4-Bromofluorobenzene (Surr)	*101*		*57 - 152*	*04/30/18 10:57*	*05/07/18 20:28*	*1*
Dibromofluoromethane (Surr)	*89*		*62 - 134*	*04/30/18 10:57*	*05/07/18 20:28*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:57*	*05/07/18 20:28*	*1*

Client Sample ID: K-2259 R1 IMPINGER #4 WITH MEOH RINSES

Lab Sample ID: 140-11412-20

Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	102		3.37	3.37	ug/Sample		04/30/18 10:57	05/07/18 20:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*04/30/18 10:57*	*05/07/18 20:54*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*04/30/18 10:57*	*05/07/18 20:54*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/30/18 10:57*	*05/07/18 20:54*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*04/30/18 10:57*	*05/07/18 20:54*	*1*

Client Sample ID: K-2260 R1 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-21

Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	51.7		1.62	1.62	ug/Sample		04/30/18 10:59	05/07/18 21:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*04/30/18 10:59*	*05/07/18 21:19*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*04/30/18 10:59*	*05/07/18 21:19*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/30/18 10:59*	*05/07/18 21:19*	*1*
Toluene-d8 (Surr)	*94*		*71 - 139*	*04/30/18 10:59*	*05/07/18 21:19*	*1*

Client Sample ID: K-2261 R1 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-22

Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	19.4		1.52	1.52	ug/Sample		04/30/18 10:59	05/07/18 21:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:59*	*05/07/18 21:44*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*04/30/18 10:59*	*05/07/18 21:44*	*1*
Dibromofluoromethane (Surr)	*97*		*62 - 134*	*04/30/18 10:59*	*05/07/18 21:44*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*04/30/18 10:59*	*05/07/18 21:44*	*1*

Client Sample ID: K-2262 R1 IMPINGER #7 WITH MEOH RINSES

Lab Sample ID: 140-11412-23

Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	8.35		1.53	1.53	ug/Sample		04/30/18 10:59	05/07/18 22:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:59*	*05/07/18 22:10*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*04/30/18 10:59*	*05/07/18 22:10*	*1*
Dibromofluoromethane (Surr)	*98*		*62 - 134*	*04/30/18 10:59*	*05/07/18 22:10*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*04/30/18 10:59*	*05/07/18 22:10*	*1*

Client Sample ID: K-2263 R1 IMPINGER #8 WITH MEOH RINSES

Lab Sample ID: 140-11412-24

Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	2.79		1.34	1.34	ug/Sample		04/30/18 10:59	05/07/18 22:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/30/18 10:59*	*05/07/18 22:35*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*04/30/18 10:59*	*05/07/18 22:35*	*1*
Dibromofluoromethane (Surr)	*98*		*62 - 134*	*04/30/18 10:59*	*05/07/18 22:35*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*04/30/18 10:59*	*05/07/18 22:35*	*1*

Client Sample ID: K-2264 R2 IMPINGER #1 WITH MEOH RINSES

Lab Sample ID: 140-11412-25

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	210		3.04	3.04	ug/Sample		04/30/18 10:59	05/07/18 23:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*04/30/18 10:59*	*05/07/18 23:00*	*1*
4-Bromofluorobenzene (Surr)	*99*		*57 - 152*	*04/30/18 10:59*	*05/07/18 23:00*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:59*	*05/07/18 23:00*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*04/30/18 10:59*	*05/07/18 23:00*	*1*

Client Sample ID: K-2265 R2 IMPINGER #2 WITH MEOH RINSES

Lab Sample ID: 140-11412-26

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	106		2.64	2.64	ug/Sample		04/30/18 10:59	05/07/18 23:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:59*	*05/07/18 23:25*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*04/30/18 10:59*	*05/07/18 23:25*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:59*	*05/07/18 23:25*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:59*	*05/07/18 23:25*	*1*

Client Sample ID: K-2266 R2 IMPINGER #3 WITH MEOH RINSES

Lab Sample ID: 140-11412-27

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	34.0		2.75	2.75	ug/Sample		04/30/18 10:59	05/07/18 23:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*04/30/18 10:59*	*05/07/18 23:51*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*04/30/18 10:59*	*05/07/18 23:51*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/30/18 10:59*	*05/07/18 23:51*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:59*	*05/07/18 23:51*	*1*

Client Sample ID: K-2267 R2 IMPINGER #4 WITH MEOH RINSES

Lab Sample ID: 140-11412-28

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	9.08		2.82	2.82	ug/Sample		04/30/18 10:59	05/08/18 00:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*04/30/18 10:59*	*05/08/18 00:16*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*04/30/18 10:59*	*05/08/18 00:16*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/30/18 10:59*	*05/08/18 00:16*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*04/30/18 10:59*	*05/08/18 00:16*	*1*

Client Sample ID: K-2268 R2 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-29

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	3.15		1.76	1.76	ug/Sample		04/30/18 10:59	05/08/18 12:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/30/18 10:59*	*05/08/18 12:22*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*04/30/18 10:59*	*05/08/18 12:22*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/30/18 10:59*	*05/08/18 12:22*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/30/18 10:59*	*05/08/18 12:22*	*1*

Client Sample ID: K-2269 R2 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-30

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.62	1.62	ug/Sample		04/30/18 10:59	05/08/18 12:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/30/18 10:59*	*05/08/18 12:47*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*04/30/18 10:59*	*05/08/18 12:47*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:59*	*05/08/18 12:47*	*1*
Toluene-d8 (Surr)	*94*		*71 - 139*	*04/30/18 10:59*	*05/08/18 12:47*	*1*

Client Sample ID: K-2270 R2 IMPINGER #7 WITH MEOH RINSES

Lab Sample ID: 140-11412-31

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.10	1.10	ug/Sample		04/30/18 10:59	05/08/18 13:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:59*	*05/08/18 13:12*	*1*
4-Bromofluorobenzene (Surr)	*92*		*57 - 152*	*04/30/18 10:59*	*05/08/18 13:12*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/30/18 10:59*	*05/08/18 13:12*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/30/18 10:59*	*05/08/18 13:12*	*1*

Client Sample ID: K-2271 R2 IMPINGER #8 WITH MEOH RINSES

Lab Sample ID: 140-11412-32

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.11	1.11	ug/Sample		04/30/18 10:59	05/08/18 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:59*	*05/08/18 13:37*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*04/30/18 10:59*	*05/08/18 13:37*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/30/18 10:59*	*05/08/18 13:37*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/30/18 10:59*	*05/08/18 13:37*	*1*

Client Sample ID: K-2272 QC IMPINGER #1 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-33

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		0.840	0.840	ug/Sample		04/30/18 10:59	05/08/18 14:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:59*	*05/08/18 14:03*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*04/30/18 10:59*	*05/08/18 14:03*	*1*
Dibromofluoromethane (Surr)	*102*		*62 - 134*	*04/30/18 10:59*	*05/08/18 14:03*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/30/18 10:59*	*05/08/18 14:03*	*1*

Client Sample ID: K-2273 QC IMPINGER #2 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-34

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.27	1.27	ug/Sample		04/30/18 10:59	05/08/18 14:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/30/18 10:59*	*05/08/18 14:28*	*1*
4-Bromofluorobenzene (Surr)	*92*		*57 - 152*	*04/30/18 10:59*	*05/08/18 14:28*	*1*
Dibromofluoromethane (Surr)	*102*		*62 - 134*	*04/30/18 10:59*	*05/08/18 14:28*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/30/18 10:59*	*05/08/18 14:28*	*1*

Client Sample ID: K-2274 QC IMPINGER #3 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-35

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.32	1.32	ug/Sample		04/30/18 10:59	05/08/18 14:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:59*	*05/08/18 14:53*	*1*
4-Bromofluorobenzene (Surr)	*92*		*57 - 152*	*04/30/18 10:59*	*05/08/18 14:53*	*1*
Dibromofluoromethane (Surr)	*102*		*62 - 134*	*04/30/18 10:59*	*05/08/18 14:53*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/30/18 10:59*	*05/08/18 14:53*	*1*

Client Sample ID: K-2275 QC IMPINGER #4 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-36

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.19	1.19	ug/Sample		04/30/18 10:59	05/08/18 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/30/18 10:59*	*05/08/18 15:19*	*1*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*	*04/30/18 10:59*	*05/08/18 15:19*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:59*	*05/08/18 15:19*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/30/18 10:59*	*05/08/18 15:19*	*1*

Client Sample ID: K-2276 QC IMPINGER #5 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-37

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.41	1.41	ug/Sample		04/30/18 10:59	05/08/18 15:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/30/18 10:59*	*05/08/18 15:44*	*1*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*	*04/30/18 10:59*	*05/08/18 15:44*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/30/18 10:59*	*05/08/18 15:44*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/30/18 10:59*	*05/08/18 15:44*	*1*

Client Sample ID: K-2277 QC IMPINGER #6 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-38

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.35	1.35	ug/Sample		04/30/18 10:59	05/08/18 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/30/18 10:59*	*05/08/18 16:09*	*1*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*	*04/30/18 10:59*	*05/08/18 16:09*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 10:59*	*05/08/18 16:09*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/30/18 10:59*	*05/08/18 16:09*	*1*

Client Sample ID: K-2278 QC IMPINGER #7 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-39

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.54	1.54	ug/Sample		04/30/18 10:59	05/08/18 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/30/18 10:59*	*05/08/18 16:34*	*1*
4-Bromofluorobenzene (Surr)	*90*		*57 - 152*	*04/30/18 10:59*	*05/08/18 16:34*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/30/18 10:59*	*05/08/18 16:34*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/30/18 10:59*	*05/08/18 16:34*	*1*

Client Sample ID: K-2279 QC IMPINGER #8 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-40

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.47	1.47	ug/Sample		04/30/18 10:59	05/08/18 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/30/18 10:59*	*05/08/18 17:00*	*1*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*	*04/30/18 10:59*	*05/08/18 17:00*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/30/18 10:59*	*05/08/18 17:00*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/30/18 10:59*	*05/08/18 17:00*	*1*

Client Sample ID: K-2280 QC MEOH RB

Lab Sample ID: 140-11412-41

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		2.16	2.16	ug/Sample		04/30/18 11:00	05/08/18 11:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/30/18 11:00*	*05/08/18 11:03*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*04/30/18 11:00*	*05/08/18 11:03*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/30/18 11:00*	*05/08/18 11:03*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/30/18 11:00*	*05/08/18 11:03*	*1*

Client Sample ID: K-2281 QC MEOH TB

Lab Sample ID: 140-11412-42

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		1.81	1.81	ug/Sample		04/30/18 11:00	05/08/18 11:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 11:00*	*05/08/18 11:28*	*1*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*	*04/30/18 11:00*	*05/08/18 11:28*	*1*
Dibromofluoromethane (Surr)	*101*		*62 - 134*	*04/30/18 11:00*	*05/08/18 11:28*	*1*
Toluene-d8 (Surr)	*92*		*71 - 139*	*04/30/18 11:00*	*05/08/18 11:28*	*1*

Client Sample ID: K-2282 QC PROOF BLANK

Lab Sample ID: 140-11412-43

Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		2.07	2.07	ug/Sample		04/30/18 11:00	05/08/18 11:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*04/30/18 11:00*	*05/08/18 11:56*	*1*

Client: Chemours Company FC, LLC The
Project/Site: Stripper Column - HFPO Field Test

TestAmerica Job ID: 140-11412-1

Client Sample ID: K-2282 QC PROOF BLANK
Lab Sample ID: 140-11412-43
Date Collected: 04/25/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00
Sample Container: Plastic 60 mL - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		57 - 152	04/30/18 11:00	05/08/18 11:56	1
Dibromofluoromethane (Surr)	100		62 - 134	04/30/18 11:00	05/08/18 11:56	1
Toluene-d8 (Surr)	93		71 - 139	04/30/18 11:00	05/08/18 11:56	1

Default Detection Limits

Client: Chemours Company FC, LLC The
Project/Site: Stripper Column - HFPO Field Test

TestAmerica Job ID: 140-11412-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Prep: MeOH Prep

Analyte	RL	MDL	Units	Method
2-MTP as HFPO	0.500	0.500	ug/Sample	8260B

Surrogate Summary

Client: Chemours Company FC, LLC The
Project/Site: Stripper Column - HFPO Field Test

TestAmerica Job ID: 140-11412-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(70-160)	(57-152)	(62-134)	(71-139)
140-11412-1	K-2240 R1 IMPINGER #1 WITH	97	105	97	100
140-11412-2	K-2241 R1 IMPINGER #2 WITH	96	104	96	100
140-11412-3	K-2242 R1 IMPINGER #3 WITH	98	104	96	99
140-11412-4	K-2243 R1 IMPINGER #4 WITH	96	105	95	99
140-11412-5	K-2244 R1 IMPINGER #5 WITH	96	102	95	97
140-11412-5 MS	K-2244 R1 IMPINGER #5 WITH	94	92	100	96
140-11412-5 MSD	K-2244 R1 IMPINGER #5 WITH	94	93	102	96
140-11412-6	K-2245 R1 IMPINGER #6 WITH	95	105	94	99
140-11412-6 MS	K-2245 R1 IMPINGER #6 WITH	94	93	103	95
140-11412-6 MSD	K-2245 R1 IMPINGER #6 WITH	93	93	102	96
140-11412-7	K-2246 R1 IMPINGER #7 WITH	90	107	91	102
140-11412-8	K-2247 R1 IMPINGER #8 WITH	95	104	96	98
140-11412-9	K-2248 R2 IMPINGER #1 WITH	98	97	102	95
140-11412-10	K-2249 R2 IMPINGER #2 WITH	96	99	99	96
140-11412-11	K-2250 R2 IMPINGER #3 WITH	96	99	100	96
140-11412-12	K-2251 R2 IMPINGER #4 WITH	98	99	100	96
140-11412-13	K-2252 R2 IMPINGER #5 WITH	95	98	99	95
140-11412-14	K-2253 R2 IMPINGER #6 WITH	96	98	100	95
140-11412-15	K-2254 R2 IMPINGER #7 WITH	95	97	100	95
140-11412-16	K-2255 R2 IMPINGER #8 WITH	98	97	98	96
140-11412-17	K-2256 R1 IMPINGER #1 WITH	98	99	99	96
140-11412-18	K-2257 R1 IMPINGER #2 WITH	95	98	100	96
140-11412-19	K-2258 R1 IMPINGER #3 WITH	94	101	89	96
140-11412-20	K-2259 R1 IMPINGER #4 WITH	96	97	99	95
140-11412-21	K-2260 R1 IMPINGER #5 WITH	96	97	99	94
140-11412-21 MS	K-2260 R1 IMPINGER #5 WITH	98	89	107	92
140-11412-21 MSD	K-2260 R1 IMPINGER #5 WITH	96	90	107	92
140-11412-22	K-2261 R1 IMPINGER #6 WITH	95	96	97	95
140-11412-22 MS	K-2261 R1 IMPINGER #6 WITH	95	90	108	94
140-11412-22 MSD	K-2261 R1 IMPINGER #6 WITH	97	90	107	92
140-11412-23	K-2262 R1 IMPINGER #7 WITH	95	97	98	95
140-11412-24	K-2263 R1 IMPINGER #8 WITH	94	98	98	95
140-11412-25	K-2264 R2 IMPINGER #1 WITH	97	99	100	95
140-11412-26	K-2265 R2 IMPINGER #2 WITH	95	98	100	96
140-11412-27	K-2266 R2 IMPINGER #3 WITH	98	98	101	96
140-11412-28	K-2267 R2 IMPINGER #4 WITH	96	98	101	96
140-11412-29	K-2268 R2 IMPINGER #5 WITH	93	94	99	93
140-11412-30	K-2269 R2 IMPINGER #6 WITH	93	95	100	94
140-11412-31	K-2270 R2 IMPINGER #7 WITH	95	92	101	93
140-11412-32	K-2271 R2 IMPINGER #8 WITH	95	94	101	92
140-11412-33	K-2272 QC IMPINGER #1 WITH	95	93	102	93
140-11412-34	K-2273 QC IMPINGER #2 WITH	94	92	102	92
140-11412-35	K-2274 QC IMPINGER #3 WITH	95	92	102	93
140-11412-36	K-2275 QC IMPINGER #4 WITH	93	91	100	93
140-11412-37	K-2276 QC IMPINGER #5 WITH	94	91	101	92
140-11412-38	K-2277 QC IMPINGER #6 WITH	93	91	100	93
140-11412-39	K-2278 QC IMPINGER #7 WITH	93	90	99	92
140-11412-40	K-2279 QC IMPINGER #8 WITH	94	91	101	92
140-11412-41	K-2280 QC MEOH RB	93	94	99	93

Surrogate Summary

Client: Chemours Company FC, LLC The
Project/Site: Stripper Column - HFPO Field Test

TestAmerica Job ID: 140-11412-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(70-160)	(57-152)	(62-134)	(71-139)
140-11412-42	K-2281 QC MEOH TB	95	91	101	92
140-11412-43	K-2282 QC PROOF BLANK	94	95	100	93
140-11412-43 MS	K-2282 QC PROOF BLANK	93	87	110	92
140-11412-43 MSD	K-2282 QC PROOF BLANK	93	90	105	93
LCS 140-19947/1-A	Lab Control Sample	95	93	101	96
LCS 140-19948/1-A	Lab Control Sample	94	89	107	92
LCS 140-19949/1-A	Lab Control Sample	93	91	106	92
MB 140-19947/2-A	Method Blank	98	103	98	98
MB 140-19948/2-A	Method Blank	95	97	99	94
MB 140-19949/2-A	Method Blank	93	93	100	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 140-19947/2-A
Matrix: Air
Analysis Batch: 20088

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 19947

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		0.437	0.437	ug/Sample		04/30/18 10:57	05/04/18 11:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*04/30/18 10:57*	*05/04/18 11:37*	*1*
4-Bromofluorobenzene (Surr)	*103*		*57 - 152*	*04/30/18 10:57*	*05/04/18 11:37*	*1*
Dibromofluoromethane (Surr)	*98*		*62 - 134*	*04/30/18 10:57*	*05/04/18 11:37*	*1*
Toluene-d8 (Surr)	*98*		*71 - 139*	*04/30/18 10:57*	*05/04/18 11:37*	*1*

Lab Sample ID: LCS 140-19947/1-A
Matrix: Air
Analysis Batch: 20088

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 19947

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-MTP as HFPO			25.0	23.47		ug/Sample		94			

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*
Dibromofluoromethane (Surr)	*101*		*62 - 134*
Toluene-d8 (Surr)	*96*		*71 - 139*

Lab Sample ID: 140-11412-5 MS
Matrix: Air
Analysis Batch: 20088

Client Sample ID: K-2244 R1 IMPINGER #5 WITH MEOH RINSES
Prep Type: Total/NA
Prep Batch: 19947

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-MTP as HFPO	53.5		87.0	174.1		ug/Sample		139			

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*
4-Bromofluorobenzene (Surr)	*92*		*57 - 152*
Dibromofluoromethane (Surr)	*100*		*62 - 134*
Toluene-d8 (Surr)	*96*		*71 - 139*

Lab Sample ID: 140-11412-5 MSD
Matrix: Air
Analysis Batch: 20088

Client Sample ID: K-2244 R1 IMPINGER #5 WITH MEOH RINSES
Prep Type: Total/NA
Prep Batch: 19947

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	53.5		87.0	141.1		ug/Sample		101		21	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*
Dibromofluoromethane (Surr)	*102*		*62 - 134*
Toluene-d8 (Surr)	*96*		*71 - 139*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-11412-6 MS — **Client Sample ID: K-2245 R1 IMPINGER #6 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20088 — **Prep Batch: 19947**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	22.1		84.0	107.6		ug/Sample		102	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*
Dibromofluoromethane (Surr)	*103*		*62 - 134*
Toluene-d8 (Surr)	*95*		*71 - 139*

Lab Sample ID: 140-11412-6 MSD — **Client Sample ID: K-2245 R1 IMPINGER #6 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20088 — **Prep Batch: 19947**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	22.1		84.0	104.0		ug/Sample		97		3	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*
Dibromofluoromethane (Surr)	*102*		*62 - 134*
Toluene-d8 (Surr)	*96*		*71 - 139*

Lab Sample ID: MB 140-19948/2-A — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20143 — **Prep Batch: 19948**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		0.437	0.437	ug/Sample		04/30/18 10:59	05/07/18 15:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*04/30/18 10:59*	*05/07/18 15:50*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*04/30/18 10:59*	*05/07/18 15:50*	*1*
Dibromofluoromethane (Surr)	*99*		*62 - 134*	*04/30/18 10:59*	*05/07/18 15:50*	*1*
Toluene-d8 (Surr)	*94*		*71 - 139*	*04/30/18 10:59*	*05/07/18 15:50*	*1*

Lab Sample ID: LCS 140-19948/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20155 — **Prep Batch: 19948**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO			25.0	27.05		ug/Sample		108	

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*
4-Bromofluorobenzene (Surr)	*89*		*57 - 152*
Dibromofluoromethane (Surr)	*107*		*62 - 134*
Toluene-d8 (Surr)	*92*		*71 - 139*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-11412-21 MS — **Client Sample ID: K-2260 R1 IMPINGER #5 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20143 — **Prep Batch: 19948**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	51.7		92.3	153.7		ug/Sample		111	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*
4-Bromofluorobenzene (Surr)	*89*		*57 - 152*
Dibromofluoromethane (Surr)	*107*		*62 - 134*
Toluene-d8 (Surr)	*92*		*71 - 139*

Lab Sample ID: 140-11412-21 MSD — **Client Sample ID: K-2260 R1 IMPINGER #5 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20143 — **Prep Batch: 19948**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	51.7		92.3	138.5		ug/Sample		94		10	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*
4-Bromofluorobenzene (Surr)	*90*		*57 - 152*
Dibromofluoromethane (Surr)	*107*		*62 - 134*
Toluene-d8 (Surr)	*92*		*71 - 139*

Lab Sample ID: 140-11412-22 MS — **Client Sample ID: K-2261 R1 IMPINGER #6 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20143 — **Prep Batch: 19948**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-MTP as HFPO	19.4		86.9	104.5		ug/Sample		98	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*
4-Bromofluorobenzene (Surr)	*90*		*57 - 152*
Dibromofluoromethane (Surr)	*108*		*62 - 134*
Toluene-d8 (Surr)	*94*		*71 - 139*

Lab Sample ID: 140-11412-22 MSD — **Client Sample ID: K-2261 R1 IMPINGER #6 WITH MEOH RINSES**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 20143 — **Prep Batch: 19948**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	19.4		86.9	119.5		ug/Sample		115		13	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*
4-Bromofluorobenzene (Surr)	*90*		*57 - 152*
Dibromofluoromethane (Surr)	*107*		*62 - 134*
Toluene-d8 (Surr)	*92*		*71 - 139*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 140-19949/2-A
Matrix: Air
Analysis Batch: 20155

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 19949

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	ND		0.437	0.437	ug/Sample		04/30/18 11:00	05/08/18 10:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*04/30/18 11:00*	*05/08/18 10:38*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*04/30/18 11:00*	*05/08/18 10:38*	*1*
Dibromofluoromethane (Surr)	*100*		*62 - 134*	*04/30/18 11:00*	*05/08/18 10:38*	*1*
Toluene-d8 (Surr)	*93*		*71 - 139*	*04/30/18 11:00*	*05/08/18 10:38*	*1*

Lab Sample ID: LCS 140-19949/1-A
Matrix: Air
Analysis Batch: 20155

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 19949

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-MTP as HFPO			25.0	28.40		ug/Sample		114			

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*
Dibromofluoromethane (Surr)	*106*		*62 - 134*
Toluene-d8 (Surr)	*92*		*71 - 139*

Lab Sample ID: 140-11412-43 MS
Matrix: Air
Analysis Batch: 20155

Client Sample ID: K-2282 QC PROOF BLANK
Prep Type: Total/NA
Prep Batch: 19949

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-MTP as HFPO	ND		118	125.3		ug/Sample		106			

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*
4-Bromofluorobenzene (Surr)	*87*		*57 - 152*
Dibromofluoromethane (Surr)	*110*		*62 - 134*
Toluene-d8 (Surr)	*92*		*71 - 139*

Lab Sample ID: 140-11412-43 MSD
Matrix: Air
Analysis Batch: 20155

Client Sample ID: K-2282 QC PROOF BLANK
Prep Type: Total/NA
Prep Batch: 19949

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-MTP as HFPO	ND		118	126.4		ug/Sample		107		1	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*
4-Bromofluorobenzene (Surr)	*90*		*57 - 152*
Dibromofluoromethane (Surr)	*105*		*62 - 134*
Toluene-d8 (Surr)	*93*		*71 - 139*

Client Sample ID: K-2240 R1 IMPINGER #1 WITH MEOH RINSES

Lab Sample ID: 140-11412-1

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	39.82 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20088	05/04/18 13:15	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2241 R1 IMPINGER #2 WITH MEOH RINSES

Lab Sample ID: 140-11412-2

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	30.10 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20088	05/04/18 13:39	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2242 R1 IMPINGER #3 WITH MEOH RINSES

Lab Sample ID: 140-11412-3

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	31.05 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20088	05/04/18 14:04	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2243 R1 IMPINGER #4 WITH MEOH RINSES

Lab Sample ID: 140-11412-4

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	36.60 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20088	05/04/18 16:30	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2244 R1 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-5

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	34.80 mL	19947	04/30/18 10:57	BKK	TAL KNX

Client Sample ID: K-2244 R1 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-5

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 14:52	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2245 R1 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-6

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.61 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 15:17	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2246 R1 IMPINGER #7 WITH MEOH RINSES

Lab Sample ID: 140-11412-7

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.90 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 15:41	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2247 R1 IMPINGER #8 WITH MEOH RINSES

Lab Sample ID: 140-11412-8

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	31.87 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 16:06	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2248 R2 IMPINGER #1 WITH MEOH RINSES

Lab Sample ID: 140-11412-9

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	43.17 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 16:15	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2249 R2 IMPINGER #2 WITH MEOH RINSES

Lab Sample ID: 140-11412-10

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	31.26 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 16:41	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2250 R2 IMPINGER #3 WITH MEOH RINSES

Lab Sample ID: 140-11412-11

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	37.64 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 17:06	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2251 R2 IMPINGER #4 WITH MEOH RINSES

Lab Sample ID: 140-11412-12

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	31.10 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 17:31	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2252 R2 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-13

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	31.68 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/07/18 17:56	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2253 R2 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-14

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.18 mL	19947	04/30/18 10:57	BKK	TAL KNX

Client Sample ID: K-2253 R2 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-14

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/07/18 18:22	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2254 R2 IMPINGER #7 WITH MEOH RINSES

Lab Sample ID: 140-11412-15

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.27 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/07/18 18:47	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2255 R2 IMPINGER #8 WITH MEOH RINSES

Lab Sample ID: 140-11412-16

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	32.88 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/07/18 19:12	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2256 R1 IMPINGER #1 WITH MEOH RINSES

Lab Sample ID: 140-11412-17

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.67 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 19:38	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2257 R1 IMPINGER #2 WITH MEOH RINSES

Lab Sample ID: 140-11412-18

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	38.45 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 20:03	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2258 R1 IMPINGER #3 WITH MEOH RINSES

Lab Sample ID: 140-11412-19

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.48 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 20:28	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2259 R1 IMPINGER #4 WITH MEOH RINSES

Lab Sample ID: 140-11412-20

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	38.61 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 20:54	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2260 R1 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-21

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	36.91 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/07/18 21:19	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2261 R1 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-22

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	34.76 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/07/18 21:44	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2262 R1 IMPINGER #7 WITH MEOH RINSES

Lab Sample ID: 140-11412-23

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	35.06 mL	19948	04/30/18 10:59	BKK	TAL KNX

Client Sample ID: K-2262 R1 IMPINGER #7 WITH MEOH RINSES

Lab Sample ID: 140-11412-23

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/07/18 22:10	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2263 R1 IMPINGER #8 WITH MEOH RINSES

Lab Sample ID: 140-11412-24

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	30.52 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/07/18 22:35	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2264 R2 IMPINGER #1 WITH MEOH RINSES

Lab Sample ID: 140-11412-25

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	34.82 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 23:00	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2265 R2 IMPINGER #2 WITH MEOH RINSES

Lab Sample ID: 140-11412-26

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	30.18 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 23:25	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2266 R2 IMPINGER #3 WITH MEOH RINSES

Lab Sample ID: 140-11412-27

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	31.49 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/07/18 23:51	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2267 R2 IMPINGER #4 WITH MEOH RINSES

Lab Sample ID: 140-11412-28

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	32.26 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	50 uL	5 mL	20143	05/08/18 00:16	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2268 R2 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-29

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	40.29 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 12:22	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2269 R2 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-30

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	37.23 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 12:47	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2270 R2 IMPINGER #7 WITH MEOH RINSES

Lab Sample ID: 140-11412-31

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.25 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 13:12	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2271 R2 IMPINGER #8 WITH MEOH RINSES

Lab Sample ID: 140-11412-32

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	25.39 mL	19948	04/30/18 10:59	BKK	TAL KNX

Client Sample ID: K-2271 R2 IMPINGER #8 WITH MEOH RINSES

Lab Sample ID: 140-11412-32

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 13:37	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2272 QC IMPINGER #1 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-33

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	19.24 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 14:03	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2273 QC IMPINGER #2 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-34

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	29.03 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 14:28	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2274 QC IMPINGER #3 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-35

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	30.24 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 14:53	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2275 QC IMPINGER #4 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-36

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	27.20 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 15:19	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2276 QC IMPINGER #5 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-37

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	32.31 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 15:44	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2277 QC IMPINGER #6 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-38

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	30.86 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 16:09	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2278 QC IMPINGER #7 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-39

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	35.29 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 16:34	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2279 QC IMPINGER #8 WITH MEOH RINSES BT

Lab Sample ID: 140-11412-40

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.51 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 17:00	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2280 QC MEOH RB

Lab Sample ID: 140-11412-41

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	49.39 mL	19949	04/30/18 11:00	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 11:03	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2281 QC MEOH TB

Lab Sample ID: 140-11412-42

Date Collected: 04/26/18 00:00

Matrix: Air

Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	41.31 mL	19949	04/30/18 11:00	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 11:28	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2282 QC PROOF BLANK

Lab Sample ID: 140-11412-43

Date Collected: 04/25/18 00:00

Matrix: Air

Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	47.32 mL	19949	04/30/18 11:00	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 11:56	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-19947/2-A

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 11:37	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-19948/2-A

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/07/18 15:50	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-19949/2-A

Date Collected: N/A

Matrix: Air

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19949	04/30/18 11:00	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 10:38	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-19947/1-A

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 10:48	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-19948/1-A

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 18:16	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-19949/1-A

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	19949	04/30/18 11:00	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 10:12	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2244 R1 IMPINGER #5 WITH MEOH RINSES
Lab Sample ID: 140-11412-5 MS

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	34.80 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 16:55	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2244 R1 IMPINGER #5 WITH MEOH RINSES
Lab Sample ID: 140-11412-5 MSD

Date Collected: 04/26/18 00:00
Matrix: Air
Date Received: 04/27/18 14:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	34.80 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 17:19	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2245 R1 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-6 MS

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.61 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 17:44	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2245 R1 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-6 MSD

Date Collected: 04/26/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	33.61 mL	19947	04/30/18 10:57	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20088	05/04/18 18:08	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2260 R1 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-21 MS

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	36.91 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/08/18 00:41	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2260 R1 IMPINGER #5 WITH MEOH RINSES

Lab Sample ID: 140-11412-21 MSD

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	36.91 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/08/18 01:07	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2261 R1 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-22 MS

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	34.76 mL	19948	04/30/18 10:59	BKK	TAL KNX

Client Sample ID: K-2261 R1 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-22 MS

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/08/18 01:32	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2261 R1 IMPINGER #6 WITH MEOH RINSES

Lab Sample ID: 140-11412-22 MSD

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	34.76 mL	19948	04/30/18 10:59	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20143	05/08/18 01:57	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2282 QC PROOF BLANK

Lab Sample ID: 140-11412-43 MS

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	47.32 mL	19949	04/30/18 11:00	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 17:25	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: K-2282 QC PROOF BLANK

Lab Sample ID: 140-11412-43 MSD

Date Collected: 04/25/18 00:00
Date Received: 04/27/18 14:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	47.32 mL	19949	04/30/18 11:00	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	20155	05/08/18 17:50	BKK	TAL KNX
	Instrument ID: MK									

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Chemours Company FC, LLC The
TestAmerica Job ID: 140-11412-1
Project/Site: Stripper Column - HFPO Field Test

Laboratory: TestAmerica Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		N/A	
ANAB	DoD ELAP		L2311	02-13-19
Arkansas DEQ	State Program	6	88-0688	06-16-19
California	State Program	9	2423	06-30-18
Colorado	State Program	8	TN00009	02-28-19
Connecticut	State Program	1	PH-0223	09-30-19
Florida	NELAP	4	E87177	06-30-18
Georgia	State Program	4	906	04-13-20
Hawaii	State Program	9	N/A	04-13-19
Kansas	NELAP	7	E-10349	10-31-18
Kentucky (DW)	State Program	4	90101	12-31-18
Louisiana	NELAP	6	83979	06-30-18
Louisiana (DW)	NELAP	6	LA160005	12-31-18
Maryland	State Program	3	277	03-31-19
Michigan	State Program	5	9933	04-13-20
Nevada	State Program	9	TN00009	07-31-18
New Jersey	NELAP	2	TN001	06-30-18
New York	NELAP	2	10781	03-31-19
North Carolina (DW)	State Program	4	21705	07-31-18
North Carolina (WW/SW)	State Program	4	64	12-31-18
Ohio VAP	State Program	5	CL0059	11-22-18
Oklahoma	State Program	6	9415	08-31-18
Oregon	NELAP	10	TNI0189	01-01-19
Pennsylvania	NELAP	3	68-00576	12-31-18
Tennessee	State Program	4	2014	04-13-20
Texas	NELAP	6	T104704380-16-9	08-31-18
US Fish & Wildlife	Federal		LE-058448-0	07-31-18
USDA	Federal		P330-16-00262	08-20-19
Utah	NELAP	8	TN00009	07-31-18
Virginia	NELAP	3	460176	09-14-18
Washington	State Program	10	C593	01-19-19
West Virginia (DW)	State Program	3	9955C	12-31-18
West Virginia DEP	State Program	3	345	04-30-18 *
Wisconsin	State Program	5	998044300	08-31-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-11412-1

SDG No.:

Instrument ID: 320 Analysis Batch Number: 19194

Lab Sample ID: IC 140-19194/1 Client Sample ID:

Date Analyzed: 03/30/18 10:28 Lab File ID: 1140-0007774-001.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Chloride	4.82	Split Peak	humphreyj	03/30/18 15:15
Bromide	7.16	Split Peak	humphreyj	03/30/18 15:16
Iodide	17.05	Baseline Smoothing	humphreyj	03/30/18 15:16

Lab Sample ID: IC 140-19194/2 Client Sample ID:

Date Analyzed: 03/30/18 10:53 Lab File ID: 2140-0007774-002.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.21	Split Peak	humphreyj	03/30/18 15:17
Chloride	4.82	Baseline Smoothing	humphreyj	03/30/18 15:18

Lab Sample ID: IC 140-19194/3 Client Sample ID:

Date Analyzed: 03/30/18 11:17 Lab File ID: 3140-0007774-003.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.21	Split Peak	humphreyj	03/30/18 15:20
Bromide	7.18	Baseline Smoothing	humphreyj	03/30/18 15:20
Sulfate	11.88	Split Peak	humphreyj	03/30/18 15:21
Iodide	17.09	Baseline Smoothing	humphreyj	03/30/18 15:21

Lab Sample ID: IC 140-19194/4 Client Sample ID:

Date Analyzed: 03/30/18 11:42 Lab File ID: 4140-0007774-004.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.21	Split Peak	humphreyj	03/30/18 15:21

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-11412-1

SDG No.:

Instrument ID: 320 Analysis Batch Number: 19194

Lab Sample ID: IC 140-19194/5 Client Sample ID:

Date Analyzed: 03/30/18 12:07 Lab File ID: 5140-0007774-005.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.23	Split Peak	humphreyj	03/30/18 15:22

Lab Sample ID: IC 140-19194/6 Client Sample ID:

Date Analyzed: 03/30/18 12:32 Lab File ID: 6140-0007774-006.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.23	Split Peak	humphreyj	03/30/18 15:23

Lab Sample ID: IC 140-19194/7 Client Sample ID:

Date Analyzed: 03/30/18 12:56 Lab File ID: 7140-0007774-007.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.25	Split Peak	humphreyj	03/30/18 15:24
Chloride	4.83	Baseline Smoothing	humphreyj	03/30/18 15:24

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Knoxville Job No.: 140-11412-1

SDG No.:

Instrument ID: 320 Analysis Batch Number: 20048

Lab Sample ID: CCV 140-20048/1 Client Sample ID:

Date Analyzed: 05/02/18 18:21 Lab File ID: 32140-0008090-001.d GC Column: AS22 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Fluoride	3.24	Split Peak	humphreyj	05/03/18 07:28

9056

APPENDIX D
SAMPLE CALCULATIONS

SAMPLE CALCULATIONS FOR
VOLUMETRIC FLOW & MOISTURE

Client: Chemours
Test Number: Pre-Run 1
Test Location: Division

Plant: Fayetteville, NC
Test Date: 4/5/18
Test Period: 0926-1026

1. Moisture Content

BWS	=	(PP / Ps) * 100
BWS	=	0.924 / 30.135 = 3.07

Where:

BWS	=	Moisture, %
PP	=	Partial Press of H2O
Ps	=	Absolute stack static pressure, inches Hg (Ps)

2. Mole fraction of dry gas.

Md	=	1 - Bws
Md	=	1 - 0.0307 = 0.969

Where:

Md	=	Mole fraction of dry gas, dimensionless.

3. Dry molecular weight of gas stream, lb/lb-mole.

MWd	=	(0.440 x % CO_2) + (0.320 x % O_2) + (0.280 x (% N_2 + % CO))
MWd	=	(0.440 x 0.00) + (0.320 x 20.90) + (0.280 x (79.10 + 0.00))
	=	28.84

Where:

MWd	=	Dry molecular weight , lb/lb-mole.
% CO_2	=	Percent carbon dioxide by volume, dry basis.
% O_2	=	Percent oxygen by volume, dry basis.
% N_2	=	Percent nitrogen by volume, dry basis.
% CO	=	Percent carbon monoxide by volume, dry basis.
0.440	=	Molecular weight of carbon dioxide, divided by 100.
0.320	=	Molecular weight of oxygen, divided by 100.
0.280	=	Molecular weight of nitrogen or carbon monoxide, divided by 100.

4. Actual molecular weight of gas stream (wet basis), lb/lb-mole.

MWs	=	(MWd x Md) + (18 x (1 - Md))
MWs	=	(28.84 x 0.969) + (18 x (1 - 0.969)) = 28.50

Where:

MWs	=	Molecular weight of wet gas, lb/lb-mole.
18	=	Molecular weight of water, lb/lb-mole.

5. Average velocity of gas stream at actual conditions, ft/sec.

$$Vs = 85.49 \times Cp \times ((\text{delt } p)^{1/2})_{avg} \times \left(\frac{Ts\ (avg)}{Ps \times MWs} \right)^{1/2}$$

$$Vs = 85.49 \times 0.84 \times 1.131262 \times \left(\frac{533}{30.13 \times 28.50} \right)^{1/2} = 64.0$$

Where:

Vs = Average gas stream velocity, ft/sec.

85.49 = Pitot tube constant, ft/sec x $\frac{(lb/lb\text{-}mole)(in.\ Hg)^{1/2}}{(deg\ R)(in\ H2O)}$

Cp = Pitot tube coefficient, dimensionless.

Ts = Absolute gas stream temperature, deg R = Ts, deg F + 460.

Ps = Absolute gas stack pressure, in. Hg. = Pb + $\frac{P(static)}{13.6}$

delt p = Velocity head of stack, in. H_2O.

6. Average gas stream volumetric flow rate at actual conditions, wacf/min.

$$Qs(act) = 60 \times Vs \times As$$

$$Qs(act) = 60 \times 63.97 \times 7.068 = 27128$$

Where:

Qs(act) = Volumetric flow rate of wet stack gas at actual conditions, wacf/min.

As = Cross-sectional area of stack, ft^2.

7. Average gas stream dry volumetric flow rate at standard conditions, dscf/min.

$$Qs(std) = 17.64 \times Md \times \frac{Ps}{Ts} \times Qs(act)$$

$$Qs(std) = 17.64 \times 0.96932 \times \frac{30.135}{532.58} \times 27128$$

$$= 26246$$

Where:

Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min.

Note: The flow rate reported in the above calculations is based on the pre-run flow traverse only. The flow rate used for cacluating emission rates is based on the average of the pre and post run flow traverse.

SAMPLE CALCULATIONS FOR HFPO MONOMER

Client: Chemours | **Plant: Fayetteville, NC**
Test Number: Run 1 | **Test Date: 4/5/18**
Test Location: Divison | **Test Period: 0926-1026**

1. HFPO Monomer concentration, lbs/dscf.

$$C_1 = \frac{W \times 2.2046 \times 10^{-9}}{Vm(std)}$$

$$C_1 = \frac{2346.0 \times 2.2046 \times 10e\text{-}9}{0.551}$$

$$= 9.39E\text{-}06$$

Where:

W = Weight of HFPO Dimer Acid collected in sample in ug.

C_1 = HFPO Dimer Acid concentration, lbs/dscf.

2.2046×10^{-9} = Conversion factor from ug to lbs.

2. HFPO Monomer concentration, ug/dscm.

C_2 = W / (Vm(std) x 0.02832)

C_2 = 2346.0 / (0.551 x 0.02832)

= 1.50E+05

Where:

C_2 = HFPO Monomer concentration, ug/dscm.

0.02832 = Conversion factor from cubic feet to cubic meters.

3. HFPO Monomer mass emission rate, lbs/hr.

PMR1 = C_1 x Qs(std) x 60 min/hr

PMR1 = 9.39E-06 x 26030 x 60

= 14.67

Where:

PMR1 = HFPO Monomer mass emission rate, lbs/hr.

4. HFPO Monomer mass emission rate, g/sec.

PMR2 = PMR1 x 453.59 / 3600

PMR2 = 14.67 x 453.59 /3600

= 1.85

Where:

PMR2 = HFPO Monomer mass emission rate, g/sec.

453.6 = Conversion factor from pounds to grams.

3600 = Conversion factor from hours to seconds.

APPENDIX E
EQUIPMENT CALIBRATION RECORDS

Long Cal and Temperature Cal Datasheet for VOST Dry Gas Meter Console

Calibrator PM | **VOST Box Number** VOST 8 | **Ambient Temp** 72

Date 28-Jul-17 | **Wet Test Meter Number** 10BB-1 | **Temp Reference Source** Thermocouple Simulator (Accuracy +/- 1°F)

Dry Gas Meter Number 3602380

Setting			Gas Volume		Temperatures				Baro Press, in Hg (Pb)	29.64
			Wet Test Meter	Dry gas Meter	Wet Test Meter	Dry Gas Meter				Results
Liters per minute	Roto-meter	Orifice Manometer in H_20 (ΔH)	liters (Vw)	liters (Vd)	°F (Tw)	Outlet, °C (Td_o)	Inlet, °C (Td_i)	Average, °F (Td)	Time, min (O)	Y
0.50	0.50	0.30	5.0	0.000	72.5	23.90	23.90	75.0	8.9	1.0147
				4.947		23.90	23.90			
				4.947		23.90	23.90			
0.50	0.50	0.30	5.0	0.000	72.5	23.90	23.90	75.0	8.9	1.0122
				4.959		23.90	23.90			
				4.959		23.90	23.90			
1.0	1.0	0.65	10.0	0.000	72.5	23.90	23.90	75.5	9.9	1.0175
				9.867		24.50	24.50			
				9.867		24.20	24.20			
1.0	1.0	0.65	10.0	0.000	72.5	24.50	24.50	76.0	10.0	1.0154
				9.897		24.50	24.50			
				9.897		24.50	24.50			
									Average	**1.0150**

Vw - Gas Volume passing through the wet test meter
Vd - Gas Volume passing through the dry gas meter
Tw - Temp of gas in the wet test meter
Tdi - Temp of the inlet gas of the dry gas meter
Tdo - Temp of the outlet gas of the dry gas meter
Td - Average temp of the gas in the dry gas meter

O - Time of calibration run
Pb - Barometric Pressure
ΔH - Pressure differential across orifice
Y - Ratio of accuracy of wet test meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6}\right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)}\right] * \left[\frac{(tw + 460) * O}{Vw}\right]^2$$

Reference Temperature	Temperature Reading from Individual Thermocouple Input [1]						Average Temperature Reading	Temp Difference [2] (%)
Select Temperature ○ °C ◉ °F	Channel Number							
	1	2	3	4	5	6		
32	32	32	32	32			32.0	0.0%
212	213	213	213	213			212.0	0.0%
932	932	932	932	932			931.0	0.0%
1832	1829	1829	1829	1829			1830.0	0.1%

1 - Channel Temps must agree with +/- 5°F or 3°C

2 - Acceptable Temperature Difference less than 1.5 %

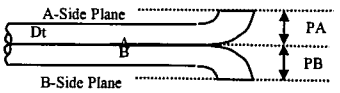
$$\text{Temp Diff} = \left[\frac{(\text{Reference Temp}(°F) + 460) - (\text{Test Temp}(°F) + 460)}{\text{Reference Temp}(°F) + 460}\right]$$

Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: **P-698**

Inspection Date 3/30/18 Individual Conducting Inspection SR

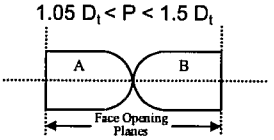
If all Criteria PASS
Cp is equal to 0.84



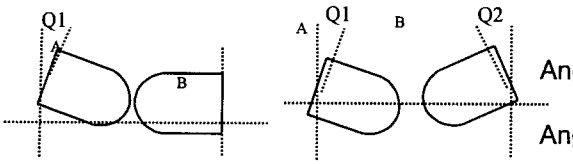
		PASS/FAIL
Distance to A Plane (PA) - inches	0.475	PASS
Distance to B Plane (PB) - inches	0.475	PASS
Pitot OD (D_t) - inches	0.375	

1.05 D_t < P < 1.5 D_t

PA must Equal PB

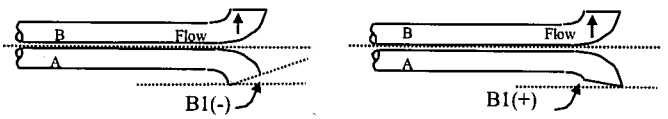


Are Open Faces Aligned Perpendicular to the Tube Axis: ◉ YES ○ NO — PASS

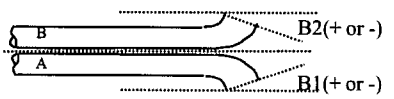


Angle of Q1 from vertical A Tube- degrees (absolute)	0	PASS
Angle of Q2 from vertical B Tube- degrees (absolute)	0	PASS

Q1 and Q2 must be ≤ 10°

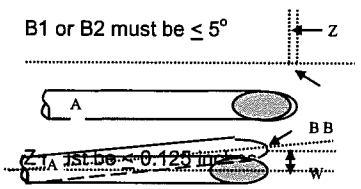


Angle of B1 from vertical A Tube- degrees (absolute): 0 — PASS



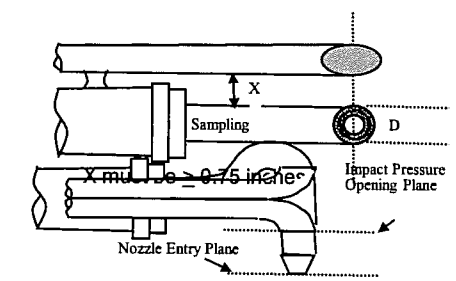
Angle of B1 from vertical B Tube- degrees (absolute): 0 — PASS

B1 or B2 must be ≤ 5°



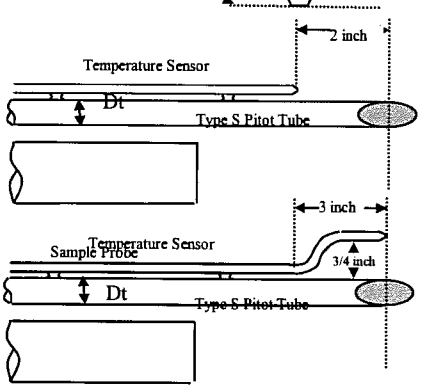
Horizontal offset between A and B Tubes (Z) - inches	0.009	PASS
Vertical offset between A and B Tubes (W) - inches	0.005	PASS

W must be ≤ 0.03125 inches



Distance between Sample Nozzle and Pitot (X) - inches	N/A	PASS

Impact Pressure Opening Plane is above the Nozzle Entry Plane: ○ YES ○ NO ◉ NA



Thermocouple meets the Distance Criteria in the adjacent figure: ○ YES ○ NO ◉ NA

Thermocouple meets the Distance Criteria in the adjacent figure: ◉ YES ○ NO ○ NA

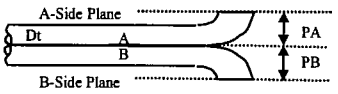
Sample Probe

Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: **P-568**

Inspection Date 1/9/18 Individual Conducting Inspection CH

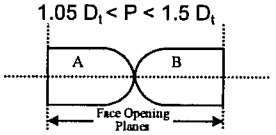
If all Criteria PASS
Cp is equal to 0.84



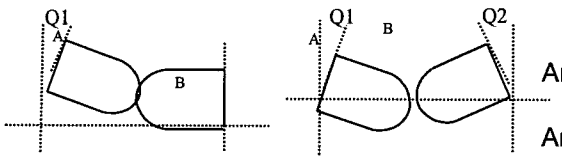
		PASS/FAIL
Distance to A Plane (PA) - inches	0.457	PASS
Distance to B Plane (PB) - inches	0.457	PASS
Pitot OD (D_t) - inches	0.375	

$1.05\ D_t < P < 1.5\ D_t$

PA must Equal PB

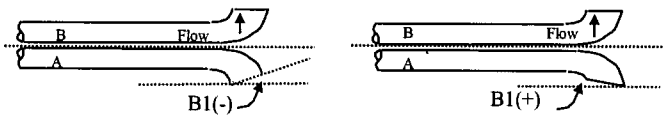


Are Open Faces Aligned Perpendicular to the Tube Axis: ◉ YES ○ NO — PASS

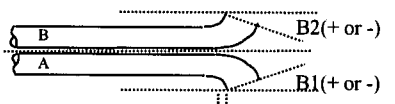


		PASS/FAIL
Angle of Q1 from vertical A Tube- degrees (absolute)	1	PASS
Angle of Q2 from vertical B Tube- degrees (absolute)	2	PASS

Q1 and Q2 must be ≤ 10°

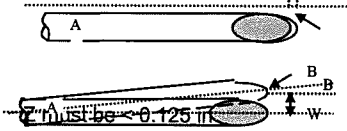


		PASS/FAIL
Angle of B1 from vertical A Tube- degrees (absolute)	2	PASS



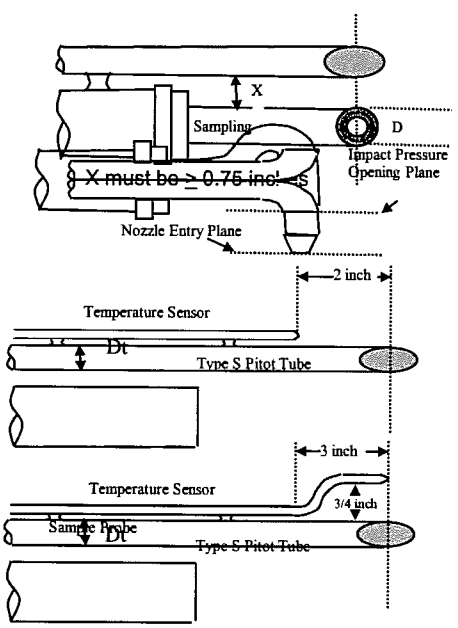
		PASS/FAIL
Angle of B1 from vertical B Tube- degrees (absolute)	2	PASS

B1 or B2 must be ≤ 5°



		PASS/FAIL
Horizontal offset between A and B Tubes (Z) - inches	0.016	PASS
Vertical offset between A and B Tubes (W) - inches	0.007	PASS

W must be ≤ 0.03125 inches



		PASS/FAIL
Distance between Sample Nozzle and Pitot (X) - inches	NA	

Impact Pressure Opening Plane is above the Nozzle Entry Plane: ○ YES ○ NO ◉ NA

Thermocouple meets the Distance Criteria in the adjacent figure: ○ YES ○ NO ◉ NA

Thermocouple meets the Distance Criteria in the adjacent figure: ◉ YES ○ NO ○ NA

Sample Probe

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
600 Union Landing Road
Cinnaminson, NJ 08077-0000
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI79E15A00E4	Reference Number:	82-124617629-1
Cylinder Number:	CC404228	Cylinder Volume:	150.5 CF
Laboratory:	124 - Riverton (SAP) - NJ	Cylinder Pressure:	2015 PSIG
PGVP Number:	B52017	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	May 08, 2017

Expiration Date: May 08, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	9.000 %	8.935 %	G1	+/- 1.0% NIST Traceable	05/08/2017
OXYGEN	12.00 %	12.00 %	G1	+/- 1.0% NIST Traceable	05/08/2017
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061336	CC360792	11.002 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2018
NTRMplus	09060208	CC262337	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 08, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA 510-CO2-19GYCXEG	NDIR	May 06, 2017
Horiba MPA 510-O2-7TWMJ041	Paramagnetic	Apr 14, 2017

Triad Data Available Upon Request

Signature on file
Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
600 Union Landing Road
Cinnaminson, NJ 08077-0000
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI62E15A0224	Reference Number:	82-124601332-1
Cylinder Number:	CC213729	Cylinder Volume:	157.2 CF
Laboratory:	124 - Riverton (SAP) - NJ	Cylinder Pressure:	2015 PSIG
PGVP Number:	B52017	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Feb 06, 2017

Expiration Date: Feb 06, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	17.00 %	16.75 %	G1	+/- 0.7% NIST Traceable	02/06/2017
OXYGEN	21.00 %	20.99 %	G1	+/- 0.5% NIST Traceable	02/06/2017
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061545	CC354843	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 27, 2018
NTRM	09061415	CC273526	22.53 % OXYGEN/NITROGEN	+/- 0.4%	Mar 08, 2019

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA 510-CO2-19GYCXEG	NDIR	Jan 11, 2017
Horiba MPA 510-O2-7TWMJ041	Paramagnetic	Jan 19, 2017

Triad Data Available Upon Request

Signature on file
Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
600 Union Landing Road
Cinnaminson, NJ 08077-0000
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI79E15A00E4	Reference Number:	82-401079104-1
Cylinder Number:	CC116156	Cylinder Volume:	150.5 CF
Laboratory:	124 - Riverton (SAP) - NJ	Cylinder Pressure:	2015 PSIG
PGVP Number:	B52017	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Dec 27, 2017

Expiration Date: Dec 27, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	9.000 %	8.971 %	G1	+/- 0.7% NIST Traceable	12/27/2017
OXYGEN	12.00 %	11.95 %	G1	+/- 0.4% NIST Traceable	12/27/2017
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061336	CC360792	11.002 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2018
NTRMplus	09060208	CC262337	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 08, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA 510-CO2-19GYCXEG	NDIR	Nov 30, 2017
Horiba MPA 510-O2-7TWMJ041	Paramagnetic	Nov 28, 2017

Triad Data Available Upon Request

Signature on file
Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
600 Union Landing Road
Cinnaminson, NJ 08077-0000
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI62E15A0224	Reference Number:	82-401044874-1
Cylinder Number:	SG9169108	Cylinder Volume:	157.2 CF
Laboratory:	124 - Riverton (SAP) - NJ	Cylinder Pressure:	2015 PSIG
PGVP Number:	B52017	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Nov 18, 2017

Expiration Date: Nov 18, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	17.00 %	16.58 %	G1	+/- 0.7% NIST Traceable	11/18/2017
OXYGEN	21.00 %	21.00 %	G1	+/- 0.5% NIST Traceable	11/18/2017
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061336	CC360792	11.002 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2018
NTRM	09061415	CC273526	22.53 % OXYGEN/NITROGEN	+/- 0.4%	Mar 08, 2019

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA 510-CO2-19GYCXEG	NDIR	Oct 30, 2017
Horiba MPA 510-O2-7TWMJ041	Paramagnetic	Oct 27, 2017

Triad Data Available Upon Request

Signature on file
Approved for Release

INTERFERENCE CHECK

Date: 12/4/14-12/5/14
Analyzer Type: Servomex - O_2
Model No: 4900
Serial No: 49000-652921
Calibration Span: 21.09 %
Pollutant: 21.09% O_2 - CC418692

INTERFERENT GAS	ANALYZER RESPONSE		% OF CALIBRATION SPAN[(a)]
	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	
CO_2 (30.17% CC199689)	0.00	-0.01	0.00
NO (445 ppm CC346681)	0.00	0.02	0.11
NO_2 (23.78 ppm CC500749)	NA	NA	NA
N_2O (90.4 ppm CC352661)	0.00	0.05	0.24
CO (461.5 ppm XC006064B)	0.00	0.02	0.00
SO_2 (451.2 ppm CC409079)	0.00	0.05	0.23
CH_4 (453.1 ppm SG901795)	NA	NA	NA
H_2 (552 ppm ALM048043)	0.00	0.09	0.44
HCl (45.1 ppm CC17830)	0.00	0.03	0.14
NH_3 (9.69 ppm CC58181)	0.00	0.01	0.03
TOTAL INTERFERENCE RESPONSE			**1.20**
METHOD SPECIFICATION			**< 2.5%**

[(a)] The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker

INTERFERENCE CHECK

Date: 12/4/14-12/5/14
Analyzer Type: Servomex - CO_2
Model No: 4900
Serial No: 49000-652921
Calibration Span: 16.65%
Pollutant: 16.65% CO_2 - CC418692

INTERFERENT GAS	ANALYZER RESPONSE		% OF CALIBRATION SPAN[a]
	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	
CO_2 (30.17% CC199689)	NA	NA	NA
NO (445 ppm CC346681)	0.00	0.02	0.10
NO_2 (23.78 ppm CC500749)	0.00	0.00	0.02
N_2O (90.4 ppm CC352661)	0.00	0.01	0.04
CO (461.5 ppm XC006064B)	0.00	0.01	0.00
SO_2 (451.2 ppm CC409079)	0.00	0.11	0.64
CH_4 (453.1 ppm SG901795)	0.00	0.07	0.44
H_2 (552 ppm ALM048043)	0.00	0.04	0.22
HCl (45.1 ppm CC17830)	0.10	0.06	0.60
NH_3 (9.69 ppm CC58181)	0.00	0.02	0.14
TOTAL INTERFERENCE RESPONSE			**2.19**
METHOD SPECIFICATION			**< 2.5%**

[a] The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker

INTERFERENCE CHECK

Date: 12/4/14-12/5/14
Analyzer Type: Servomex - O2
Model No: 1440
Serial No: 01420L/898
Calibration Span: 21.09 %
Pollutant: 21.09% O2 - CC418692

INTERFERENT GAS	ANALYZER RESPONSE		% OF CALIBRATION SPAN[a]
	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	
CO_2 (30.17% CC199689)	0.00	0.09	0.4
NO (445 ppm CC346681)	0.10	0.02	0.5
NO_2 (23.78 ppm CC500749)	NA	NA	NA
N_2O (90.4 ppm CC352661)	0.00	0.05	0.2
CO (461.5 ppm XC006064B)	0.00	0.02	0.0
SO_2 (451.2 ppm CC409079)	0.00	0.05	0.2
CH_4 (453.1 ppm SG901795)	NA	NA	NA
H_2 (552 ppm ALM048043)	0.10	0.09	0.5
HCl (45.1 ppm CC17830)	0.00	0.03	0.1
NH_3 (9.69 ppm CC58181)	0.00	0.09	0.4
TOTAL INTERFERENCE RESPONSE			**2.4**
METHOD SPECIFICATION			**< 2.5%**

[a] The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker

INTERFERENCE CHECK

Date: 12/4/14-12/5/14
Analyzer Type: Servomex - CO2
Model No: 1440
Serial No: 01415L/711
Calibration Span: 16.65%
Pollutant: 16.65% CO2 - CC418692

INTERFERENT GAS	ANALYZER RESPONSE		% OF CALIBRATION SPAN[a]
	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	
CO_2 (30.17% CC199689)	NA	NA	NA
NO (445 ppm CC346681)	0.00	0.02	0.1
NO_2 (23.78 ppm CC500749)	0.00	0.10	0.6
N_2O (90.4 ppm CC352661)	0.00	0.01	0.0
CO (461.5 ppm XC006064B)	0.00	0.01	0.0
SO_2 (451.2 ppm CC409079)	0.00	0.01	0.0
CH_4 (453.1 ppm SG901795)	0.00	0.03	0.2
H_2 (552 ppm ALM048043)	0.00	0.04	0.2
HCl (45.1 ppm CC17830)	0.10	0.04	0.6
NH_3 (9.69 ppm CC58181)	0.00	0.02	0.1
TOTAL INTERFERENCE RESPONSE			**1.9**
METHOD SPECIFICATION			**< 2.5%**

[a] The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker

APPENDIX F
LIST OF PROJECT PARTICIPANTS

The following WESTON employees participated in this project.

Paul Meeter	Senior Project Manager
Steve Rathfon	Team Leader
Kyle Schweitzer	Team Member
Matt Winkeler	Team Member
Jack Mills	Team Member