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Report

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October 2020

SOURCE EMISSIONS TESTING OF THE VINYL ETHERS SOUTH CARBON BED

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SOURCE EMISSIONS TESTING OF THE VINYL ETHERS SOUTH CARBON BED

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Prepared by	**Patrick Grady, Project Associate**
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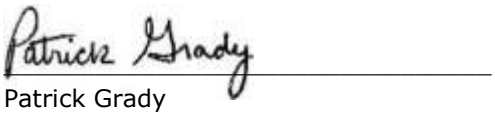
This report has been reviewed and to the best of our knowledge the report is complete, and the results presented herein are accurate, error free, legible, and representative of the actual emissions measured during testing.



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1. INTRODUCTION AND BACKGROUND

Ramboll Americas Engineering Solutions, Inc. (Ramboll) was retained by The Chemours Company (Chemours) to conduct source emissions testing at its facility located in Fayetteville, North Carolina. Ramboll has prepared the following test report summarizing the results of the testing on behalf of Chemours.

1.1 Testing Objective

As provided in their Title V Air Permit, Chemours is required to evaluate hexafluoro-propylene oxide-dimer acid (HFPO-DA) emissions from a carbon bed adsorber at the Fayetteville Works facility. The objective of this test program was to collect field sample data from the inlet and outlet to the carbon bed serving the Vinyl Ethers South (VES) process area to determine carbon bed replacement frequency.

The source emissions test program was performed on September 1, 2020. Messrs. Patrick Grady, Jeff Sheldon, Eric Alongi, Brian Goodhile and Antonio Anderson of Ramboll conducted the emissions testing. Ms. Christel Compton and Mr. Edward Vega coordinated process operations with the emissions testing. There were no representatives from any of the regulatory agencies present to observe the field test program.

This report presents a description of the sources tested, a summary of the scope of work conducted, sampling methods used, QA/QC procedures, and emission test results. The following section lists the testing program's participants and their contact information.

1.2 Emissions Testing Program Participants

Facility

Name:	The Chemours Company
Site Address:	22828 Hwy 87 W Fayetteville, NC 28306
Contact:	Christel E. Compton
e-mail:	christel.e.compton@chemours.com

Source Testing Firm

Name:	Ramboll
Address:	7600 Morgan Road Liverpool, NY 13090
Contact:	Patrick Grady
e-mail:	Patrick.grady@ramboll.com

Sample Analysis Laboratory

Name:	Eurofins TestAmerica, Knoxville
Address:	5815 Middlebrook Pike Knoxville, Tennessee 37921
Contact:	Courtney Adkins
e-mail:	courtney.adkins@testamericainc.com

2. PROCESS DESCRIPTION

This section provides a description of the VES process.

2.1 Process Description

VES is part of the fluoromonomer area at the Fayetteville facility. This area produces fluorocarbon compounds used to produce Chemours products, such as Nafion® Krytox® and Viton®. Indoor air fugitive emissions from VES are vented to a carbon bed which is then vented to atmosphere through a process stack (NEP-Hdr2).

2.2 Operating Conditions During Testing

Source emissions testing was performed during normal operations of the VES process. Facility personnel monitored and recorded process operations during the testing. These operating data were provided to Ramboll and are included in Appendix A of this report.

3. SUMMARY OF TEST PROGRAM

This section provides a summary of the testing scope of work conducted. Test methods used during the sampling program can be found in Section 4 of this report.

3.1 Test Program Summary

Emissions testing was conducted simultaneously at the inlet and outlet of the VES carbon bed in order to evaluate potential emissions and removal efficiencies of HFPO-DA. The testing at each location was conducted in triplicate and each test run was 96 minutes in duration. Results of the source emission testing are reported in units of milligrams per dry standard cubic meter (mg/dscm) and pounds per hour (lb/hr).

4. SAMPLING AND ANALYTICAL PROCEDURES

This section provides a description of the test methods that were utilized during the test program.

4.1 Test Methods

The test procedures were conducted in accordance with the most recent updates to the United States Environmental Protection Agency (USEPA) Reference Methods (RM) described in 40 CFR 60; Appendix A.

RM 1:	Sample and velocity traverses for stationary sources
RM 2:	Determination of stack gas velocity and volumetric flow rate (Type S pitot tube)
RM 3:	Determination of oxygen and carbon dioxide concentrations in emissions from stationary sources
RM 4:	Determination of moisture content in stationary sources
Modified 0010:	Determination of PFAS emissions from stationary sources (modified)

4.2 Sampling Locations

The sampling ports at the 36-inch inside diameter (ID) carbon bed inlet duct are located approximately 35 inches (1.0 diameters) downstream of a bend and approximately 41 inches (1.1 diameters) upstream of another bend. Test ports in the 41½ -inch ID carbon bed outlet stack are located approximately 12 ½ feet (3.6 diameters) downstream of a bend and approximately 31 feet (8.9 diameters) upstream from another bend. A total of 12 traverse points were sampled on each diameter during each test run for a total of 24 traverse points at each test location. Traverse points were located in accordance with USEPA RM 1. Schematics of the sample locations along with traverse point locations are provided in Appendix B.

4.3 Gas Velocity and Volumetric Flow Rate

Velocity was evaluated from differential pressure measurements using a stainless-steel Type-S pitot tube and oil manometer in accordance with USEPA RMs 1 and 2. These methods were conducted in conjunction with each test run. Exhaust gas volumetric flow rate in units of dry standard cubic feet per minute (dscfm) were derived from velocity, temperature, molecular weight, and moisture measurements. Pollutant mass emission rates (lb/hr) were calculated using these volumetric flow rate data and pollutant concentrations.

4.4 Oxygen and Carbon Dioxide Concentrations

Concentrations of oxygen (O_2) and carbon dioxide (CO_2) were evaluated at both locations in accordance with modified USEPA RM 3 procedures using a Fyrite® combustion analyzer. A grab sample was collected and introduced into the Fyrite® for O_2 and CO_2 analysis.

4.5 Moisture Content

The moisture content of the sample trains was quantified utilizing procedures identified in USEPA RM 4. A sample of gas was continuously collected from each traverse point using a dry gas meter stack sampling system along with a series of impingers. The moisture content of the gas was measured as a change in the volume of the water collected in each impinger solution and the increased weight of the desiccant during the sampling period.

4.6 HFPO-DA Emissions

HFPO-DA emissions were evaluated in accordance with a modified USEPA Method 0010. The sample train consisted of a stainless-steel nozzle attached directly to a heated borosilicate glass-lined probe. The probe was connected directly to a heated borosilicate glass filter holder containing a solvent-extracted glass fiber filter. In order to minimize possible thermal degradation of the HFPO-DA, the probe and particulate filter were heated to just above stack temperature to minimize water vapor condensation before the filter. The filter holder exit was connected to a water-cooled coil condenser followed by a water-cooled sorbent module containing approximately 40 grams of XAD-2 resin. The XAD-2 inlet temperature was monitored to ensure that the module is maintained at a temperature below 20°C.

The XAD-2 resin trap was followed by a condensate knockout impinger and a series of two impingers each containing 100-ml of high purity deionized water. The water impingers were followed by another condensate knockout impinger equipped with a second XAD-2 resin trap to account for any sample breakthrough. The final impinger contained approximately 250 grams of dry pre-weighed silica gel. The water impingers and condensate impingers were submerged in an ice bath through the duration of the testing. The water in the ice bath was also used to circulate around the coil condenser and the XAD-2 resin traps.

Exhaust gases were extracted from the sample locations isokinetically using a metering console equipped with a vacuum pump, a calibrated orifice, oil manometer and probe/filter heat controllers.

4.6.1 HFPO-DA Sample Train and Equipment Preparation

Prior to conducting the field work the following procedures were conducted to prepare the field sampling glassware and sample recovery tools.

1. Wash all glassware, brushes, and ancillary tools with low residue soap and hot water.
2. Rinse all glassware, brushes, and ancillary tools three (3) times with D.I. H_20.

3. Bake glassware (with the exception of probe liners) at 450°C for approximately 2 hours, (XAD-2 resin tube glassware will be cleaned by Eurofins/TestAmerica by this same procedure).
4. Solvent rinse three (3) times all glassware, brushes, and ancillary tools with the following sequence of solvents: acetone, methylene chloride, hexane, and methanol.
5. Clean glassware and tools will be sealed in plastic bags or aluminum foil for transport to the sampling site.
6. Squirt bottles will be new dedicated bottles of known history and dedicated to the D.I. Water and methanol/ammonium hydroxide (MeOH/ 5% NH_4OH) solvent contents. Squirt bottles will be labelled with the solvent content it contains.

4.6.2 HFPO-DA Sample Train Recovery

Following completion of each test run, the sample probe, nozzle and front-half of the filter holder were brushed and rinsed three times each with the MeOH/ 5% NH_4OH solution (Container #1). The glass fiber filter was removed from its housing and transferred to a polyethylene bottle (Container #2). Any particulate matter and filter fibers which adhered to the filter holder and gasket were also placed in Container #2. The XAD-2 resin trap was sealed, labelled and placed in an iced sample cooler. The back-half of the filter holder, coil condenser condensate trap and connecting glassware were rinsed with the same MeOH/ 5% NH_4OH solution and placed in Container #3.

The volume of water collected in the second and third impingers was measured for moisture determinations and then placed in Container #4. Impingers #2 and #3 were then rinsed with the MeOH/ 5% NH_4OH solution and placed in Container #5. The second (breakthrough) XAD-2 resin trap was sealed, labelled and placed in an iced sample cooler. The second condensate trap was rinsed with the MeOH/ 5% NH_4OH solution and placed in Container #5. The contents of the fifth impinger were placed in its original container and weighed for moisture determinations.

Containers were sealed and labeled with the appropriate sample information. Samples remained chilled until analysis. HFPO-DA analysis was conducted using liquid chromatography/dual mass spectrometry (LC/MS/MS).

5. EMISSIONS TEST RESULTS

A detailed summary of the test results is presented in Table 1 in the appendix. Supporting field data and calculations can be found in Appendix C. The laboratory report is presented in Appendix D. A brief discussion of the test results is presented below.

5.1 Emission Test Results

Table 1 presents a detailed summary of the HFPO-DA test results. HFPO-DA concentrations at the carbon bed inlet ranged from 3.59E-03 mg/dscm to 6.12E-02 mg/dscm and averaged 2.28E-02 mg/dscm. Corresponding mass emissions of HFPO-DA ranged from 2.43E-04 lb/hr to 4.28E-03 lb/hr and averaged 1.59E-03 lb/hr.

Concentrations of HFPO-DA at the carbon bed outlet ranged from 2.08E-03 mg/dscm to 4.62E-03 mg/dscm and averaged 3.16E-03 mg/dscm. Mass emission rates of HFPO-DA from the carbon bed outlet ranged from 1.29E-04 lb/hr to 2.86E-04 lb/hr and averaged 1.95E-04 lb/hr. The resulting average HFPO-DA removal efficiency of the VES carbon bed was 88 percent.

A review of Table 1 indicates that HFPO-DA emissions at the carbon bed inlet were significantly lower during Runs 2 and 3. It should be noted that HFPO-DA emissions for Run 2 from the carbon bed outlet were similar to the carbon bed inlet (2.43E-04 lb/hr at the inlet vs. 2.86E-04 lb/hr at the outlet). There were no sampling issues or leak check problems of the sampling trains during any of the test runs. All glassware was prepared in accordance with the procedures list in Section 4.6.1. Note the glassware and equipment used to sample at the VES carbon bed was used the day previous for testing of the Polymer Process Aid (PPA) carbon bed. All equipment and glassware used to sample the PPA carbon bed inlet was used to sample the carbon bed inlet of VES. Similarly, the equipment used to sample the PPA carbon bed outlet was used to sample the VES carbon bed outlet. The decreased removal efficiency from the carbon bed during Runs 2 and 3 can be attributed to the lower fugitive emissions during these test runs.

5.2 Discussion and Conclusion

As previously mentioned in Section 5.1, there were no sampling or process operating problems encountered during the field testing that impacted the test results. Therefore, all test data are believed to be representative of actual emissions in evidence during the test program.

6. QUALITY ASSURANCE/QUALITY CONTROL

QA/QC was based on the recommended QA/QC procedures of the various sampling and analytical methods that were used for the test program. This section summarizes the pertinent QA/QC procedures that were employed during the emissions testing program.

6.1 Equipment Calibration

An important aspect of pre-sampling preparations is the inspection and calibration of all equipment planned to be used for the field effort. Equipment is inspected for proper operation and durability prior to calibration. Calibration of equipment is conducted in accordance with the procedures outlined in the USEPA document entitled "Quality Assurance Handbook for Air Pollution Measurement Systems; Volume III—Stationary Source Specific Methods" (EPA-600/4-77-027b). Equipment calibration is performed in accordance with USEPA guidelines and/or manufacturer's recommendations. Examples of the typical calibration requirements of the field equipment being used are as follows:

- Pitot tubes (QA Handbook Section 3.1.2, pp. 1-13) - measured for appropriate spacing and dimensions or calibrate in a wind tunnel. Rejection criteria given on the calibration sheet. Post-test check - inspect for damage.
- Probe nozzles (QA Handbook Section 3.4.2, pg. 19) - make three measurements of the nozzle ID (to the nearest 0.001 in.) using different diameters with a micrometer. Difference between the high and low values should not exceed 0.004 in. Post-test check - inspect for damage.
- Thermocouples (QA Handbook Section 3.4.2, pp. 15-18) - verify against a mercury-in-glass thermometer at two or more points including the anticipated measurement range. Acceptance limits - impinger ±2°F; DGM ±5.4°F; stack ±1.5 percent of stack temperature.
- Dry gas meters (QA Handbook Section 3.4.2, pp. 1-12) - Dry gas meters are calibrated using critical orifices. The procedure entails four runs using four separate critical orifices running at an actual vacuum 1-2 in. greater than the theoretical critical vacuum. The minimum sample volume required per orifice is 5 ft^3. Meter boxes are calibrated annually and then verified by use of the alternative USEPA RM 5 post-test calibration procedure. This procedure is referenced as Approved Alternate Method ALT-009 (June 21, 1994) by USEPA's Emission Measurement Center. The average Y-value obtained by this method must be within 5% of the initial Y-value.

6.2 Equipment Leak Checks

Pitot tube leak checks were conducted in accordance with USEPA RM 2. Leak checks were conducted on the HFPO-DA sample trains prior to and following each test run in accordance with the procedures outlined in USEPA RM 5, Sections 8.4.1 and 8.4.2.

6.3 Reagent Blanks and Field Blanks

A field blank for the Modified USEPA RM 0010 sample train was collected as part of the test program. The blank train was assembled and set-up near one of the carbon bed outlet test locations and as close to the outlet sample train as possible. The blank train remained in place for the duration of the sampling run. The blank train was heated to the same temperature as used for the outlet sampling train, and the impinger portion of the train was iced down and chilled water circulated through the coil condenser as described in SW-846 Method 0010. The blank train was recovered in the same location, and by the same procedures as the actual sampling trains.

Additionally, a proof blank train rinse sample was collected one time during the sampling campaign. The glassware components of the train received a thorough solvent rinse after samples were recovered and put away for a sampling run. This secondary rinse was used to prove that the sampling breakdown collection processes capture all HFPO-DA material, and generally leave none of the target analytes uncaptured on the sample glassware. All sampling train glassware parts, including brushes and other tools used, were thoroughly rinsed with MeOH / 5% NH_4OH solution to evaluate the general rinsing efficiency of the sampling train recovery process.

Reagent blanks of the diH_2O used in the sample trains and MeOH/5% NH_4OH solution used for sample recovery were also submitted to the laboratory for analysis along with the field samples. The field blank train was collected during test Run 1. The proof blank was collected following completion of Run 1. Results of the field blank, proof blank and reagent blanks and are included with the laboratory reports in Appendix D.

6.4 Test Data and Report Review

Test data input and emission calculations were double-checked for accuracy. The test results were reviewed by senior personnel for reasonableness and accuracy. The final report was peer reviewed by senior personnel and certified by the project manager.

TABLES

Table 1
The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed
Fayetteville, North Carolina

Run Identification	Run 1 [a]	Run 2	Run 3	Average	Run 1 [a]	Run 2	Run 3	Average
Source ID:		Carbon Bed Inlet				Carbon Bed Outlet		
Run Date	01Sep20	01Sep20	01Sep20		01Sep20	01Sep20	01Sep20	
Start/Stop Time	0843-1040	1124-1317	1402-1555		0843-1040	1124-1317	1402-1555	
Exhaust Gas Conditions								
Temperature (deg. F)	79	83	87	**83**	86	91	92	**90**
Moisture (volume %)	2.5	2.8	2.1	**2.5**	2.2	2.3	2.0	**2.2**
Oxygen (dry volume %)	20.9	20.9	20.9	**20.9**	20.9	20.9	20.9	**20.9**
Carbon Dioxide (dry volume %)	0.0	0.0	0.0	**0.0**	0.0	0.0	0.0	**0.0**
Volumetric Flow Rate								
acfm	19,615	19,227	19,617	**19,486**	17,477	17,577	17,291	**17,448**
dscfm	18,668	18,083	18,464	**18,405**	16,602	16,541	16,289	**16,477**
HFPO - Dimer Acid								
mg/dscm	6.12E-02	3.59E-03	3.70E-03	**2.28E-02**	2.08E-03	4.62E-03	2.77E-03	**3.16E-03**
lb/hr	4.28E-03	2.43E-04	2.56E-04	**1.59E-03**	1.29E-04	2.86E-04	1.69E-04	**1.95E-04**
Carbon Bed Removal Efficiency								
percent	97	NA	34	88				

[a]Test results for Run 1 do not include analytical data from the breakthrough XAD module.

APPENDIX A
PROCESS OPERATING DATA

Date **9/1/2020**

Time	800			900			1000					
Stack Testing				RUN 1: 0843 - 1040								
VES Product												
VES Precursor												
VES Condensation (HFPO)												
VES ABR (East)												
VES ABR (West)												
VES Refining												

Date **9/1/2020**

Time					1200					1300	
Stack Testing		RUN 2: 1124-1317									
VES Product											
VES Precursor											
VES Condensation (HFPO)											
VES ABR (East)											
VES ABR (West)											
VES Refining											

Date	**9/1/2020**												
Time			1400				1500				1600		
Stack Testing			RUN 3: 1402-1555										
VES Product	PM/PE												
VES Precursor													
VES Condensation (HFPO)													
VES ABR (East)		Burnout											
VES ABR (West)													
VES Refining													

APPENDIX B
SCHEMATICS OF THE TEST LOCATIONS

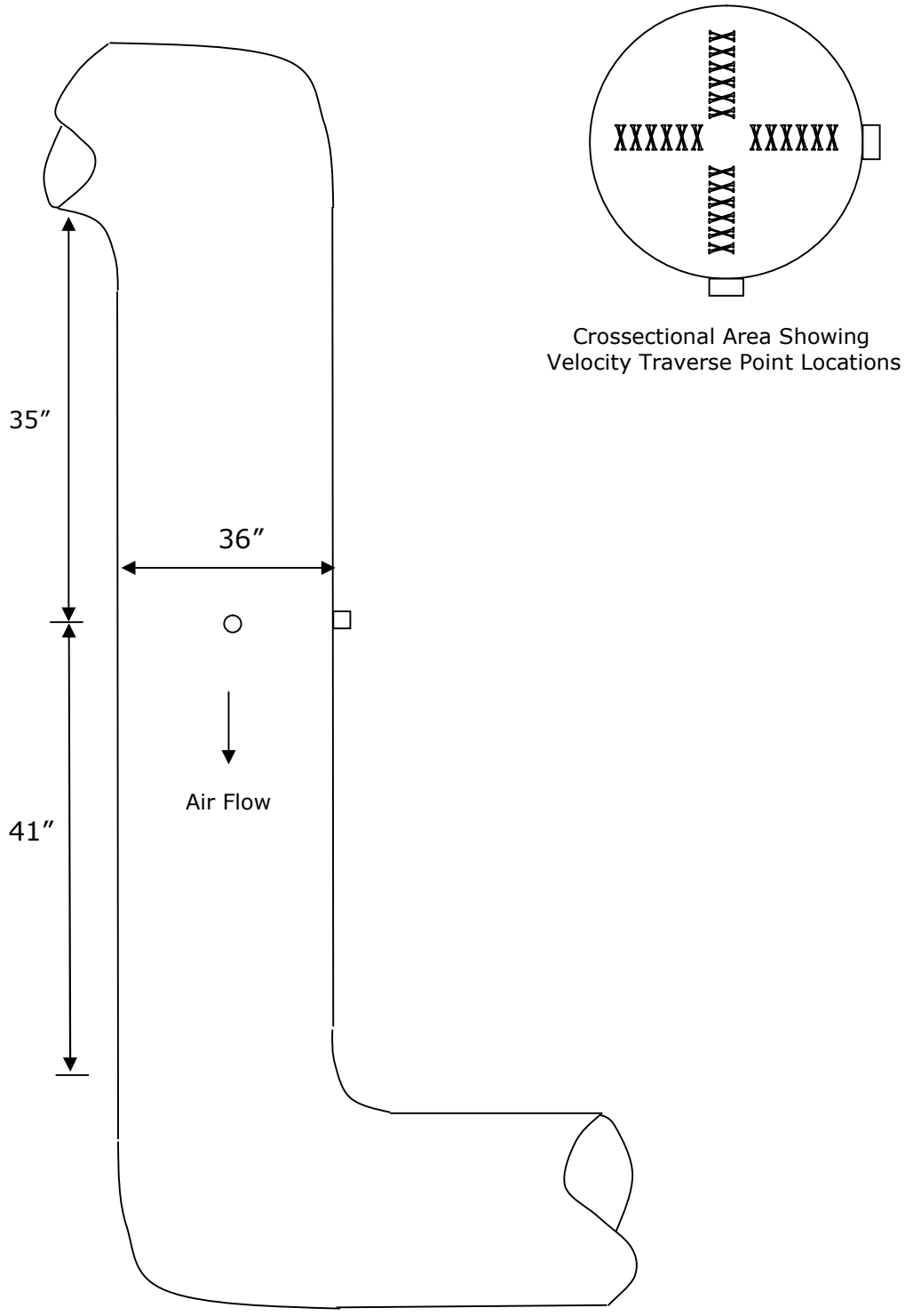


Figure 1
Carbon Bed Inlet Sampling Location
Vinyl Ethers South
The Chemours Company
Fayetteville, North Carolina

Sample Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: VES Carbon Bed Inlet

Stack Diameter: 36 inches

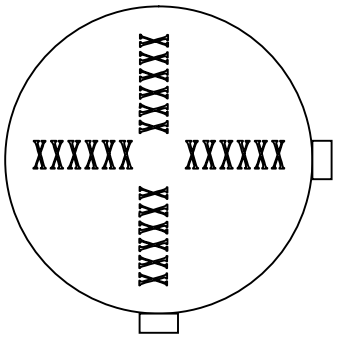
Sampling Locations: 1.0 diameters downstream
1.1 diameters upstream

Minimum Number of Traverse points as specified by EPA Method 1: 24

Number of traverse points sampled: 24

Traverse Point Number	Percent of Stack Diameter From Inside Wall	Distance in Inches From Inside Wall*
1	2.1	1.0
2	6.7	2.4
3	11.8	4.2
4	17.7	6.4
5	25.0	9.0
6	35.6	12.8
7	64.4	23.2
8	75.0	27.0
9	82.3	29.6
10	88.2	31.8
11	93.3	33.6
12	97.9	35.0

*Traverse points located within 1.00" to the stack wall for stacks having an inside diameter greater than 24" will be relocated as well as traverse points located within 0.50 inches to the stack wall on stacks with a 24" ID or less to meet criteria.



Crossectional Area Showing
Velocity Traverse Point Locations

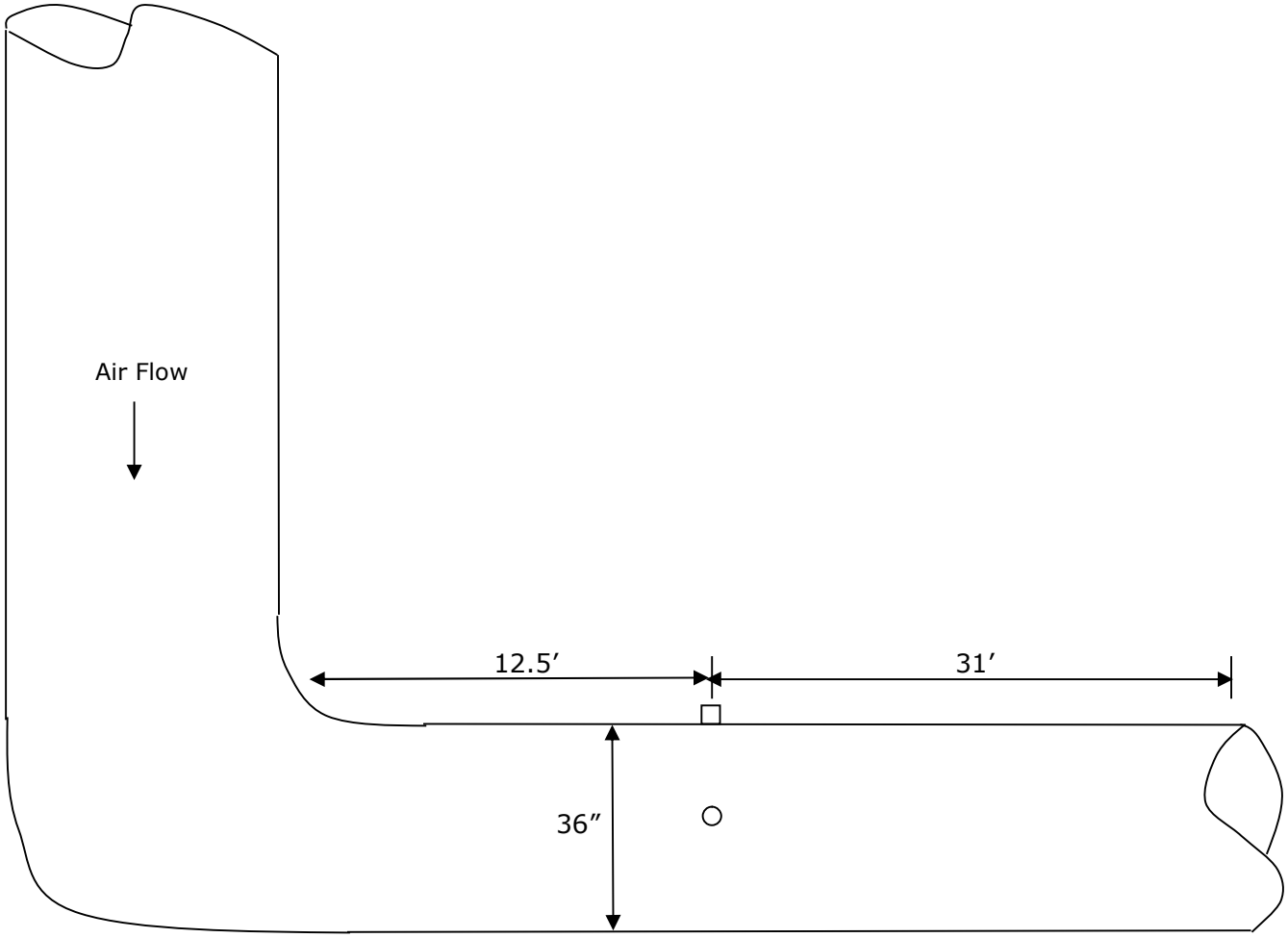


Figure 2
Carbon Bed Outlet Sampling Location
Vinyl Ethers South
The Chemours Company
Fayetteville, North Carolina

Sample Traverse Point Locations for Circular Stacks

Facility: The Chemours Company

Source Identification: VES Carbon Bed Outlet

Stack Diameter: 41.5 inches

Sampling Locations: 3.6 diameters downstream
8.9 diameters upstream

Minimum Number of Traverse points as specified by EPA Method 1: 24

Number of traverse points sampled: 24

Traverse Point Number	Percent of Stack Diameter From Inside Wall	Distance in Inches From Inside Wall*
1	2.1	1.0
2	6.7	2.8
3	11.8	4.9
4	17.7	7.3
5	25.0	10.4
6	35.6	14.8
7	64.4	26.7
8	75.0	31.1
9	82.3	34.2
10	88.2	36.6
11	93.3	38.7
12	97.9	35.0

*Traverse points located within 1.00" to the stack wall for stacks having an inside diameter greater than 24" will be relocated as well as traverse points located within 0.50 inches to the stack wall on stacks with a 24" ID or less to meet criteria.

APPENDIX C
FIELD DATA AND CALCULATIONS

VES Carbon Bed Inlet Field Test Data

Field Data Summary
The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Inlet
Fayetteville, North Carolina

	Run 1							Run 2							Run 3					
Traverse Point	Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P
A1	78	1.10	3.08	76	76	1.0488		83	0.84	2.35	87	87	0.9165		86	1.10	3.08	96	96	1.0488
2	78	1.00	2.80	77	77	1.0000		82	0.84	2.35	88	88	0.9165		86	1.05	2.94	97	97	1.0247
3	78	0.96	2.68	77	77	0.9798		82	0.80	2.24	88	88	0.8944		86	0.98	2.74	97	97	0.9899
4	78	1.00	2.80	77	77	1.0000		82	0.82	2.29	88	88	0.9055		86	0.98	2.74	97	97	0.9899
5	78	0.95	2.66	78	78	0.9747		82	0.80	2.24	88	88	0.8944		86	0.91	2.54	97	97	0.9539
6	78	0.90	2.52	78	78	0.9487		82	0.78	2.18	88	88	0.8832		87	0.88	2.46	98	98	0.9381
7	78	0.82	2.29	79	79	0.9055		82	0.67	1.87	89	89	0.8185		86	0.55	1.54	98	98	0.7416
8	78	0.57	1.59	79	79	0.7550		82	0.59	1.65	89	89	0.7681		87	0.38	1.06	98	98	0.6164
9	78	0.36	1.00	79	79	0.6000		82	0.50	1.40	89	89	0.7071		87	0.36	1.00	99	99	0.6000
10	78	0.26	0.72	80	80	0.5099		82	0.52	1.45	90	90	0.7211		87	0.31	0.86	99	99	0.5568
11	78	0.23	0.64	80	80	0.4796		83	0.48	1.34	90	90	0.6928		87	0.24	0.67	99	99	0.4899
12	78	0.20	0.56	81	81	0.4472		83	0.47	1.31	90	90	0.6856		87	0.23	0.64	99	99	0.4796
B1	78	0.88	2.46	82	82	0.9381		83	1.10	3.08	92	92	1.0488		87	0.87	2.43	99	99	0.9327
2	79	0.87	2.43	83	83	0.9327		84	0.99	2.77	93	93	0.9950		88	0.87	2.43	99	99	0.9327
3	79	0.80	2.24	83	83	0.8944		84	0.99	2.77	93	93	0.9950		88	0.83	2.32	99	99	0.9110
4	79	0.80	2.24	83	83	0.8944		84	0.98	2.74	94	94	0.9899		88	0.81	2.26	99	99	0.9000
5	79	0.75	2.10	84	84	0.8660		84	0.93	2.60	94	94	0.9644		88	0.77	2.15	99	99	0.8775
6	79	0.75	2.10	84	84	0.8660		84	0.84	2.35	95	95	0.9165		88	0.75	2.10	99	99	0.8660
7	79	0.63	1.76	84	84	0.7937		85	0.53	1.48	95	95	0.7280		88	0.68	1.90	99	99	0.8246
8	79	0.57	1.59	85	85	0.7550		85	0.38	1.06	95	95	0.6164		87	0.62	1.73	99	99	0.7874
9	79	0.54	1.51	85	85	0.7348		85	0.24	0.67	96	96	0.4899		87	0.55	1.54	99	99	0.7416
10	79	0.50	1.40	86	86	0.7071		85	0.24	0.67	96	96	0.4899		87	0.57	1.59	99	99	0.7550
11	79	0.48	1.34	86	86	0.6928		85	0.22	0.61	96	96	0.4690		87	0.46	1.28	99	99	0.6782
12	80	0.50	1.40	86	86	0.7071		85	0.20	0.56	96	96	0.4472		87	0.44	1.23	99	99	0.6633
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
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						0.0000							0.0000							0.0000
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						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
Average	79	0.68	1.91	81	81	0.8096		83	0.66	1.84	92	92	0.7897		87	0.67	1.89	98	98	0.8042

Test Data Summary and Calculations
The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Inlet
Fayetteville, North Carolina

Parameter	Run 1	Run 2	Run 3
Run Date	9/1/20	9/1/20	9/1/20
Start/Stop Time	0843-1040	1124-1317	1402-1555
Duration of Run, Minutes	96	96	96
Ave. Nozzle Diameter, inches	0.23	0.23	0.23
Pitot Calibration Factor, CF	0.84	0.84	0.84
Meter Gamma	1.013	1.013	1.013
Meter Delta H, inches of H2O	1.73	1.73	1.73
Stack Diameter, inches	36	36	36
Rectangular Width, inches	0	0	0
Rectangular Length, inches	0	0	0
Stack Area, sq.ft.	7.07	7.07	7.07
Barometric Pressure, inches of Hg	29.98	29.98	29.98
Static Pressure, inches of H2O	-2.5	-2.4	-2.4
Dry Gas Meter Sample Volume, (VM)ft3			
Initial	742.212	814.857	886.187
Final	814.423	886.008	959.142
Total Volume	72.211	71.151	72.955
Ave. Stack Temperature, Ts(F)	78.5	83.3	87.0
Ave. Meter Temperature, Tm(F)	81.3	91.6	98.4
Ave. Run Delta H, inches of H2O	1.91	1.84	1.89
Ave. Square Root of Delta P	0.8096	0.7897	0.8042
Moisture Data			
Volume of water collected, mls	22.4	18.8	13.8
Silica Gel, grams	17.2	24.4	18.4
Total Collected, mls	39.6	43.2	32.2
ORSAT Data			
%O2	20.90	20.90	20.90
%CO2	0.0	0.0	0.0
%CO			
Calculations			
Vw(std), scf =	1.864	2.033	1.516
Vm(std), dscf =	71.826	69.438	70.342
Bws=	0.025	0.028	0.021
Md=	28.84	28.84	28.84
Ms=	28.56	28.53	28.61
Vs, ft/sec =	46.2	45.3	46.3
Qs, acfm =	19,615	19,227	19,617
Qs(std), dscfm =	18,668	18,083	18,464
Isokinetic Sampling Rate, %	98.2	98.0	97.2

Where:
An = area of the nozzle
As = area of the stack
Vw(std) = volume of water vapor in gas, standard conditions = 0.04707*Vlc
Vm(std) = vol. of gas sampled, standard conditions = 17.647 x Vm x gamma x [Pb + (dH/13.6)]/Tm(R)
Bws = water vapor in gas stream, proportion by volume = Vw(std)/(Vm(std) + Vw(std))
Md = molecular weight of stack gas, dry basis = (0.44 x%CO2) + (0.32 x%O2) + [0.28 x (%N2 + %CO)]
Ms = molecular weight of stack gas, wet basis = [Md x (1-Bws)] + (18.0 x Bws)
Vs = stack gas velocity = 85.49 x Cp x (avg. Sq.Rt. dP) x [Sq.Rt. (Ts(R))/(Ms x Ps)]
Qs = stack gas flow rate = Vs x As x 60
Qs(std) = stack gas flow rate, standard conditions = Qs x (1-Bws) x (528/(Ts(R)) x (Ps/29.92)
Isokinetic sampling rate = {(Ts(R)) x [(0.00267 x Vlc) + (Vm(std)/17.647)] x 100}/(Time x vs x Ps x An x60)

Results Summary
The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Inlet
Fayetteville, North Carolina

Parameter:		Run 1				Run 2				Run 3				Average			
	Mol. Wt.	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr
HFPO - Dimer Acid	330	0.12449	6.12E-02	4.46E-03	4.28E-03	0.00706	3.59E-03	2.62E-04	2.43E-04	0.00736	3.70E-03	2.69E-04	2.56E-04	0.05	2.28E-02	1.66E-03	1.59E-03

Where:
Pollutant Emission Concentration:
mg= total sample collected, milligrams
mg/dscm = milligrams of pollutant per dry standard cubic meter sampled = (mg/dscf) x (35.314 cubic feet/cubic meter)
ppm = parts per million =((mg/dscm x 24.04 liters/mol)/mol.wt))

Pollutant Emission Rate:
lb/hr = pounds of pollutant emitted per hour = mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr

Example Calculations

The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Inlet
Fayetteville, North Carolina
Note: Values are shown for example purposes only.

Vm,a = Dry gas volume at actual conditions (acf)

Initial gas meter volume:	742.212
Final gas meter volume:	814.423
Difference:	72.211

Vm,std = Volume of dry gas at standard conditions (dscf)

= 17.647x Vm, a x Gamma*[Pbar+(DeltaH/13.6)]/Tm(R)
= 17.647 x 0.000 x 1.013 x (29.98 + [(1.730 /13.6) / 541
= 71.826

Vl,c = Volume of water collected in impingers and silica gel (ml)

impinger catch (mls):	22
silica gel (g)	17.2
total:	39.6

Vw,std = Volume of water vapor in gas at standard conditions (cu.ft.)

= (0.04707) x (Vl,c)
= 0.04707 x 39.6
= 1.864

Bwo = Proportion by volume of water vapor in gas stream

= Vw,std/(Vw,std+Vm,std)
= 1.86 / (1.86 + 71.826)
= 0.025

Ps = Stack gas static pressure (in. Hg)

= St/13.6
= -2.50 / 13.6
= -0.184

Pa = Absolute stack gas pressure (in. Hg)

= Ps+Pbar
= -0.184 + 29.98
= 29.80

MFD = Dry mole fraction of stack gas

= 1-Bwo
= 1 - 0.025
= 0.975

Md = Dry molecular weight of stack gas (lb/lb-mol)

= (0.32 x %O2) + (0.44 x %CO2) + (0.28 x %N2)
= (0.32 x 20.90)+(0.44 x 0.00) + (0.28 x 79.10)
= 28.84

Mw = Wet molecular weight of stack gas (lb/lb-mol)

= (Md) x (MFD) + (0.18) x (Bwo*100)
= 28.84 x 0.975 + 0.18 x 2.52946
= 28.56

Example Calculations

The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Inlet
Fayetteville, North Carolina
Note: Values are shown for example purposes only.

Vs,avg = **Average stack gas velocity (fps)**
= Kp x (Cp) x (sqrt,deltaP) x sqrt((Ts + 460°R)/Mw*Pa))
= 85.48 x 0.84 x 0.81 x sqrt (0.63)
= 46.2

A **Cross sectional areas of stack (sq. ft)**
= pi/4*d^2
= 3.14159/4 x 3.00 ^2
= 7.07

Qa **Volumetric flow rate at actual conditions (acfm)**
= (60)sec/min(A)(Vs, avg)
= 60 x 7.0686 x 46.24
= 19,613

Qstd **Volumetric flow rate at standard conditions (scfm)**
= Qa x (528/Ts,avg + 460) x Pa/29.92
= 19,613 x (528 / 539) x 0.996
= 19,151

Qstd,dry **Volumetric flow rate at dry standard conditions per minute(dscfm)**
= Qstd x (1-Bwo)
= 19,151 x 0.9747
= 18,666

mg/dscm **HFPO-DA concentration**
= (mg/dscf) x 35.314 cu. ft./cu. meter
= (0.124 / 71.83) x 35.314
= 6.12E-02

lb/hr **HFPO-DA Mass Emission Rate**
= mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr
= 0.124 / 1,000 /[453.59) / 71.83)] x 18,668 x 60
= 4.28E-03

EPA Isokinetic Field Sheet

Methods Performed M0010

Client	The Chemours Company	Run Number	1	Pitot Number	P4-2
Location	Fayetteville, NC	Stack Diameter	36-inches	Pitot Coefficient	0.84
Source	VES Inlet	Barometric Pres.	29.98	Stack TC I.D.	P4-2
Date	9/1/20	Static Pressure	-2.5	Oven Box I.D.	OG4
Operators	EA/AA	Meter Box #	15	Impinger Out I.D.	IO-1
Start Time	843/ 952	Meter delta H	1.73	Nozzle Size	.230
End Time	931 / 1038 1040	Meter Gamma	1.013	XAD Trap I.D.	NA

K=2.8

Leak Check Rates	Sample Rate in.	Sample Rate cfm	Pitot +	Pitot -
Initial	11	0.008	✓	✓
Mid				
Mid				
Final	10	0.005	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
A1	4	1.1	3.08	742.212	78	83	82	67	67	76	76	4	
2	8	1.0	2.8	—	78	82	83	65	56	77	77	5	
3	12	0.96	2.68	749.16	78	83	84	54	55	77	77	5	
4	16	1.0	2.8	753.3	78	82	83	60	53	77	77	6	
5	20	0.95	2.66	756.9	78	82	84	59	53	78	78	6	
6	24	0.90	2.52	760.5	78	82	83	59	54	78	78	6	
7	28	0.82	2.29	764.0	78	82	83	60	55	79	79	6	
8	32	0.59	1.59	—	78	82	82	60	54	79	79	6	
9	36	0.36	1.0	770.2	78	82	82	61	55	79	79	5	
10	40	0.26	0.72	772.4	78	82	82	62	56	80	80	5	
11	44	0.23	0.64	774.3	78	82	82	62	54	80	80	5	
12	48	0.20	0.56	776.1	78	82	82	62	58	81	81	5	
B1	52	0.88	2.46	777.761	78	82	82	67	61	82	82	7	
2	56	0.87	2.43	—	79	82	82	47	58	83	83	7	
3	60	0.80	2.24	784.4	79	82	82	48	61	83	83	7	
4	64	0.80	2.24	788.0	79	82	82	51	52	83	83	7	
5	68	0.75	2.1	791.2	79	82	83	52	53	84	84	7	
6	72	0.75	2.1	794.5	79	82	82	54	54	84	84	7	
7	76	0.63	1.76	797.8	79	82	82	54	52	84	84	7	
8	80	0.57	1.59	800.7	79	82	82	55	53	85	85	7	
9	84	0.54	1.51	—	79	83	82	55	56	85	85	7	
10	88	0.5	1.4	—	79	84	83	54	57	86	86	7	
11	92	0.48	1.34	—	79	83	83	55	57	86	86	7	
12	96	0.5	1.4	811.7	80	84	83	57	56	86	86	7	
				814.423									

Impinger Data (vol) #	Initial	Final
1		
2		
3		
4		
5		
6		

Silica Gel Data (gm) #	Initial	Final
1		
2		

Moisture Gain	
	ml.
	gm
	Total

Filter Data #	Number	Tare
1		
2		
3		

Molecular Weight Data (% #	O_2	CO_2
1		
2		
3		
Avg		

RAMBOLL

EPA Isokinetic Field Sheet

Methods Performed M0010

Client	The Chemours Company	Run Number	2	Pitot Number	P4-2
Location	Fayetteville, NC	Stack Diameter	36-inches	Pitot Coefficient	0.84
Source	VES Inlet	Barometric Pres.	29.98	Stack TC I.D.	P4-2
Date	9/1/20	Static Pressure	-2.4	Oven Box I.D.	084
Operators	EA/AA	Meter Box #	15	Impinger Out I.D.	20-1
Start Time	1124 / 1229	Meter delta H	1.73	Nozzle Size	.230
End Time	1212 / 1317	Meter Gamma	1.013	XAD Trap I.D.	NA

K=2.8

Leak Check Rates				
	Sample Rate in.	cfm	Pitot +	Pitot -
Initial	10	0.009	✓	✓
Mid				
Mid				
Final	11	0.008	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
A1	4	0.84	2.35	814.857	83	86	87	67	66	87	87	5	
2	8	0.84	2.35	818.1	82	87	88	66	62	88	88	5	
3	12	0.80	2.24	821.7	82	87	87	64	61	88	88	5	
4	16	0.82	2.24	825.0	82	88	89	64	60	88	88	6	
5	20	0.80	2.24	—	82	89	88	61	58	86	88	6	
6	24	0.78	2.18	831.7	82	88	89	59	58	88	88	6	
7	28	0.67	1.87	835.0	82	89	89	58	59	89	89	5	
8	32	0.59	1.65	838.1	82	88	90	59	59	88	89	5	
9	36	0.50	1.4	—	82	89	90	59	60	89	89	5	
10	40	052	1.45	843.6	82	89	89	60	60	90	90	5	
11	44	0.48	1.34	846.2	83	91	90	60	60	90	90	5	
12	48	0.47	1.31	848.9	83	92	90	58	59	90	90	5	
B1	52	1.1	3.08	851.450	83	91	90	66	67	92	92	8	
2	56	0.99	~~3.54~~	855.3	84	89	89	55	54	93	93	7	2.77
3	60	0.94	2.77	859.2	84	89	89	57	59	93	93	7	
4	64	0.98	2.74	862.9	84	91	89	58	58	94	84	7	
5	68	0.93	2.60	866.6	84	92	89	56	59	94	94	7	
6	72	0.84	2.35	870.3	84	91	88	55	55	95	95	7	
7	76	0.53	1.48	873.9	85	91	89	55	51	95	95	5	
8	80	0.38	1.06	876.5	85	89	88	57	53	95	95	5	
9	84	024	0.67	878.9	85	89	88	59	55	96	96	5	
10	88	0.24	0.67	—	85	89	88	60	56	96	96	5	
11	92	0.22	0.61	882.5	85	89	89	59	59	96	96	5	
12	96	0.20	0.56	—	85	89	88	60	58	96	96	5	
				886.008									

Impinger Data (vol)		
#	Initial	Final
1		
2		
3		
4		
5		
6		

Silica Gel Data (gm)		
#	Initial	Final
1		
2		

Moisture Gain	
	ml.
	gm
	Total

Filter Data		
#	Number	Tare
1		
2		
3		

Molecular Weight Data (%		
#	O_2	CO_2
1		
2		
3		
Avg		

RAMBOLL

EPA Isokinetic Field Sheet

Methods Performed M0010

Client	The Chemours Company	Run Number	3	Pitot Number	P4-2
Location	Fayetteville, NC	Stack Diameter	36-inches	Pitot Coefficient	0.84
Source	VES Inlet	Barometric Pres.	29.98	Stack TC I.D.	P4-2
Date	9/1/20	Static Pressure	-2.4	Oven Box I.D.	OS-4
Operators	EA/AA	Meter Box #	15	Impinger Out I.D.	IO-1
Start Time	1402/1507	Meter delta H	1.73	Nozzle Size	.230
End Time	1450/1555	Meter Gamma	1.013	XAD Trap I.D.	NA
			K-24		

Leak Check Rates				
	Sample Rate in.	cfm	Pitot +	Pitot -
Initial	12	0.007	✓	✓
Mid				
Mid				
Final	4	0.610	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
A1	4	1.1	3.08	886.187	86	93	93	68	66	96	96	5	886.187-VE
2	8	1.05	2.94	889.9	86	91	93	66	65	97	97	5	
3	12	0.98	2.74	893.9	86	90	92	65	51	97	97	6	
4	16	0.98	2.74	897.6	86	89	93	65	52	97	97	6	
5	20	0.91	2.54	901.5	86	89	92	65	53	97	97	6	
6	24	0.88	2.46	905.1	87	89	92	64	51	98	98	6	
7	28	0.55	1.54	908.5	86	90	92	68	52	99	99	5	
8	32	0.38	1.06	911.3	87	~~89~~ 89	91	65	53	98	98	5	
9	36	0.36	1.0	913.7	87	89	91	64	54	99	99	5	
10	40	0.31	0.86	916.0	87	90	91	64	55	99	99	4	
11	44	0.24	0.67	918.1	87	90	91	65	56	99	99	4	
12	48	0.23	0.64	—	87	90	90	64	57	99	99	4	
B1	52	0.87	2.43	921.687	87	91	91	68	65	99	99	6	
2	56	0.87	2.43	925.0	88	91	90	66	60	99	99	6	
3	60	0.83	2.32	928.8	88	92	91	64	~~47~~ 47	99	99	6	
4	64	0.81	2.26	932.1	88	92	92	62	48	99	99	6	
5	68	0.77	2.15	935.6	88	92	92	58	47	99	99	6	
6	72	0.75	2.1	938.9	88	94	93	56	47	99	99	6	
7	76	0.68	1.90	942.2	88	94	94	55	48	99	99	6	
8	80	0.62	1.73	945.2	87	94	94	55	48	99	99	6	
9	84	0.55	1.54	948.2	87	93	94	55	49	99	99	6	
10	88	0.57	1.59	951.5	87	93	93	56	49	99	99	6	
11	92	0.46	1.28	—	87	93	93	58	50	99	99	5	
12	96	0.44	1.23	956.7	87	92	93	59	50	99	99	5	
				959.142									

Impinger Data (vol)		
#	Initial	Final
1		
2		
3		
4		
5		
6		

Silica Gel Data (gm)		
#	Initial	Final
1		
2		

Moisture Gain	
	ml.
	gm
	Total

Filter Data		
#	Number	Tare
1		
2		
3		

Molecular Weight Data (%		
#	O_2	CO_2
1		
2		
3		
Avg		

RAMBOLL

Sample Train Recovery Data Sheet

Client The Chemours Co. Location Fayetteville, NC Source VES Inlet Method M0010 Date 9/1/20

Run # R1

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	574.2	491.6	22.6
Impinger #2	751.8	754.4	-2.6
Impinger #3	729.6	730.8	-1.2
Impinger #4	502.8	499.2	3.6
Impinger #5	886.6	869.4	17.2
Impinger #6			
Impinger #7			
Impinger #8			
	Total Gain		ml/gm

Filter #1 M0010
Filter #2
Filter #3
Run Start Time 843
Run End Time 1040
Recovery Technician P. Grady

Run # R2

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	486.8	467.4	19.4
Impinger #2	765.6	769.6	-4.0
Impinger #3	795.6	797.2	-1.6
Impinger #4	524.0	519.0	5.0
Impinger #5	870.0	850.6	19.4
Impinger #6			
Impinger #7			
Impinger #8			
	Total Gain		ml/gm

Filter #1 M0010
Filter #2
Filter #3
Run Start Time 1124
Run End Time 1317
Recovery Technician P. Grady

Run # R3

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	513.4	499.8	13.6
Impinger #2	756.4	759.8	-3.4
Impinger #3	742.6	742.2	0.4
Impinger #4	532.0	528.8	3.2
Impinger #5	781.6	769.2	18.4
Impinger #6			
Impinger #7			
Impinger #8			
	Total Gain		ml/gm

Filter #1 M0010
Filter #2
Filter #3
Run Start Time 1402
Run End Time 1655
Recovery Technician P. Grady

Nozzle Calibration Form

Plant I.D. CHEMOURS

Project No. _____

Source I.D. VE SOUTH OUTLET

Personnel BG

Date 8/31/20

Nozzle ID:	Stainless Steel
Diameter 1	0.245
Diameter 2	0.245
Diameter 3	0.244
Average	0.245

< 0.004" between high & low diameters

Cyclonic Flow Determination Data Sheet

Client	CHEMOURS	Stack Diameter	36"	Leak Ck Int.	✓ ✓
Location	FAYETTEVILLE NC	Upstream Distance		Leak Ck Post	✓ ✓
Source	INLET VES	Downstream Distance		Barometric Pressure	
Date	8.31.20	Minimum Traverse Points		Probe ID	PS
Operator	ILS	Port Collar Length	~~10"~~ 11.25" 2.5" TO GATE.	Velocity Guage ID	F2
				Static Pressure	
				Time	—

Traverse Point Number	Point Position / Angle	Delta P (in. H20)	Stack Temp (°F)	Angle at Null
1	2	.95		
2	2	.98		
3	2	.97		105
4	3	.97		105
5	5	.96		105
6	10	.82		105
7	10	.55		105
8	5	.30		101
9	4	.30		101
10	15	.32		101
11	4	.28		101
12	12	.26		100
1	1	.75		
2	2	.85		
3	3	.85		101
4	7	.85		
5	10	.80		
6	10	.80		
7	4	.68		104
8	5	.66		
9	5	.64		
10	5	.60		
4	15	.58		105
12	15	.50		

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (°F)	Angle at Null
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

RAMBOLL

VES Carbon Bed Outlet Field Test Data

Field Data Summary
The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Outlet
Fayetteville, North Carolina

	Run 1							Run 2							Run 3					
Traverse Point	Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P		Stack Temp(F)	Delta P	Delta H	Tm(F) in	Tm(F) out	SQRT Delta P
A1	85	0.44	1.41	83	83	0.6633		89	0.41	1.31	94	94	0.6403		92	0.41	1.31	100	100	0.6403
2	85	0.42	1.34	86	83	0.6481		88	0.41	1.31	95	94	0.6403		92	0.41	1.31	103	100	0.6403
3	87	0.43	1.38	87	83	0.6557		89	0.43	1.38	97	95	0.6557		92	0.43	1.38	104	100	0.6557
4	85	0.43	1.38	89	83	0.6557		89	0.43	1.38	99	95	0.6557		92	0.43	1.38	105	100	0.6557
5	86	0.35	1.12	90	84	0.5916		89	0.35	1.12	100	95	0.5916		92	0.36	1.15	105	100	0.6000
6	85	0.37	1.18	90	84	0.6083		89	0.38	1.22	99	95	0.6164		92	0.35	1.12	105	101	0.5916
7	85	0.34	1.09	91	84	0.5831		89	0.35	1.12	99	96	0.5916		92	0.35	1.12	105	101	0.5916
8	85	0.30	0.96	91	84	0.5477		89	0.31	0.99	100	95	0.5568		92	0.28	0.90	105	101	0.5292
9	88	0.25	0.80	91	85	0.5000		90	0.28	0.90	100	95	0.5292		92	0.25	0.80	104	100	0.5000
10	88	0.21	0.67	91	85	0.4583		91	0.22	0.70	100	96	0.4690		92	0.22	0.70	104	100	0.4690
11	86	0.23	0.74	91	85	0.4796		91	0.23	0.74	100	96	0.4796		92	0.22	0.70	104	100	0.4690
12	86	0.23	0.74	91	86	0.4796		91	0.23	0.74	100	97	0.4796		92	0.21	0.67	104	100	0.4583
B1	86	0.35	1.12	88	87	0.5916		92	0.35	1.12	97	98	0.5916		93	0.35	1.12	101	100	0.5916
2	86	0.35	1.12	89	87	0.5916		92	0.35	1.12	99	97	0.5916		93	0.35	1.12	102	100	0.5916
3	87	0.37	1.18	92	87	0.6083		92	0.35	1.12	100	97	0.5916		93	0.34	1.09	104	100	0.5831
4	86	0.37	1.18	93	88	0.6083		92	0.35	1.12	101	98	0.5916		93	0.35	1.12	104	101	0.5916
5	88	0.35	1.12	92	88	0.5916		94	0.37	1.18	103	101	0.6083		92	0.31	0.99	105	101	0.5568
6	86	0.32	1.02	93	88	0.5657		94	0.32	1.02	103	101	0.5657		92	0.31	0.99	105	102	0.5568
7	87	0.23	0.74	94	89	0.4796		94	0.23	0.73	103	99	0.4796		92	0.21	0.67	105	102	0.4583
8	87	0.20	0.64	94	89	0.4472		91	0.20	0.60	102	99	0.4472		92	0.19	0.61	104	101	0.4359
9	88	0.18	0.58	94	90	0.4243		91	0.18	0.58	102	99	0.4243		92	0.18	0.58	103	101	0.4243
10	87	0.18	0.58	94	90	0.4243		92	0.18	0.58	102	99	0.4243		92	0.16	0.51	102	101	0.4000
11	87	0.16	0.51	94	90	0.4000		92	0.16	0.51	102	99	0.4000		92	0.16	0.51	101	100	0.4000
12	88	0.16	0.51	94	91	0.4000		92	0.16	0.51	102	100	0.4000		92	0.17	0.54	101	100	0.4123
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
						0.0000							0.0000							0.0000
Average	86	0.30	0.96	91	86	0.5418		91	0.30	0.96	100	97	0.5426		92	0.29	0.93	104	101	0.5335

Test Data Summary and Calculations
The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Outlet
Fayetteville, North Carolina

Parameter	Run 1	Run 2	Run 3
Run Date	9/1/20	9/1/20	9/1/20
Start/Stop Time	843-1040	1124-1317	1402-1555
Duration of Run, Minutes	96	96	96
Ave. Nozzle Diameter, inches	0.245	0.245	0.245
Pitot Calibration Factor, CF	0.84	0.84	0.84
Meter Gamma	0.975	0.975	0.975
Meter Delta H, inches of H2O	1.56	1.56	1.56
Stack Diameter, inches	41.5	41.5	41.5
Rectangular Width, inches	0	0	0
Rectangular Length, inches	0	0	0
Stack Area, sq.ft.	9.39	9.39	9.39
Barometric Pressure, inches of Hg	29.98	29.98	29.98
Static Pressure, inches of H2O	1.4	1.4	1.4
Dry Gas Meter Sample Volume, (VM)ft3			
Initial	170.418	229.002	287.872
Final	228.526	287.229	344.638
Total Volume	57.977	58.111	56.617
Ave. Stack Temperature, Ts(F)	86.4	90.9	92.2
Ave. Meter Temperature, Tm(F)	88.6	98.5	102.0
Ave. Run Delta H, inches of H2O	0.96	0.96	0.93
Ave. Square Root of Delta P	0.5418	0.5426	0.5335
Moisture Data			
Volume of water collected, mls	13.2	14.2	10
Silica Gel, grams	13.2	13.2	12.8
Total Collected, mls	26.4	27.4	22.8
ORSAT Data			
%O2	20.90	20.90	20.90
%CO2	0.0	0.0	0.0
%CO			
Calculations			
Vw(std), scf =	1.243	1.290	1.073
Vm(std), dscf =	54.638	53.796	52.083
Bws=	0.022	0.023	0.020
Md=	28.84	28.84	28.84
Ms=	28.60	28.58	28.62
Vs, ft/sec =	31.0	31.2	30.7
Qs, acfm =	17,477	17,577	17,291
Qs(std), dscfm =	16,602	16,541	16,289
Isokinetic Sampling Rate, %	98.4	97.2	95.6

Where:
An = area of the nozzle
As = area of the stack
Vw(std) = volume of water vapor in gas, standard conditions = 0.04707*Vlc
Vm(std) = vol. of gas sampled, standard conditions = 17.647 x Vm x gamma x [Pb + (dH/13.6)]/Tm(R)
Bws = water vapor in gas stream, proportion by volume = Vw(std)/(Vm(std) + Vw(std))
Md = molecular weight of stack gas, dry basis = (0.44 x%CO2) + (0.32 x%O2) + [0.28 x (%N2 + %CO)]
Ms = molecular weight of stack gas, wet basis = [Md x (1-Bws)] + (18.0 x Bws)
Vs = stack gas velocity = 85.49 x Cp x (avg. Sq.Rt. dP) x [Sq.Rt. (Ts(R))/(Ms x Ps)]
Qs = stack gas flow rate = Vs x As x 60
Qs(std) = stack gas flow rate, standard conditions = Qs x (1-Bws) x (528/(Ts(R)) x (Ps/29.92)
Isokinetic sampling rate = {(Ts(R)) x [(0.00267 x Vlc) + (Vm(std)/17.647)] x 100}/(Time x vs x Ps x An x60)

Results Summary
The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Outlet
Fayetteville, North Carolina

Parameter:		Run 1				Run 2				Run 3				Average			
	Mol. Wt.	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr	mg	mg/dscm	ppm	lb/hr
HFPO - Dimer Acid	330	0.00322	2.08E-03	1.52E-04	1.29E-04	0.00704	4.62E-03	3.37E-04	2.86E-04	0.00408	2.77E-03	2.01E-04	1.69E-04	0.00	3.16E-03	2.30E-04	1.95E-04

Where:
Pollutant Emission Concentration:
mg= total sample collected, milligrams
mg/dscm = milligrams of pollutant per dry standard cubic meter sampled = (mg/dscf) x (35.314 cubic feet/cubic meter)
ppm = parts per million =((mg/dscm x 24.04 liters/mol)/mol.wt))

Pollutant Emission Rate:
lb/hr = pounds of pollutant emitted per hour = mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr

Example Calculations

The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Outlet
Fayetteville, North Carolina
Note: Values are shown for example purposes only.

Vm,a = Dry gas volume at actual conditions (acf)

Initial gas meter volume:	170.418
Final gas meter volume:	228.526
Difference:	58.108

Vm,std = Volume of dry gas at standard conditions (dscf)

= 17.647x Vm, a x Gamma*[Pbar+(DeltaH/13.6)]/Tm(R)
= 17.647 x 0.000 x 0.975 x (29.98 + [(1.560 /13.6) / 549
= 54.638

Vl,c = Volume of water collected in impingers and silica gel (ml)

impinger catch (mls):	13
silica gel (g)	13.2
total:	26.4

Vw,std = Volume of water vapor in gas at standard conditions (cu.ft.)

= (0.04707) x (Vl,c)
= 0.04707 x 26.4
= 1.243

Bwo = Proportion by volume of water vapor in gas stream

= Vw,std/(Vw,std+Vm,std)
= 1.24 / (1.24 + 54.638)
= 0.022

Ps = Stack gas static pressure (in. Hg)

= St/13.6
= 1.40 / 13.6
= 0.103

Pa = Absolute stack gas pressure (in. Hg)

= Ps+Pbar
= 0.103 + 29.98
= 30.08

MFD = Dry mole fraction of stack gas

= 1-Bwo
= 1 - 0.022
= 0.978

Md = Dry molecular weight of stack gas (lb/lb-mol)

= (0.32 x %O2) + (0.44 x %CO2) + (0.28 x %N2)
= (0.32 x 20.90)+(0.44 x 0.00) + (0.28 x 79.10)
= 28.84

Mw = Wet molecular weight of stack gas (lb/lb-mol)

= (Md) x (MFD) + (0.18) x (Bwo*100)
= 28.84 x 0.978 + 0.18 x 2.22375
= 28.60

Example Calculations

The Chemours Company - Fayetteville Works
Vinyl Ethers South Carbon Bed Outlet
Fayetteville, North Carolina
Note: Values are shown for example purposes only.

Vs,avg = **Average stack gas velocity (fps)**
= Kp x (Cp) x (sqrt,deltaP) x sqrt((Ts + 460°R)/Mw*Pa))
= 85.48 x 0.84 x 0.54 x sqrt (0.64)
= 31.0

A **Cross sectional areas of stack (sq. ft)**
= pi/4*d^2
= 3.14159/4 x 3.46 ^2
= 9.39

Qa **Volumetric flow rate at actual conditions (acfm)**
= (60)sec/min(A)(Vs, avg)
= 60 x 9.3934 x 31.01
= 17,475

Qstd **Volumetric flow rate at standard conditions (scfm)**
= Qa x (528/Ts,avg + 460) x Pa/29.92
= 17,475 x (528 / 546) x 1.005
= 16,978

Qstd,dry **Volumetric flow rate at dry standard conditions per minute(dscfm)**
= Qstd x (1-Bwo)
= 16,978 x 0.9778
= 16,601

mg/dscm **HFPO-DA concentration**
= (mg/dscf) x 35.314 cu. ft./cu. meter
= (0.003 / 54.64) : 35.314
= 2.08E-03

lb/hr **HFPO-DA Mass Emission Rate**
= mg/1000/[(453.59 g/lb)/(dscf)] x dscfm x 60 min/hr
= 0.00 / 1,000 /[453.59) / 54.64)] x 16,602 x 60
= 1.29E-04

EPA Isokinetic Field Sheet

Methods Performed M0010

Client	The Chemours Company	Run Number	1	Pitot Number	P 4-3
Location	Fayetteville, NC	Stack Diameter	41.5-inches	Pitot Coefficient	0.84
Source	VES Outlet	Barometric Pres.	29.98	Stack TC I.D.	TC 7C
Date	9/1/2020	Static Pressure	1.4	Oven Box I.D.	DB-2
Operators	BG/JS	Meter Box #	8	Impinger Out I.D.	IO-3
Start Time	0843	Meter delta H	1.56	Nozzle Size	.245
End Time	~~1050~~ 1040	Meter Gamma	0.975	XAD Trap I.D.	NA

K=3.2

Leak Check Rates	Sample Rate in.	Sample Rate cfm	Pitot +	Pitot -
Initial	10	0.005	✓	✓
Mid	8	0.009		
Mid	9	0.005		
Final	9	0.005	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
A1	4	0.44	1.41	170.418	85	93	93	50	64	83	83	5	
2	8	0.42	1.34	173.2	85	94	92	47	60	86	83	5	
3	12	0.43	1.38	176.4	87	91	94	48	60	87	83	5	
4	16	0.43	1.38	—	85	92	95	46	58	89	83	5	
5	20	0.35	1.12	—	86	94	95	47	59	90	84	5	
6	24	0.37	1.18	184.5	85	92	94	46	58	90	84	5	
7	28	0.34	1.09	187.6	85	92	93	48	58	91	84	5	
8	32	0.30	0.96	190.6	85	91	93	47	58	91	84	5	
9	36	0.25	0.80	192.7	88	93	92	49	59	91	85	4	
10	40	0.21	0.67	194.4	88	93	91	48	60	91	85	4	
11	44	0.23	0.74	196.6	86	94	91	45	60	91	85	4	
START 0952 12	48	0.23	0.74	198.5	86	93	94	45	60	91	86	4	VOLUME- 200.561
B1	52	0.35	1.12	~~200.561~~ (82)	86	92	93	47	62	88	87	5	VOLUME-200.692
2	56	0.35	1.12	—	86	91	94	46	60	89	87	5	
3	60	0.37	1.18	206.0	87	92	95	46	56	92	87	6	
4	64	0.37	1.18	208.6	86	93	96	48	58	93	88	6	
5	68	0.35	1.12	211.2	88	94	94	49	58	92	88	6	
6	72	0.32	1.02	—	86	95	94	47	59	93	88	6	
7	76	0.23	0.74	—	87	94	95	47	58	94	89	6	
8	80	0.20	0.64	218.9	87	95	95	49	60	94	89	5	
9	84	0.18	0.58	220.9	88	94	95	49	59	94	90	4	
10	88	0.18	0.58	—	87	95	95	49	59	94	90	4	
11	92	0.16	0.51	224.7	87	96	95	46	60	94	90	4	
12	96	0.16	0.51	226.7	88	95	95	43	59	94	91	4	STOP 1040
				228.526									

Impinger Data (vol)		
#	Initial	Final
1		
2		
3		
4		
5		
6		

Silica Gel Data (gm)		
#	Initial	Final
1		
2		

Moisture Gain	
	ml.
	gm
	Total

Filter Data		
#	Number	Tare
1		
2		
3		

Molecular Weight Data (%		
#	O_2	CO_2
1		
2		
3		
Avg		

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EPA Isokinetic Field Sheet

Methods Performed M0010

Client	The Chemours Company	Run Number	2	Pitot Number	P4-3
Location	Fayetteville, NC	Stack Diameter	41.5-inches	Pitot Coefficient	0.84
Source	VES Outlet	Barometric Pres.	29.93	Stack TC I.D.	TC 7
Date	9/1/2020	Static Pressure	1.4	Oven Box I.D.	OB-2
Operators	BG / JS	Meter Box #	3	Impinger Out I.D.	ID-3
Start Time	1124	Meter delta H	1.56	Nozzle Size	.1245
End Time	~~1317~~ 1317	Meter Gamma	0.995	XAD Trap I.D.	NA

Leak Check Rates	Sample Rate in.	Sample Rate cfm	Pitot +	Pitot -
Initial	8	0.010	✓	✓
Mid	6	0.008		
Mid	6	0.008		
Final	8	0.005	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
A1	4	0.41	1.31	229.002	89	94	95	65	63	94	94	4	
	8	0.41	1.31	—	88	96	96	52	60	95	94	4	
	12	0.43	1.38	234.9	89	91	96	54	61	97	95	4	
	16	0.43	1.38	237.5	89	92	95	53	60	99	95	4	
	20	0.35	1.12	240.2	89	93	95	50	60	100	95	4	
	24	0.38	1.22	242.9	89	92	96	51	59	99	95	4	
	28	0.35	1.17	245.5	89	93	95	53	59	99	96	4	
	32	0.31	0.99	248.3	89	94	95	48	59	100	95	4	
	36	0.28	0.90	250.7	90	97	98	50	58	100	95	4	
	40	0.22	0.70	253.0	91	96	98	51	59	100	96	~~4~~ 3	
	44	0.23	0.74	255.3	91	97	99	51	59	100	96	~~4~~ 3	
	48	0.23	0.74	257.4	91	97	100	49	60	100	97	3	VOLUME: 259.418 (BG)
1229 B1	52	0.35	1.12	259.534	92	100	100	~~58~~ 58	64	97	98	4	VOLUME: ~~259.418~~
2	56	0.35	1.12	—	92	100	99	56	62	99	97	5	VOLUME: ~~259.418~~
3	60	0.35	1.12	264.4	92	100	99	54	62	100	97	5	
4	64	.35	1.12	—	92	101	100	56	63	101	98	5	
5	68	.37	1.18	—	94	104	104	58	64	103	101	5	
6	72	.32	1.02	—	94	103	97	56	64	103	101	5	
7	76	.23	.73	277.6	94	102	97	53	64	103	99	4	
8	80	.20	.60	—	91	99	97	52	62	102	99	4	
9	84	.18	.58	280.46	91	98	100	50	60	102	99	4	
10	88	.18	.58	281.3	92	101	100	45	59	102	99	4	
11	92	.16	.51	283.5	92	101	94	45	58	102	99	4	
12	96	.16	.51	285.5	92	101	98	44	56	102	100	4	
				287.229									

Impinger Data (vol)		
#	Initial	Final
1		
2		
3		
4		
5		
6		

Silica Gel Data (gm)		
#	Initial	Final
1		
2		

Moisture Gain	
	ml.
	gm
	Total

Filter Data		
#	Number	Tare
1		
2		
3		

Molecular Weight Data (%		
#	O_2	CO_2
1		
2		
3		
Avg		

C:\Users\Field Data Forms\[redacted]\Isi Field Sheet.xm\Sheet1

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EPA Isokinetic Field Sheet

Methods Performed M0010

Client	The Chemours Company	Run Number	3	Pitot Number	P4-3
Location	Fayetteville, NC	Stack Diameter	41.5-inches	Pitot Coefficient	0.84
Source	VES Outlet	Barometric Pres.	1.4	Stack TC I.D.	TC-7C
Date	9/1/2020	Static Pressure	29.98	Oven Box I.D.	OB-2
Operators	BG/JS	Meter Box #	8	Impinger Out I.D.	IO-3
Start Time	1402	Meter delta H	1.56	Nozzle Size	.295
End Time	1555	Meter Gamma	0.975	XAD Trap I.D.	NA

Leak Check Rates				
	Sample Rate in.	cfm	Pitot +	Pitot -
Initial	8	0.012	✓	✓
Mid	6	0.010		
Mid	6	0.009		
Final	7	0.008	✓	✓

Sample Point	Sample Time (min)	Velocity Head (in. H_2O)	Orifice Setting (in. H_2O)	Meter Volume (ft^3)	Temperature Readings in Degrees Farenheit: Stack	Probe	Oven Box	Impinger	Aux	Meter Inlet	Meter Outlet	Vacuum (in. hg)	Comments/Notes
A1	4	0.41	1.31	287.872	92	100	100	50	62	100	100	4	
2	8	0.41	1.31	—	92	99	101	48	60	103	100	4	
3	12	0.43	1.38	293.5	92	100	100	50	60	104	100	4	
4	16	~~0.38~~ 0.43	1.38	—	92	100	99	50	60	105	100	4	ΔP- 0.43
5	20	0.36	1.15	—	92	99	100	48	60	105	100	4	
6	24	0.35	1.12	301.6	92	100	98	46	59	105	101	4	
7	28	0.35	1.12	304.2	92	98	100	44	58	105	101	4	
8	32	0.28	0.90	306.9	92	98	99	46	58	105	101	3	
9	36	0.25	0.80	309.6	92	100	101	47	57	104	100	3	
10	40	0.22	0.70	311.6	92	101	100	44	57	104	100	3	
11	44	0.22	0.70	313.5	92	99	100	45	58	104	100	3	
12	48	0.21	0.67	315.6	92	100	101	44	56	104	100	3	V= 317.796
1507 B1	52	0.35	1.12	317.945	93	103	102	56	64	101	100	4	V= 317.945
2	56	0.35	1.12	—	93	100	101	43	56	102	100	4	
3	60	0.34	1.09	323.05	93	100	102	43	55	104	100	4	
4	64	0.35	1.12	325.7	93	100	101	42	55	104	101	4	
5	68	0.31	0.99	—	92	99	100	42	54	105	101	5	
6	72	0.31	0.99	330.6	92	98	100	47	55	105	102	5	
7	76	0.21	0.67	333.1	93	99	99	41	54	105	102	4	
8	80	0.19	0.61	335.2	92	98	99	42	55	104	101	4	
9	84	0.18	0.58	337.2	92	99	98	43	56	103	101	4	
10	88	0.16	0.51	339.2	92	100	97	43	56	102	101	4	
11	92	0.16	0.51	—	92	98	98	43	57	101	100	4	
12	96	0.17	0.54	342.7	92	98	97	42	57	101	100	4	
				344.638									

Impinger Data (vol)		
#	Initial	Final
1		
2		
3		
4		
5		
6		

Silica Gel Data (gm)		
#	Initial	Final
1		
2		

Moisture Gain	
	ml.
	gm
	Total

Filter Data		
#	Number	Tare
1		
2		
3		

Molecular Weight Data (%		
#	O_2	CO_2
1		
2		
3		
Avg		

C:\Stack\Field Data Forms\[redacted]\Isokinetic Field Sheet.xlsx\Sheet1

RAMBOLL

Sample Train Recovery Data Sheet

Client The Chemours Co. Location Fayetteville, NC Source VES OUTLET Method M0010 Date 9/1/20

Run # 1

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	519.4	507.8	11.6
Impinger #2	699.6	699.6	0
Impinger #3	772.8	773.2	-.4
Impinger #4	492.2	490.2	2.0
Impinger #5	895.8	882.6	13.2
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1 M0010
Filter #2
Filter #3
Run Start Time 843
Run End Time 1040
Recovery Technician P. Grady

Run # 2

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	493.6	483.6	10.0
Impinger #2	785.6	786.2	-0.6
Impinger #3	779.0	779.0	0
Impinger #4	516.0	511.2	4.8
Impinger #5	835.0	821.8	13.2
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1 M0010
Filter #2
Filter #3
Run Start Time 1124
Run End Time 1317
Recovery Technician P. Grady

Run # 3

	Final ml or gm	Initial ml or gm	Net Gain
Impinger #1	516.4	508.0	8.4
Impinger #2	705.2	705.2	0
Impinger #3	764.2	764.2	0
Impinger #4	492.0	490.4	1.6
Impinger #5	908.2	895.4	12.8
Impinger #6			
Impinger #7			
Impinger #8			
		Total Gain	ml/gm

Filter #1 M0010
Filter #2
Filter #3
Run Start Time 1402
Run End Time 1555
Recovery Technician P. Grady

RAMBOLL

Nozzle Calibration Form

Plant I.D. Chemours

Project No. _____

Source I.D. VES Inlet

Personnel P. Grady

Date 8/31/20

Nozzle ID:	Stainless Steel
Diameter 1	.230
Diameter 2	.229
Diameter 3	.230
Average	.230

< 0.004" between high & low diameters

Cyclonic Flow Determination Data Sheet

Client	Chemours	Stack Diameter	41.5	Leak Ck Int.	✓ ✓
Location	Fayetteville NC	Upstream Distance	150"	Post	✓ ✓
Source	OUTLET VES	Downstream Distance	360"	Barometric Pressure	
Date	8.31-20	Minimum Traverse Points	12	Probe ID	P5
Operator	JGS.	Port Collar Length	10" 11.25"	Velocity Guage ID	F2
				Static Pressure	
				Time	

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (°F)	Angle at Null
1		.40	105	2
2		.45	105	3
3		.45	104	5
4		.45	104	5
5		.40	104	6
6		.35	104	6
7		.25	103	7
8		.25	103	7
9		.20	103	5
10		.20	103	15
11		.15	103	5
12		.15	103	10
1		.40	101	5
2		.48	101	7
3		.50	102	7
4		.50	102	5
5		.45	102	10
6		.40	102	10
7		.25	102	5
8		.30	102	7
9		.25	102	6
10		.20	102	7
11		.15	102	15
12		.10	102	10

Traverse Point Number	Point Position	Delta P (in. H20)	Stack Temp (°F)	Angle at Null

APPENDIX D
LABORATORY DATA

VES Carbon Bed Inlet Laboratory Data

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-20288-1
Client Project/Site: VES CB Inlet - M0010

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

Attn: Michael Aucoin

Authorized for release by:
9/21/2020 2:13:37 PM

Courtney Adkins, Project Manager II
(865)291-3019
courtney.adkins@eurofinset.com

Table of Contents

Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 140-20288-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-20288-1

Sample Receipt

The samples were received on September 4, 2020 at 12:35 PM in good condition and properly preserved. The temperature of the cooler at receipt was 1.6º C.

LCMS

Method 537 (modified): The required dilution factor for the following samples were higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): QF-2322,2324 VES BC INLET R1 M0010 FH (140-20288-1), QF-2329,2330 VES BC INLET R2 M0010 FH (140-20288-5) and QF-2336,2337 VES BC INLET R3 M0010 FH (140-20288-9). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: QF-2322,2324 VES BC INLET R1 M0010 FH (140-20288-1), QF-2329,2330 VES BC INLET R2 M0010 FH (140-20288-5) and QF-2336,2337 VES BC INLET R3 M0010 FH (140-20288-9). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples QF-2331,2332,2334 VES BC INLET R2 M0010 BH (140-20288-6) and QF-2338,2339,2341 VES BC INLET R3 M0010 BH (140-20288-10) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The required dilution factor for the following samples were higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): QF-2324,2325,2327 VES BC INLET R1 M0010 BH (140-20288-2). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The method blank for preparation batch 140-42523 and 140-42590 contained HFPO-DA above the reporting limit (RL). The entire sample was consumed during analysis or extraction, therefore, the data have been reported.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: QF-2324,2325,2327 VES BC INLET R1 M0010 BH (140-20288-2), QF-2331,2332,2334 VES BC INLET R2 M0010 BH (140-20288-6) and QF-2338,2339,2341 VES BC INLET R3 M0010 BH (140-20288-10). The sample was analyzed at a dilution based on screening results.

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

Organic Prep

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

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Client Sample ID: QF-2322,2324 VES BC INLET R1 M0010 FH — Lab Sample ID: 140-20288-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	96.9		2.00	1.16	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2324,2325,2327 VES BC INLET R1 M0010 BH — Lab Sample ID: 140-20288-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	27.1	B	0.800	0.700	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 CONDENSATE — Lab Sample ID: 140-20288-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.478		0.0585	0.00965	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2328 VES BC INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-20288-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00988	B	0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2329,2330 VES BC INLET R2 M0010 FH — Lab Sample ID: 140-20288-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	6.11		0.100	0.0580	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2331,2332,2334 VES BC INLET R2 M0010 BH — Lab Sample ID: 140-20288-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.833	B	0.0320	0.0280	ug/Sample	20		537 (modified)	Total/NA

Client Sample ID: QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 CONDENSATE — Lab Sample ID: 140-20288-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.112		0.0570	0.00941	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2335 VES BC INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-20288-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00890	B	0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2336,2337 VES BC INLET R3 M0010 FH — Lab Sample ID: 140-20288-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	5.86		0.100	0.0580	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2338,2339,2341 VES BC INLET R3 M0010 BH — Lab Sample ID: 140-20288-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.27	B	0.0320	0.0280	ug/Sample	20		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Client Sample ID: QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20288-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.224		0.0605	0.00999	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2342 VES BC INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20288-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00806	B	0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: QF-2322,2324 VES BC INLET R1 M0010 FH

Lab Sample ID: 140-20288-1

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	96.9		2.00	1.16	ug/Sample		09/09/20 11:52	09/16/20 16:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*90*		*25 - 150*	*09/09/20 11:52*	*09/16/20 16:57*	*1*

Client Sample ID: QF-2324,2325,2327 VES BC INLET R1 M0010 BH

Lab Sample ID: 140-20288-2

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	27.1	B	0.800	0.700	ug/Sample		09/08/20 09:30	09/18/20 18:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*84*		*25 - 150*	*09/08/20 09:30*	*09/18/20 18:04*	*1*

Client Sample ID: QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20288-3

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.478		0.0585	0.00965	ug/Sample		09/14/20 11:33	09/15/20 13:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*25 - 150*	*09/14/20 11:33*	*09/15/20 13:33*	*1*

Client Sample ID: QF-2328 VES BC INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20288-4

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00988	B	0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 18:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*84*		*25 - 150*	*09/08/20 09:30*	*09/18/20 18:13*	*1*

Client Sample ID: QF-2329,2330 VES BC INLET R2 M0010 FH

Lab Sample ID: 140-20288-5

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	6.11		0.100	0.0580	ug/Sample		09/09/20 11:52	09/16/20 17:05	1

Client Sample ID: QF-2329,2330 VES BC INLET R2 M0010 FH

Lab Sample ID: 140-20288-5

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	96		25 - 150	09/09/20 11:52	09/16/20 17:05	1

Client Sample ID: QF-2331,2332,2334 VES BC INLET R2 M0010 BH

Lab Sample ID: 140-20288-6

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.833	B	0.0320	0.0280	ug/Sample		09/08/20 09:30	09/18/20 18:22	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	89		25 - 150	09/08/20 09:30	09/18/20 18:22	20

Client Sample ID: QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20288-7

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.112		0.0570	0.00941	ug/Sample		09/14/20 11:33	09/15/20 13:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	105		25 - 150	09/14/20 11:33	09/15/20 13:41	1

Client Sample ID: QF-2335 VES BC INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20288-8

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00890	B	0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 18:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	71		25 - 150	09/08/20 09:30	09/18/20 18:31	1

Client Sample ID: QF-2336,2337 VES BC INLET R3 M0010 FH

Lab Sample ID: 140-20288-9

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	5.86		0.100	0.0580	ug/Sample		09/09/20 11:52	09/16/20 17:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	93		25 - 150	09/09/20 11:52	09/16/20 17:14	1

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Client Sample ID: QF-2338,2339,2341 VES BC INLET R3 M0010 BH

Lab Sample ID: 140-20288-10

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.27	B	0.0320	0.0280	ug/Sample		09/08/20 09:30	09/18/20 18:39	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*80*		*25 - 150*	*09/08/20 09:30*	*09/18/20 18:39*	*20*

Client Sample ID: QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20288-11

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.224		0.0605	0.00999	ug/Sample		09/14/20 11:33	09/15/20 13:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*103*		*25 - 150*	*09/14/20 11:33*	*09/15/20 13:50*	*1*

Client Sample ID: QF-2342 VES BC INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20288-12

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00806	B	0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 18:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*73*		*25 - 150*	*09/08/20 09:30*	*09/18/20 18:48*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00100	0.000580	ug/Sample
HFPO-DA	0.00160	0.00140	ug/Sample
HFPO-DA	0.00200	0.000330	ug/Sample

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HFPODA (25-150)						
140-20288-1	QF-2322,2324 VES BC INLET F	90						
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 BH	84						
140-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 CONDENSATE	99						
140-20288-4	QF-2328 VES BC INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	84						
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	96						
140-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 BH	89						
140-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 CONDENSATE	105						
140-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	71						
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	93						
140-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 BH	80						
140-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 CONDENSATE	103						
140-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	73						
LCS 140-42523/2-B	Lab Control Sample	55						
LCS 140-42561/2-B	Lab Control Sample	87						
LCS 140-42711/2-B	Lab Control Sample	97						
LCSD 140-42523/3-B	Lab Control Sample Dup	64						
LCSD 140-42561/3-B	Lab Control Sample Dup	83						
LCSD 140-42711/3-B	Lab Control Sample Dup	103						
MB 140-42523/15-B	Method Blank	59						
MB 140-42523/1-B	Method Blank	51						
MB 140-42561/1-B	Method Blank	85						
MB 140-42711/1-B	Method Blank	99						

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-42523/15-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42523

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.001663		0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 14:04	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*59*		*25 - 150*	*09/08/20 09:30*	*09/18/20 14:04*	*1*

Lab Sample ID: MB 140-42523/1-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42523

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/08/20 09:30	09/18/20 13:55	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*51*		*25 - 150*	*09/08/20 09:30*	*09/18/20 13:55*	*1*

Lab Sample ID: LCS 140-42523/2-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42523

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.01854		ug/Sample		93	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*55*		*25 - 150*

Lab Sample ID: LCSD 140-42523/3-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42523

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.01662		ug/Sample		83	60 - 140	11	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*64*		*25 - 150*

Lab Sample ID: MB 140-42561/1-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 15:11	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*85*		*25 - 150*	*09/09/20 11:52*	*09/16/20 15:11*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 140-42561/2-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42561

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.01768		ug/Sample		88	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*87*		*25 - 150*

Lab Sample ID: LCSD 140-42561/3-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42561

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.01792		ug/Sample		90	60 - 140	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*83*		*25 - 150*

Lab Sample ID: MB 140-42711/1-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:47	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*25 - 150*	*09/14/20 11:33*	*09/15/20 11:47*	*1*

Lab Sample ID: LCS 140-42711/2-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42711

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0100	0.009984		ug/Sample		100	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*97*		*25 - 150*

Lab Sample ID: LCSD 140-42711/3-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42711

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.009072		ug/Sample		91	60 - 140	10	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*103*		*25 - 150*

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

LCMS

Prep Batch: 42523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 B	Total/NA	Air	None	
140-20288-4	QF-2328 VES BC INLET R1 M0010 BREAKTHR(	Total/NA	Air	None	
140-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 B	Total/NA	Air	None	
140-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHR(	Total/NA	Air	None	
140-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 B	Total/NA	Air	None	
140-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHR(	Total/NA	Air	None	
MB 140-42523/15-B	Method Blank	Total/NA	Air	None	
MB 140-42523/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 42561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Total/NA	Air	None	
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Total/NA	Air	None	
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Total/NA	Air	None	
MB 140-42561/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 B	Total/NA	Air	Split	42523
140-20288-4	QF-2328 VES BC INLET R1 M0010 BREAKTHR(	Total/NA	Air	Split	42523
140-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 B	Total/NA	Air	Split	42523
140-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHR(	Total/NA	Air	Split	42523
140-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 B	Total/NA	Air	Split	42523
140-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHR(	Total/NA	Air	Split	42523
MB 140-42523/15-B	Method Blank	Total/NA	Air	Split	42523
MB 140-42523/1-B	Method Blank	Total/NA	Air	Split	42523
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	Split	42523
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42523

Cleanup Batch: 42591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Total/NA	Air	Split	42561
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Total/NA	Air	Split	42561
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Total/NA	Air	Split	42561
MB 140-42561/1-B	Method Blank	Total/NA	Air	Split	42561
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	Split	42561
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42561

Prep Batch: 42711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 C	Total/NA	Air	None	
140-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 C	Total/NA	Air	None	
140-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 C	Total/NA	Air	None	
MB 140-42711/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	None	

LCMS

Cleanup Batch: 42725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 C	Total/NA	Air	Split	42711
140-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 C	Total/NA	Air	Split	42711
140-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 C	Total/NA	Air	Split	42711
MB 140-42711/1-B	Method Blank	Total/NA	Air	Split	42711
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	Split	42711
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42711

Analysis Batch: 42757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 C	Total/NA	Air	537 (modified)	42725
140-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 C	Total/NA	Air	537 (modified)	42725
140-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 C	Total/NA	Air	537 (modified)	42725
MB 140-42711/1-B	Method Blank	Total/NA	Air	537 (modified)	42725
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42725
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42725

Cleanup Batch: 42822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Total/NA	Air	Dilution	42591
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Total/NA	Air	Dilution	42591
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Total/NA	Air	Dilution	42591

Analysis Batch: 42824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Total/NA	Air	537 (modified)	42822
MB 140-42561/1-B	Method Blank	Total/NA	Air	537 (modified)	42591
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42591
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42591

Cleanup Batch: 42906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 B	Total/NA	Air	Dilution	42590

Analysis Batch: 42907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 B	Total/NA	Air	537 (modified)	42906
140-20288-4	QF-2328 VES BC INLET R1 M0010 BREAKTHR(	Total/NA	Air	537 (modified)	42590
140-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 B	Total/NA	Air	537 (modified)	42590
140-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHR(	Total/NA	Air	537 (modified)	42590
140-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 B	Total/NA	Air	537 (modified)	42590
140-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHR(	Total/NA	Air	537 (modified)	42590
MB 140-42523/15-B	Method Blank	Total/NA	Air	537 (modified)	42590
MB 140-42523/1-B	Method Blank	Total/NA	Air	537 (modified)	42590
LCS 140-42523/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42590
LCSD 140-42523/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42590

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Client Sample ID: QF-2322,2324 VES BC INLET R1 M0010 FH

Lab Sample ID: 140-20288-1

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	120 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			60 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			5 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 16:57	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2324,2325,2327 VES BC INLET R1 M0010 BH

Lab Sample ID: 140-20288-2

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Cleanup	Dilution			20 uL	10000 uL	42906	09/18/20 12:20	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 18:04	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20288-3

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			0.00855 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 13:33	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2328 VES BC INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20288-4

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 18:13	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Client Sample ID: QF-2329,2330 VES BC INLET R2 M0010 FH

Lab Sample ID: 140-20288-5

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	120 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			60 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:05	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2331,2332,2334 VES BC INLET R2 M0010 BH

Lab Sample ID: 140-20288-6

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		20			42907	09/18/20 18:22	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20288-7

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00877 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 13:41	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2335 VES BC INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20288-8

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 18:31	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Client Sample ID: QF-2336,2337 VES BC INLET R3 M0010 FH

Lab Sample ID: 140-20288-9

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	128 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			64 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:14	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2338,2339,2341 VES BC INLET R3 M0010 BH

Lab Sample ID: 140-20288-10

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		20			42907	09/18/20 18:39	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20288-11

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.00826 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 13:50	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2342 VES BC INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20288-12

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 18:48	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42523/15-B
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	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:04	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42523/1-B
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	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 13:55	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42561/1-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:11	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42711/1-B
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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:47	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-42523/2-B
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	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:13	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-42561/2-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:29	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-42711/2-B
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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:05	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-42523/3-B
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	None			1 Sample	360 mL	42523	09/08/20 09:30	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42590	09/10/20 10:00	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 14:21	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-42561/3-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:38	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-42711/3-B
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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:14	JRC	TAL KNX
	Instrument ID: LCA									

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

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
Job ID: 140-20288-1
Project/Site: VES CB Inlet - M0010

Laboratory: Eurofins TestAmerica, Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-21
Colorado	State	TN00009	02-28-21
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	07-01-21
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	LA110001	12-31-12 *
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-21
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-21
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL KNX
Dilution	Dilution and Re-fortification of Standards	None	TAL KNX
None	Leaching Procedure	TAL SOP	TAL KNX
None	Leaching Procedure for Condensate	TAL SOP	TAL KNX
None	Leaching Procedure for Filter	TAL SOP	TAL KNX
Split	Source Air Split	None	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Inlet - M0010

Job ID: 140-20288-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-20288-1	QF-2322,2324 VES BC INLET R1 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-2	QF-2324,2325,2327 VES BC INLET R1 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-3	QF-2326 VES BC INLET R1 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-4	QF-2328 VES BC INLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-5	QF-2329,2330 VES BC INLET R2 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-6	QF-2331,2332,2334 VES BC INLET R2 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-7	QF-2333 VES BC INLET R2 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-8	QF-2335 VES BC INLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-9	QF-2336,2337 VES BC INLET R3 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-10	QF-2338,2339,2341 VES BC INLET R3 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-11	QF-2340 VES BC INLET R3 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
140-20288-12	QF-2342 VES BC INLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	

Request for Analysis/Chain-of-Custody – RFA/COC #001
The Chemours Company – Fayetteville NC Facility
HFPO-DA Testing on VES Carbon Bed Inlet

eurofins Environment Testing TestAmerica

Project Identification:	Chemours Emissions Test
Client Name:	The Chemours Company FC, LLC
Client Contact:	Ms. Christel Compton Office: (910) 678-1213 Cell: (910) 975-3386
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	Hand Deliver

Project Deliverables:
Report analytical results on TALS Reports and in data packages. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
HFPO-DA (CAS No. 13252-13-6)	14 Days to Extraction; 40 Days to Analysis	

140-20288 Chain of Custody

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
QF-2322 VES CB Inlet R1 M0010 Filter	1	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (90 mm Whatman Glass Microfiber)** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **Knoxville**: Analyze for HFPO-DA.
QF-2323 VES CB Inlet R1 M0010 FH of Filter Holder & Probe MeOH Rinse	1	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
QF-2324 VES CB Inlet R1 M0010 XAD-2 Resin Tube	1	9/1/20		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **Knoxville**: Analyze for HFPO-DA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
QF-2325 VES CB Inlet R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	1	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2326 VES CB Inlet R1 M0010 Impingers 1,2 & 3 Condensate	1	9/1/20		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. **Knoxville**: Analyze for HFPO-DA.
QF-2327 VES CB Inlet R1 M0010 Impinger Glassware MeOH Rinse	1	9/1/20		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
QF-2328 VES CB Inlet R1 M0010 Breakthrough XAD-2 Resin Tube	1	9/1/20		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2329 VES CB Inlet R2 M0010 Filter	2	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (90 mm Whatman Glass Microfiber)** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **Knoxville**: Analyze for HFPO-DA.
QF-2330 VES CB Inlet R2 M0010 FH of Filter Holder & Probe MeOH Rinse	2	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
QF-2331 VES CB Inlet R2 M0010 XAD-2 Resin Tube	2	9/1/20		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **Knoxville**: Analyze for HFPO-DA.
QF-2332 VES CB Inlet R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	2	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2333 VES CB Inlet R2 M0010 Impingers 1,2 & 3 Condensate	2	9/1/20		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. **Knoxville**: Analyze for HFPO-DA.
QF-2334 VES CB Inlet R2 M0010 Impinger Glassware MeOH Rinse	2	9/1/20		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
QF-2335 VES CB Inlet R2 M0010 Breakthrough XAD-2 Resin Tube	2	9/1/20		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2336 VES CB Inlet R3 M0010 Filter	3	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (90 mm Whatman Glass Microfiber)** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **Knoxville**: Analyze for HFPO-DA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
QF-2337 VES CB Inlet R3 M0010 FH of Filter Holder & Probe MeOH Rinse	3	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
QF-2338 VES CB Inlet R3 M0010 XAD-2 Resin Tube	3	9/1/20		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **Knoxville**: Analyze for HFPO-DA.
QF-2339 VES CB Inlet R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	3	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2340 VES CB Inlet R3 M0010 Impingers 1,2 & 3 Condensate	3	9/1/20		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. **Knoxville**: Analyze for HFPO-DA.
QF-2341 VES CB Inlet R3 M0010 Impinger Glassware MeOH Rinse	3	9/1/20		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
QF-2342 VES CB Inlet R3 M0010 Breakthrough XAD-2 Resin Tube	3	9/1/20		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **Knoxville**: Analyze for HFPO-DA.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 1.6 / CT 1.6 °C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	HAND DELIVERED, NO CUSTODY SEALS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Patricia Murphy	Ramboll	9/3/20 2030
Accepted By:	Doug Call	ETA KNOX	9/3/20 2030
Relinquished By:	Doug Call	ETA KNOX	9/4/20 1235
Accepted By:		ETA KNX	9-4-20 12:35
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC6K Correction factor: 0-0	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 14004326 PM Instructions:

Sample Receiving Associate: Date: 9-7-20

QA026R32.doc, 062719

VES Carbon Bed Outlet Laboratory Data

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-20289-1
Client Project/Site: VES CB Outlet - M0010

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

Attn: Michael Aucoin

Authorized for release by:
9/21/2020 2:18:18 PM

Courtney Adkins, Project Manager II
(865)291-3019
courtney.adkins@eurofinset.com

Table of Contents

Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 140-20289-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-20289-1

Sample Receipt

The samples were received on September 4, 2020 at 12:35 PM in good condition and properly preserved. The temperature of the cooler at receipt was 0.8º C.

LCMS

Method 537 (modified): The required dilution factor for the following samples were higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): QF-2343,2344 VES BC OUTLET R1 M0010 FH (140-20289-1), QF-2350,2351 VES BC OUTLET R2 M0010 FH (140-20289-5) and QF-2357,2358 VES BC OUTLET R3 M0010 FH (140-20289-9). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: QF-2343,2344 VES BC OUTLET R1 M0010 FH (140-20289-1), QF-2350,2351 VES BC OUTLET R2 M0010 FH (140-20289-5) and QF-2357,2358 VES BC OUTLET R3 M0010 FH (140-20289-9). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH (140-20289-2), QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH (140-20289-6), QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH (140-20289-10) and QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20289-12). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH (140-20289-2), QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH (140-20289-6), QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH (140-20289-10) and QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-20289-12) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

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

Organic Prep

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

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Client Sample ID: QF-2343,2344 VES BC OUTLET R1 M0010 FH — Lab Sample ID: 140-20289-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.46		0.0991	0.0575	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH — Lab Sample ID: 140-20289-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.608		0.00800	0.00700	ug/Sample	5		537 (modified)	Total/NA

Client Sample ID: QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3 CONDENSATE — Lab Sample ID: 140-20289-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0897	B	0.0585	0.00965	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2349 VES BC OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-20289-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0603		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2350,2351 VES BC OUTLET R2 M0010 FH — Lab Sample ID: 140-20289-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.67		0.100	0.0580	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH — Lab Sample ID: 140-20289-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.53		0.0320	0.0280	ug/Sample	20		537 (modified)	Total/NA

Client Sample ID: QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3 CONDENSATE — Lab Sample ID: 140-20289-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.80	B	0.0585	0.00965	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2356 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-20289-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.0400		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2357,2358 VES BC OUTLET R3 M0010 FH — Lab Sample ID: 140-20289-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	2.29		0.100	0.0580	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Client Sample ID: QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH — Lab Sample ID: 140-20289-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.950		0.0160	0.0140	ug/Sample	10		537 (modified)	Total/NA

Client Sample ID: QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3 CONDENSATE — Lab Sample ID: 140-20289-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.135	B	0.0570	0.00941	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE — Lab Sample ID: 140-20289-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.704		0.00800	0.00700	ug/Sample	5		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: QF-2343,2344 VES BC OUTLET R1 M0010 FH

Lab Sample ID: 140-20289-1

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.46		0.0991	0.0575	ug/Sample		09/09/20 11:52	09/16/20 17:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*91*		*25 - 150*	*09/09/20 11:52*	*09/16/20 17:23*	*1*

Client Sample ID: QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH

Lab Sample ID: 140-20289-2

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.608		0.00800	0.00700	ug/Sample		09/09/20 15:00	09/19/20 12:44	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*70*		*25 - 150*	*09/09/20 15:00*	*09/19/20 12:44*	*5*

Client Sample ID: QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20289-3

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0897	B	0.0585	0.00965	ug/Sample		09/14/20 11:33	09/15/20 13:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*109*		*25 - 150*	*09/14/20 11:33*	*09/15/20 13:59*	*1*

Client Sample ID: QF-2349 VES BC OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20289-4

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0603		0.00160	0.00140	ug/Sample		09/09/20 15:00	09/19/20 12:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*50*		*25 - 150*	*09/09/20 15:00*	*09/19/20 12:53*	*1*

Client Sample ID: QF-2350,2351 VES BC OUTLET R2 M0010 FH

Lab Sample ID: 140-20289-5

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.67		0.100	0.0580	ug/Sample		09/09/20 11:52	09/16/20 17:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*95*		*25 - 150*	*09/09/20 11:52*	*09/16/20 17:32*	*1*

Client Sample ID: QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH

Lab Sample ID: 140-20289-6

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.53		0.0320	0.0280	ug/Sample		09/09/20 15:00	09/19/20 13:02	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*50*		*25 - 150*	*09/09/20 15:00*	*09/19/20 13:02*	*20*

Client Sample ID: QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20289-7

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.80	B	0.0585	0.00965	ug/Sample		09/14/20 11:33	09/15/20 14:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*106*		*25 - 150*	*09/14/20 11:33*	*09/15/20 14:08*	*1*

Client Sample ID: QF-2356 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20289-8

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0400		0.00160	0.00140	ug/Sample		09/09/20 15:00	09/19/20 13:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*80*		*25 - 150*	*09/09/20 15:00*	*09/19/20 13:11*	*1*

Client Sample ID: QF-2357,2358 VES BC OUTLET R3 M0010 FH

Lab Sample ID: 140-20289-9

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.29		0.100	0.0580	ug/Sample		09/09/20 11:52	09/16/20 17:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	97		25 - 150	09/09/20 11:52	09/16/20 17:41	1

Client Sample ID: QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH

Lab Sample ID: 140-20289-10

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.950		0.0160	0.0140	ug/Sample		09/09/20 15:00	09/19/20 13:20	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	101		25 - 150	09/09/20 15:00	09/19/20 13:20	10

Client Sample ID: QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20289-11

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.135	B	0.0570	0.00941	ug/Sample		09/14/20 11:33	09/15/20 14:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	106		25 - 150	09/14/20 11:33	09/15/20 14:17	1

Client Sample ID: QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20289-12

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.704		0.00800	0.00700	ug/Sample		09/09/20 15:00	09/19/20 13:29	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	99		25 - 150	09/09/20 15:00	09/19/20 13:29	5

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00100	0.000580	ug/Sample
HFPO-DA	0.00160	0.00140	ug/Sample
HFPO-DA	0.00200	0.000330	ug/Sample

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	HFPODA (25-150)
140-20289-1	QF-2343,2344 VES BC OUTLET	91
140-20289-2	QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH	70
140-20289-3	QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3 CONDENSATE	109
140-20289-4	QF-2349 VES BC OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	50
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	95
140-20289-6	QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH	50
140-20289-7	QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3 CONDENSATE	106
140-20289-8	QF-2356 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	80
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	97
140-20289-10	QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH	101
140-20289-11	QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3 CONDENSATE	106
140-20289-12	QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	99
LCS 140-42561/2-B	Lab Control Sample	87
LCS 140-42566/2-B	Lab Control Sample	76
LCS 140-42711/2-B	Lab Control Sample	97
LCSD 140-42561/3-B	Lab Control Sample Dup	83
LCSD 140-42566/3-B	Lab Control Sample Dup	47
LCSD 140-42711/3-B	Lab Control Sample Dup	103
MB 140-42561/14-B	Method Blank	88
MB 140-42561/1-B	Method Blank	85
MB 140-42566/1-B	Method Blank	68
MB 140-42711/14-B	Method Blank	95
MB 140-42711/1-B	Method Blank	99

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-42561/14-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 15:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*88*		*25 - 150*	*09/09/20 11:52*	*09/16/20 15:20*	*1*

Lab Sample ID: MB 140-42561/1-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 15:11	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*85*		*25 - 150*	*09/09/20 11:52*	*09/16/20 15:11*	*1*

Lab Sample ID: LCS 140-42561/2-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42561

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.01768		ug/Sample		88	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*87*		*25 - 150*

Lab Sample ID: LCSD 140-42561/3-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42561

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.01792		ug/Sample		90	60 - 140	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*83*		*25 - 150*

Lab Sample ID: MB 140-42566/1-B
Matrix: Air
Analysis Batch: 42934

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42566

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/09/20 15:00	09/19/20 12:18	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*68*		*25 - 150*	*09/09/20 15:00*	*09/19/20 12:18*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 140-42566/2-B
Matrix: Air
Analysis Batch: 42934

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42566

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.02000		ug/Sample		100	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*76*		*25 - 150*

Lab Sample ID: LCSD 140-42566/3-B
Matrix: Air
Analysis Batch: 42934

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42566

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.02047		ug/Sample		102	60 - 140	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*47*		*25 - 150*

Lab Sample ID: MB 140-42711/14-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0001444	J	0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:56	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*95*		*25 - 150*	*09/14/20 11:33*	*09/15/20 11:56*	*1*

Lab Sample ID: MB 140-42711/1-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:47	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*25 - 150*	*09/14/20 11:33*	*09/15/20 11:47*	*1*

Lab Sample ID: LCS 140-42711/2-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42711

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0100	0.009984		ug/Sample		100	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*97*		*25 - 150*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-42711/3-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42711

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.009072		ug/Sample		91	60 - 140	10	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*103*		*25 - 150*

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

LCMS

Prep Batch: 42561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Total/NA	Air	None	
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Total/NA	Air	None	
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Total/NA	Air	None	
MB 140-42561/14-B	Method Blank	Total/NA	Air	None	
MB 140-42561/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 42566

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-2	QF-2345,2346,2348 VES BC OUTLET R1 M001(	Total/NA	Air	None	
140-20289-4	QF-2349 VES BC OUTLET R1 M0010 BREAKTH	Total/NA	Air	None	
140-20289-6	QF-2352,2353,2355 VES BC OUTLET R2 M001(	Total/NA	Air	None	
140-20289-8	QF-2356 VES BC OUTLET R2 M0010 BREAKTH	Total/NA	Air	None	
140-20289-10	QF-2359,2360,2362 VES BC OUTLET R3 M001(	Total/NA	Air	None	
140-20289-12	QF-2363 VES BC OUTLET R3 M0010 BREAKTH	Total/NA	Air	None	
MB 140-42566/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42566/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42566/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Total/NA	Air	Split	42561
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Total/NA	Air	Split	42561
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Total/NA	Air	Split	42561
MB 140-42561/14-B	Method Blank	Total/NA	Air	Split	42561
MB 140-42561/1-B	Method Blank	Total/NA	Air	Split	42561
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	Split	42561
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42561

Cleanup Batch: 42680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-2	QF-2345,2346,2348 VES BC OUTLET R1 M001(	Total/NA	Air	Split	42566
140-20289-4	QF-2349 VES BC OUTLET R1 M0010 BREAKTH	Total/NA	Air	Split	42566
140-20289-6	QF-2352,2353,2355 VES BC OUTLET R2 M001(	Total/NA	Air	Split	42566
140-20289-8	QF-2356 VES BC OUTLET R2 M0010 BREAKTH	Total/NA	Air	Split	42566
140-20289-10	QF-2359,2360,2362 VES BC OUTLET R3 M001(	Total/NA	Air	Split	42566
140-20289-12	QF-2363 VES BC OUTLET R3 M0010 BREAKTH	Total/NA	Air	Split	42566
MB 140-42566/1-B	Method Blank	Total/NA	Air	Split	42566
LCS 140-42566/2-B	Lab Control Sample	Total/NA	Air	Split	42566
LCSD 140-42566/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42566

Prep Batch: 42711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-3	QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3	Total/NA	Air	None	
140-20289-7	QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3	Total/NA	Air	None	
140-20289-11	QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3	Total/NA	Air	None	
MB 140-42711/14-B	Method Blank	Total/NA	Air	None	
MB 140-42711/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	None	

LCMS

Cleanup Batch: 42725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-3	QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3	Total/NA	Air	Split	42711
140-20289-7	QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3	Total/NA	Air	Split	42711
140-20289-11	QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3	Total/NA	Air	Split	42711
MB 140-42711/14-B	Method Blank	Total/NA	Air	Split	42711
MB 140-42711/1-B	Method Blank	Total/NA	Air	Split	42711
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	Split	42711
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42711

Analysis Batch: 42757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-3	QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	42725
140-20289-7	QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	42725
140-20289-11	QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3	Total/NA	Air	537 (modified)	42725
MB 140-42711/14-B	Method Blank	Total/NA	Air	537 (modified)	42725
MB 140-42711/1-B	Method Blank	Total/NA	Air	537 (modified)	42725
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42725
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42725

Cleanup Batch: 42822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Total/NA	Air	Dilution	42591
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Total/NA	Air	Dilution	42591
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Total/NA	Air	Dilution	42591

Analysis Batch: 42824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Total/NA	Air	537 (modified)	42822
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Total/NA	Air	537 (modified)	42822
MB 140-42561/14-B	Method Blank	Total/NA	Air	537 (modified)	42591
MB 140-42561/1-B	Method Blank	Total/NA	Air	537 (modified)	42591
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42591
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42591

Analysis Batch: 42934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20289-2	QF-2345,2346,2348 VES BC OUTLET R1 M001(	Total/NA	Air	537 (modified)	42680
140-20289-4	QF-2349 VES BC OUTLET R1 M0010 BREAKTH	Total/NA	Air	537 (modified)	42680
140-20289-6	QF-2352,2353,2355 VES BC OUTLET R2 M001(	Total/NA	Air	537 (modified)	42680
140-20289-8	QF-2356 VES BC OUTLET R2 M0010 BREAKTH	Total/NA	Air	537 (modified)	42680
140-20289-10	QF-2359,2360,2362 VES BC OUTLET R3 M001(	Total/NA	Air	537 (modified)	42680
140-20289-12	QF-2363 VES BC OUTLET R3 M0010 BREAKTH	Total/NA	Air	537 (modified)	42680
MB 140-42566/1-B	Method Blank	Total/NA	Air	537 (modified)	42680
LCS 140-42566/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42680
LCSD 140-42566/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42680

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Client Sample ID: QF-2343,2344 VES BC OUTLET R1 M0010 FH

Lab Sample ID: 140-20289-1

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	111 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			56 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:23	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH

Lab Sample ID: 140-20289-2

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		5			42934	09/19/20 12:44	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20289-3

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			0.00855 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 13:59	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2349 VES BC OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20289-4

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42934	09/19/20 12:53	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Client Sample ID: QF-2350,2351 VES BC OUTLET R2 M0010 FH

Lab Sample ID: 140-20289-5

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	130 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			65 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:32	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH

Lab Sample ID: 140-20289-6

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		20			42934	09/19/20 13:02	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20289-7

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			0.00855 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 14:08	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2356 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20289-8

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42934	09/19/20 13:11	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Client Sample ID: QF-2357,2358 VES BC OUTLET R3 M0010 FH

Lab Sample ID: 140-20289-9

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	88 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			44 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:31	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 17:41	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH

Lab Sample ID: 140-20289-10

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		10			42934	09/19/20 13:20	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3 CONDENSATE

Lab Sample ID: 140-20289-11

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			0.00877 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 14:17	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-20289-12

Date Collected: 09/01/20 00:00
Date Received: 09/04/20 12:35

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	None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		5			42934	09/19/20 13:29	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42561/14-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:20	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42561/1-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:11	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42566/1-B
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	None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42934	09/19/20 12:18	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42711/14-B
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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:56	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42711/1-B
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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:47	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-42561/2-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:29	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-42566/2-B
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	None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42934	09/19/20 12:27	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-42711/2-B
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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:05	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-42561/3-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:38	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-42566/3-B
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	None			1 Sample	360 mL	42566	09/09/20 15:00	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42680	09/13/20 05:56	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42934	09/19/20 12:36	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Client Sample ID: Lab Control Sample Dup

Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCSD 140-42711/3-B

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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:14	JRC	TAL KNX
	Instrument ID: LCA									

Laboratory References:

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

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
Job ID: 140-20289-1
Project/Site: VES CB Outlet - M0010

Laboratory: Eurofins TestAmerica, Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-21
Colorado	State	TN00009	02-28-21
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	07-01-21
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	LA110001	12-31-12 *
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-21
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-21
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL KNX
Dilution	Dilution and Re-fortification of Standards	None	TAL KNX
None	Leaching Procedure	TAL SOP	TAL KNX
None	Leaching Procedure for Condensate	TAL SOP	TAL KNX
None	Leaching Procedure for Filter	TAL SOP	TAL KNX
Split	Source Air Split	None	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: VES CB Outlet - M0010

Job ID: 140-20289-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-20289-1	QF-2343,2344 VES BC OUTLET R1 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-2	QF-2345,2346,2348 VES BC OUTLET R1 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-3	QF-2347 VES BC OUTLET R1 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-4	QF-2349 VES BC OUTLET R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-5	QF-2350,2351 VES BC OUTLET R2 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-6	QF-2352,2353,2355 VES BC OUTLET R2 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-7	QF-2354 VES BC OUTLET R2 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-8	QF-2356 VES BC OUTLET R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-9	QF-2357,2358 VES BC OUTLET R3 M0010 FH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-10	QF-2359,2360,2362 VES BC OUTLET R3 M0010 BH	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-11	QF-2361 VES BC OUTLET R3 M0010 IMP 1,2&3 CONDENSATE	Air	09/01/20 00:00	09/04/20 12:35	
140-20289-12	QF-2363 VES BC OUTLET R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	09/01/20 00:00	09/04/20 12:35	

Request for Analysis/Chain-of-Custody – RFA/COC #002
The Chemours Company – Fayetteville NC Facility
HFPO-DA Testing on VES Carbon Bed Outlet

eurofins Environment Testing TestAmerica

Project Identification:	Chemours Emissions Test
Client Name:	The Chemours Company FC, LLC
Client Contact:	Ms. Christel Compton Office: (910) 678-1213 Cell: (910) 975-3386
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	Hand Deliver

Project Deliverables:
Report analytical results on TALS Reports and in data packages. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
HFPO-DA (CAS No. 13252-13-6)	14 Days to Extraction; 40 Days to Analysis	

140-20289 Chain of Custody

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
QF-2343 VES CB Outlet R1 M0010 Filter	1	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (90 mm Whatman Glass Microfiber)** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **Knoxville**: Analyze for HFPO-DA.
QF-2344 VES CB Outlet R1 M0010 FH of Filter Holder & Probe MeOH Rinse	1	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
QF-2345 VES CB Outlet R1 M0010 XAD-2 Resin Tube	1	9/1/20		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **Knoxville**: Analyze for HFPO-DA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
QF-2346 VES CB Outlet R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	1	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2347 VES CB Outlet R1 M0010 Impingers 1,2 & 3 Condensate	1	9/1/20		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. **Knoxville**: Analyze for HFPO-DA.
QF-2348 VES CB Outlet R1 M0010 Impinger Glassware MeOH Rinse	1	9/1/20		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
QF-2349 VES CB Outlet R1 M0010 Breakthrough XAD-2 Resin Tube	1	9/1/20		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2350 VES CB Outlet R2 M0010 Filter	2	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (90 mm Whatman Glass Microfiber)** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **Knoxville**: Analyze for HFPO-DA.
QF-2351 VES CB Outlet R2 M0010 FH of Filter Holder & Probe MeOH Rinse	2	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
QF-2352 VES CB Outlet R2 M0010 XAD-2 Resin Tube	2	9/1/20		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **Knoxville**: Analyze for HFPO-DA.
QF-2353 VES CB Outlet R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	2	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2354 VES CB Outlet R2 M0010 Impingers 1,2 & 3 Condensate	2	9/1/20		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. **Knoxville**: Analyze for HFPO-DA.
QF-2355 VES CB Outlet R2 M0010 Impinger Glassware MeOH Rinse	2	9/1/20		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
QF-2356 VES CB Outlet R2 M0010 Breakthrough XAD-2 Resin Tube	2	9/1/20		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2357 VES CB Outlet R3 M0010 Filter	3	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (90 mm Whatman Glass Microfiber)** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **Knoxville**: Analyze for HFPO-DA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
QF-2358 VES CB Outlet R3 M0010 FH of Filter Holder & Probe MeOH Rinse	3	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
QF-2359 VES CB Outlet R3 M0010 XAD-2 Resin Tube	3	9/1/20		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **Knoxville**: Analyze for HFPO-DA.
QF-2360 VES CB Outlet R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse	3	9/1/20		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **Knoxville**: Analyze for HFPO-DA.
QF-2361 VES CB Outlet R3 M0010 Impingers 1,2 & 3 Condensate	3	9/1/20		500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. **Knoxville**: Analyze for HFPO-DA.
QF-2362 VES CB Outlet R3 M0010 Impinger Glassware MeOH Rinse	3	9/1/20		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
QF-2363 VES CB Outlet R3 M0010 Breakthrough XAD-2 Resin Tube	3	9/1/20		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **Knoxville**: Analyze for HFPO-DA.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 0.8/CT 0.8°C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	HAND DELIVERED, NO CUSTODY SEALS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Patti Mabry	Ramboll	9/3/20 2030
Accepted By:	Dary Caudill	ETA KNOX	9/3/20 2030
Relinquished By:	Dary Caudill	ETA KNOX	9/4/20 1235
Accepted By:		ETA KNX	9-4-20 12:35
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC6F Correction factor: 0.0	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:	
Lot Number:	
Exp Date:	
Analyst:	
Date:	
Time:	

Project #: 14004326 PM Instructions:

Sample Receiving Associate: Date: 9-7-20

QA026R32.doc, 062719

QA/QC Laboratory Data

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-20292-1
Client Project/Site: August Field QC Samples - M0010

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

Attn: Michael Aucoin

Authorized for release by:
9/21/2020 3:01:54 PM

Courtney Adkins, Project Manager II
(865)291-3019
courtney.adkins@eurofinset.com

Table of Contents

Definitions/Glossary

Client: The Chemours Company FC, LLC
Job ID: 140-20292-1
Project/Site: August Field QC Samples - M0010

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 140-20292-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-20292-1

Sample Receipt

The samples were received on September 4, 2020 at 12:35 PM in good condition and properly preserved.. The temperature of the cooler at receipt was 1.1º C.

LCMS

Method 537 (modified): The required dilution factor for the following samples were higher than could be achieved by "in vial" dilution, as it would dilute out the Isotope Dilution Analytes (IDA): GF-2564,2565 QC VEN CB M0010 FH BT (140-20292-1). As such, the dilution was achieved by taking a subsample of the undiluted extract, adding sufficient solvent, and re-spiking the extract with IDA.

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: GF-2564,2565 QC VEN CB M0010 FH BT (140-20292-1). The sample was analyzed at a dilution based on screening results.

Method 537 (modified): Results for samples GF-2566,2567,2569 QC VEN CB M0010 BH BT (140-20292-2) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The following samples were reported with elevated reporting limits for all analytes: GF-2566,2567,2569 QC VEN CB M0010 BH BT (140-20292-2). The sample was analyzed at a dilution based on screening results.

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

Organic Prep

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

Detection Summary

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: GF-2564,2565 QC VEN CB M0010 FH BT — Lab Sample ID: 140-20292-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.804		0.100	0.0580	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2566,2567,2569 QC VEN CB M0010 BH BT — Lab Sample ID: 140-20292-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	1.31		0.0800	0.0700	ug/Sample	50		537 (modified)	Total/NA

Client Sample ID: GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT — Lab Sample ID: 140-20292-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00911	B	0.000500	0.0000825	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT — Lab Sample ID: 140-20292-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.00476		0.00160	0.00140	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB — Lab Sample ID: 140-20292-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.000180	J B	0.000500	0.0000825	ug/Sample	1		537 (modified)	Total/NA

Client Sample ID: GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB — Lab Sample ID: 140-20292-6

No Detections.

Client Sample ID: GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB — Lab Sample ID: 140-20292-7

No Detections.

Client Sample ID: A-7162, MEDIA CHECK XAD — Lab Sample ID: 140-20292-8

No Detections.

Client Sample ID: A-7163, MEDIA CHECK FILTER — Lab Sample ID: 140-20292-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
HFPO-DA	0.000653	J	0.00100	0.000580	ug/Sample	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: GF-2564,2565 QC VEN CB M0010 FH BT
Lab Sample ID: 140-20292-1

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.804		0.100	0.0580	ug/Sample		09/09/20 11:52	09/16/20 19:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*95*		*25 - 150*	*09/09/20 11:52*	*09/16/20 19:00*	*1*

Client Sample ID: GF-2566,2567,2569 QC VEN CB M0010 BH BT
Lab Sample ID: 140-20292-2

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.31		0.0800	0.0700	ug/Sample		09/09/20 15:03	09/18/20 17:01	50

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*94*		*25 - 150*	*09/09/20 15:03*	*09/18/20 17:01*	*50*

Client Sample ID: GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT
Lab Sample ID: 140-20292-3

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00911	B	0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 16:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*107*		*25 - 150*	*09/14/20 11:33*	*09/15/20 16:13*	*1*

Client Sample ID: GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT
Lab Sample ID: 140-20292-4

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.00476		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 17:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*44*		*25 - 150*	*09/09/20 15:03*	*09/18/20 17:27*	*1*

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB
Lab Sample ID: 140-20292-5

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.000180	J B	0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 15:45	1

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB
Lab Sample ID: 140-20292-5
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	97		25 - 150	09/14/20 11:33	09/15/20 15:45	1

Client Sample ID: GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB
Lab Sample ID: 140-20292-6
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 17:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	89		25 - 150	09/09/20 15:03	09/18/20 17:38	1

Client Sample ID: GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB
Lab Sample ID: 140-20292-7
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 17:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	82		25 - 150	09/09/20 15:03	09/18/20 17:47	1

Client Sample ID: A-7162, MEDIA CHECK XAD
Lab Sample ID: 140-20292-8
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 17:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	83		25 - 150	09/09/20 15:03	09/18/20 17:55	1

Client Sample ID: A-7163, MEDIA CHECK FILTER
Lab Sample ID: 140-20292-9
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**0.000653**	**J**	0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 19:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	86		25 - 150	09/09/20 11:52	09/16/20 19:09	1

Default Detection Limits

Client: The Chemours Company FC, LLC
Job ID: 140-20292-1
Project/Site: August Field QC Samples - M0010

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00100	0.000580	ug/Sample
HFPO-DA	0.00160	0.00140	ug/Sample
HFPO-DA	0.00200	0.000330	ug/Sample

Isotope Dilution Summary

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HFPODA (25-150)						
140-20292-1	GF-2564,2565 QC VEN CB M0(	95						
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	94						
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT	107						
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESI TUBE BT	44						
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	97						
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB	89						
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PI	82						
140-20292-8	A-7162, MEDIA CHECK XAD	83						
140-20292-9	A-7163, MEDIA CHECK FILTER	86						
LCS 140-42561/2-B	Lab Control Sample	87						
LCS 140-42567/2-B	Lab Control Sample	49						
LCS 140-42711/2-B	Lab Control Sample	97						
LCSD 140-42561/3-B	Lab Control Sample Dup	83						
LCSD 140-42567/3-B	Lab Control Sample Dup	51						
LCSD 140-42711/3-B	Lab Control Sample Dup	103						
MB 140-42561/14-B	Method Blank	88						
MB 140-42561/1-B	Method Blank	85						
MB 140-42567/1-B	Method Blank	38						
MB 140-42711/14-B	Method Blank	95						
MB 140-42711/1-B	Method Blank	99						

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 140-42561/14-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 15:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*88*		*25 - 150*	*09/09/20 11:52*	*09/16/20 15:20*	*1*

Lab Sample ID: MB 140-42561/1-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42561

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00100	0.000580	ug/Sample		09/09/20 11:52	09/16/20 15:11	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*85*		*25 - 150*	*09/09/20 11:52*	*09/16/20 15:11*	*1*

Lab Sample ID: LCS 140-42561/2-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42561

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.01768		ug/Sample		88	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*87*		*25 - 150*

Lab Sample ID: LCSD 140-42561/3-B
Matrix: Air
Analysis Batch: 42824

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42561

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.01792		ug/Sample		90	60 - 140	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*83*		*25 - 150*

Lab Sample ID: MB 140-42567/1-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42567

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.00160	0.00140	ug/Sample		09/09/20 15:03	09/18/20 16:35	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*38*		*25 - 150*	*09/09/20 15:03*	*09/18/20 16:35*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 140-42567/2-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42567

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0200	0.01792		ug/Sample		90	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*49*		*25 - 150*

Lab Sample ID: LCSD 140-42567/3-B
Matrix: Air
Analysis Batch: 42907

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42567

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0200	0.01577		ug/Sample		79	60 - 140	13	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*51*		*25 - 150*

Lab Sample ID: MB 140-42711/14-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0001444	J	0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:56	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*95*		*25 - 150*	*09/14/20 11:33*	*09/15/20 11:56*	*1*

Lab Sample ID: MB 140-42711/1-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 42711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.000500	0.0000825	ug/Sample		09/14/20 11:33	09/15/20 11:47	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*25 - 150*	*09/14/20 11:33*	*09/15/20 11:47*	*1*

Lab Sample ID: LCS 140-42711/2-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 42711

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HFPO-DA			0.0100	0.009984		ug/Sample		100	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*97*		*25 - 150*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 140-42711/3-B
Matrix: Air
Analysis Batch: 42757

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 42711

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.0100	0.009072		ug/Sample		91	60 - 140	10	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*103*		*25 - 150*

LCMS

Prep Batch: 42561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Total/NA	Air	None	
140-20292-9	A-7163, MEDIA CHECK FILTER	Total/NA	Air	None	
MB 140-42561/14-B	Method Blank	Total/NA	Air	None	
MB 140-42561/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 42567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	Total/NA	Air	None	
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH	Total/NA	Air	None	
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/N	Total/NA	Air	None	
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLAS	Total/NA	Air	None	
140-20292-8	A-7162, MEDIA CHECK XAD	Total/NA	Air	None	
MB 140-42567/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42567/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42567/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Total/NA	Air	Split	42561
140-20292-9	A-7163, MEDIA CHECK FILTER	Total/NA	Air	Split	42561
MB 140-42561/14-B	Method Blank	Total/NA	Air	Split	42561
MB 140-42561/1-B	Method Blank	Total/NA	Air	Split	42561
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	Split	42561
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42561

Cleanup Batch: 42704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	Total/NA	Air	Split	42567
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH	Total/NA	Air	Split	42567
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/N	Total/NA	Air	Split	42567
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLAS	Total/NA	Air	Split	42567
140-20292-8	A-7162, MEDIA CHECK XAD	Total/NA	Air	Split	42567
MB 140-42567/1-B	Method Blank	Total/NA	Air	Split	42567
LCS 140-42567/2-B	Lab Control Sample	Total/NA	Air	Split	42567
LCSD 140-42567/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42567

Prep Batch: 42711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDE	Total/NA	Air	None	
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	Total/NA	Air	None	
MB 140-42711/14-B	Method Blank	Total/NA	Air	None	
MB 140-42711/1-B	Method Blank	Total/NA	Air	None	
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 42725

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDE	Total/NA	Air	Split	42711
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	Total/NA	Air	Split	42711

LCMS (Continued)

Cleanup Batch: 42725 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-42711/14-B	Method Blank	Total/NA	Air	Split	42711
MB 140-42711/1-B	Method Blank	Total/NA	Air	Split	42711
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	Split	42711
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	Split	42711

Analysis Batch: 42757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDE	Total/NA	Air	537 (modified)	42725
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	Total/NA	Air	537 (modified)	42725
MB 140-42711/14-B	Method Blank	Total/NA	Air	537 (modified)	42725
MB 140-42711/1-B	Method Blank	Total/NA	Air	537 (modified)	42725
LCS 140-42711/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42725
LCSD 140-42711/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42725

Cleanup Batch: 42822

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Total/NA	Air	Dilution	42591

Analysis Batch: 42824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Total/NA	Air	537 (modified)	42822
140-20292-9	A-7163, MEDIA CHECK FILTER	Total/NA	Air	537 (modified)	42591
MB 140-42561/14-B	Method Blank	Total/NA	Air	537 (modified)	42591
MB 140-42561/1-B	Method Blank	Total/NA	Air	537 (modified)	42591
LCS 140-42561/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42591
LCSD 140-42561/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42591

Analysis Batch: 42907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	Total/NA	Air	537 (modified)	42704
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH	Total/NA	Air	537 (modified)	42704
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/N	Total/NA	Air	537 (modified)	42704
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLAS	Total/NA	Air	537 (modified)	42704
140-20292-8	A-7162, MEDIA CHECK XAD	Total/NA	Air	537 (modified)	42704
MB 140-42567/1-B	Method Blank	Total/NA	Air	537 (modified)	42704
LCS 140-42567/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	42704
LCSD 140-42567/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	42704

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: GF-2564,2565 QC VEN CB M0010 FH BT

Lab Sample ID: 140-20292-1

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Cleanup	Dilution			100 uL	10000 uL	42822	09/16/20 13:33	JRC	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 19:00	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: GF-2566,2567,2569 QC VEN CB M0010 BH BT

Lab Sample ID: 140-20292-2

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		50			42907	09/18/20 17:01	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT

Lab Sample ID: 140-20292-3

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 16:13	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT

Lab Sample ID: 140-20292-4

Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 17:27	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: GF-2571 QC VEN CB M0010 DI WATER RB

Lab Sample ID: 140-20292-5
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 15:45	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB

Lab Sample ID: 140-20292-6
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 17:38	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-20292-7
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 17:47	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: A-7162, MEDIA CHECK XAD

Lab Sample ID: 140-20292-8
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 17:55	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: A-7163, MEDIA CHECK FILTER

Lab Sample ID: 140-20292-9
Date Collected: 09/01/20 00:00
Matrix: Air
Date Received: 09/04/20 12:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 19:09	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42561/14-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:20	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42561/1-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:11	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42567/1-B
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	None			1 Sample	360 mL	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 16:35	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42711/14-B
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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:56	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-42711/1-B
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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 11:47	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-42561/2-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:29	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-42567/2-B
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	None			1 Sample	360 mL	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 16:43	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-42711/2-B
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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:05	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-42561/3-B
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	None			1 Sample	50 mL	42561	09/09/20 11:52	DWS	TAL KNX
Total/NA	Cleanup	Split			25 mL	10 mL	42591	09/10/20 10:01	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42824	09/16/20 15:38	JRC	TAL KNX
	Instrument ID: LCA									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-42567/3-B
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	None			1 Sample	360 mL	42567	09/09/20 15:03	DWS	TAL KNX
Total/NA	Cleanup	Split			180 mL	10 mL	42704	09/14/20 09:32	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42907	09/18/20 16:52	JRC	TAL KNX
	Instrument ID: LCA									

Lab Chronicle

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-42711/3-B

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	None			1 Sample	10 mL	42711	09/14/20 11:33	DWS	TAL KNX
Total/NA	Cleanup	Split			10 mL	10 mL	42725	09/14/20 14:08	DWS	TAL KNX
Total/NA	Analysis	537 (modified)		1			42757	09/15/20 12:14	JRC	TAL KNX
	Instrument ID: LCA									

Laboratory References:

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

Accreditation/Certification Summary

Client: The Chemours Company FC, LLC
Job ID: 140-20292-1
Project/Site: August Field QC Samples - M0010

Laboratory: Eurofins TestAmerica, Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-13-22
ANAB	Dept. of Energy	L2311.01	02-13-22
ANAB	ISO/IEC 17025	L2311	02-13-22
ANAB	ISO/IEC 17025	L2311	02-14-22
Arkansas DEQ	State	88-0688	06-17-21
California	State	2423	06-30-21
Colorado	State	TN00009	02-28-21
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	07-01-21
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	LA110001	12-31-12 *
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-21
Michigan	State	9933	12-11-22
Nevada	State	TN00009	07-31-21
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	07-01-21
New York	NELAP	10781	03-31-21
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	12-11-22
Texas	NELAP	T104704380-18-12	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-21
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	05-01-21
Wisconsin	State	998044300	08-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL KNX
Dilution	Dilution and Re-fortification of Standards	None	TAL KNX
None	Leaching Procedure	TAL SOP	TAL KNX
None	Leaching Procedure for Condensate	TAL SOP	TAL KNX
None	Leaching Procedure for Filter	TAL SOP	TAL KNX
Split	Source Air Split	None	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: August Field QC Samples - M0010

Job ID: 140-20292-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-20292-1	GF-2564,2565 QC VEN CB M0010 FH BT	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-2	GF-2566,2567,2569 QC VEN CB M0010 BH BT	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-3	GF-2568 QC VEN CB M0010 IMP 1,2&3 CONDENSATE BT	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-4	GF-2570 QC VEN CB M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-5	GF-2571 QC VEN CB M0010 DI WATER RB	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-6	GF-2572 QC VEN CB M0010 MEOH WITH 5%/NH4OH RB	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-7	GF-2573 QC VEN CB M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-8	A-7162, MEDIA CHECK XAD	Air	09/01/20 00:00	09/04/20 12:35	
140-20292-9	A-7163, MEDIA CHECK FILTER	Air	09/01/20 00:00	09/04/20 12:35	

Request for Analysis/Chain-of-Custody – RFA/COC #003
The Chemours Company – Fayetteville NC Facility
HFPO-DA Testing on VEN Carbon Bed Field QC Samples

eurofins Environment Testing TestAmerica

Project Identification:	Chemours Emissions Test
Client Name:	The Chemours Company FC, LLC
Client Contact:	Ms. Christel Compton Office: (910) 678-1213 Cell: (910) 975-3386
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	Hand Deliver

Project Deliverables:
Report analytical results on TALS Reports and in data packages. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
HFPO-DA (CAS No. 13252-13-6)	14 Days to Extraction; 40 Days to Analysis	

140-20292 Chain of Custody

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2564 QC VEN CB M0010 Filter BT	QC	9/1/20	Blank Train	125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (90 mm Whatman Glass Microfiber)** Method 0010 Blank Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **Knoxville**: Analyze for HFPO-DA.
GF-2565 QC VEN CB M0010 FH of Filter Holder & Probe MeOH Rinse BT	**QC**	9/1/20	Blank Train	125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
GF-2566 QC VEN CB M0010 XAD-2 Resin Tube BT	**QC**	9/1/20	Blank Train	XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Blank Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **Knoxville**: Analyze for HFPO-DA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2567 QC VEN CB M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT	QC	9/1/20	Blank Train	125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **Knoxville**: Analyze for HFPO-DA.
GF-2568 QC VEN CB M0010 Impingers 1,2 & 3 Condensate BT	QC	9/1/20	Blank Train	500 mL HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Blank Train HFPO-DA Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to Knoxville for analysis. **Knoxville**: Analyze for HFPO-DA.
GF-2569 QC VEN CB M0010 Impinger Glassware MeOH Rinse BT	QC	9/1/20	Blank Train	250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train HFPO-DA Analysis	**Knoxville**: Use this solvent sample in the XAD-2 Resin Extraction.
GF-2570 QC VEN CB M0010 Breakthrough XAD-2 Resin Tube BT	QC	9/1/20	Blank Train	XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Blank Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **Knoxville**: Analyze for HFPO-DA.
GF-2571 QC VEN CB M0010 DI Water RB	QC	9/1/20	Reagent Blank	500 mL HDPE Wide-Mouth Bottle	**Deionized (DI) Water Reagent Blank** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. **Knoxville**: Analyze for HFPO-DA.
GF-2572 QC VEN CB M0010 MeOH with 5% NH_4OH RB	**QC**	9/1/20	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methanol with 5% NH_4OH Reagent Blank** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. **Knoxville**: Analyze for HFPO-DA.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
GF-2573 QC VEN CB M0010 Combined Glassware Rinses (MeOH/5% NH_4OH) PB	**QC**	9/1/20	Proof Blank	125 mL HDPE Wide-Mouth Bottle	**Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank** Method 0010 Train HFPO-DA Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. **Knoxville**: Analyze for HFPO-DA.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 1.1/CT 1.1°C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	HAND DELIVERED / NO CUSTODY SEALS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Patrick Mundy	Ramboll	9/3/20 2035
Accepted By:	Doug Cahill	ETA KNOX	9/3/20 2030
Relinquished By:	Doug Cahill	ETA KNOX	9/4/20 1235
Accepted By:	[illegible]	ETA-KNX	9-4-20 12:35
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ Containers, Broken
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: 0.0	✓			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt
5. Were all of the sample containers received intact?	✓			☐ Containers, Broken
6. Were samples received in appropriate containers?	✓			☐ Containers, Improper; Client Contacted; Proceed/Cancel
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received
8. Were all of the samples listed on the COC received?	✓			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received
9. Is the date/time of sample collection noted?	✓			☐ COC; No Date/Time; Client Contacted
10. Was the sampler identified on the COC?			✓	☐ Sampler Not Listed on COC
11. Is the client and project name/# identified?	✓			☐ COC Incorrect/Incomplete
12. Are tests/parameters listed for each sample?	✓			☐ COC No tests on COC
13. Is the matrix of the samples noted?	✓			☐ COC Incorrect/Incomplete
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ COC Incorrect/Incomplete
15. Were samples received within holding time?	✓			☐ Holding Time - Receipt
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative
17. Were VOA samples received without headspace?			✓	☐ Headspace (VOA only)
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ Residual Chlorine
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:	
Lot Number:	
Exp Date:	
Analyst:	
Date:	
Time:	

Project #: 14004326 PM Instructions:

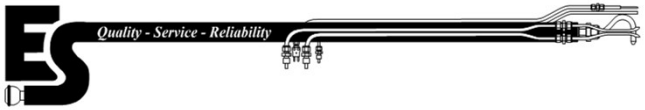
Sample Receiving Associate: Date: 9-7-20

QA026R32.doc, 062719

APPENDIX E
EQUIPMENT CALIBRATION DATA

Pretest Equipment Calibration Data

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES



1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the **GREEN** cells, YELLOW cells are calculated.

DATE:	1/15/2020	METER SERIAL #:	MB 8	BAROMETRIC PRESSURE (in Hg):	INITIAL 30.19	FINAL 30.19	AVG (P_{bar}) 30.19
METER PART #:	13276842	CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	$DH_@$
11	1	0.306	23.5	151.919	158.115	6.196	70.5	76	78	75	76	76.25	15.00	0.44	6.1634	6.0181	0.976			1.53
	2																			
	3																			
																AVG =	0.976	0.16	0.66	
16	1	0.4268	22.5	158.115	163.916	5.801	71	77	79	76	77	77.25	10.00	0.9	5.7662	5.5933	0.970			1.61
	2																			
	3																			
																AVG =	0.970	-0.50	-0.66	
18	1	0.4961	21.5	163.916	170.574	6.658	71.1	79	80	77	78	78.5	10.00	1.1	6.6059	6.5009	0.984			1.45
	2																			
	3																			
																AVG =	0.984	0.94	1.51	
26	1	0.7131	19	170.654	180.354	9.70	71.1	80	81	78	79	79.5	10.00	2.5	9.6389	9.3444	0.969			1.60
	2																			
	3																			
																AVG =	0.969	-0.56	-0.52	
31	1	0.8358	17.5	180.354	191.665	11.311	71.4	81	84	79	80	81	10.00	3.5	11.2357	10.9492	0.974			1.63
	2																			
	3																			
																AVG =	0.974	-0.04	0.52	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.975

AVERAGE $DH_@$ = 1.56

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$DH_@ = \left(\frac{0.75\ q}{V_{cr(std)}}\right)^2 DH \left(\frac{V_{m(std)}}{V_m}\right)$$

RAMBOLL

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the **GREEN** cells, YELLOW cells are calculated.

					INITIAL	FINAL	AVG (P_{bar})
DATE:	1/14/2020	METER SERIAL #:	MB 15	BAROMETRIC PRESSURE (in Hg):	30.27	30.27	30.27
METER PART #:		CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	Y % Diff with other orifices	$DH_@$
11	1	0.306	23.5	240.408	246.224	5.816	70.4	65	67	65	67	66	15.00	0.5	5.9147	6.0346	1.020			1.77
	2	0.306																		
	3	0.306																		
																AVG =	1.020	0.68	1.04	
16	1	0.4268	22.5	246.224	251.697	5.473	70.4	67	68	67	68	67.5	10.00	1	5.5568	5.6113	1.010			1.81
	2	0.4268																		
	3	0.4268																		
																AVG =	1.010	-0.35	-1.03	
18	1	0.4961	20.5	251.697	257.984	6.287	70.5	68	70	68	70	69	10.00	1.2	6.3682	6.5218	1.024			1.61
	2	0.4961																		
	3	0.4961																		
																AVG =	1.024	1.06	1.87	
26	1	0.7131	17.5	257.984	267.179	9.195	70.9	70	71	70	71	70.5	10.00	2.7	9.3212	9.3709	1.005			1.75
	2	0.7131																		
	3	0.7131																		
																AVG =	1.005	-0.79	-0.21	
31	1	0.8358	17.5	267.179	277.971	10.792	71.1	71	73	71	73	72	10.03	3.6	10.9329	11.0142	1.007			1.70
	2	0.8358																		
	3	0.8358																		
																AVG =	1.007	-0.59	0.21	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.013

AVERAGE $DH_@$ = 1.73

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$DH_@ = \left(\frac{0.75\ q}{V_{cr(std)}}\right)^2 DH \left(\frac{V_{m(std)}}{V_m}\right)$$

Initial Impinger Outlet Thermocouple Calibration

ID Number	Ice Bath			Ambient			Hot Water Bath			Technician	Date Performed
	Reference Temperature (^{o}Rk)	Thermocouple Temperature (^{o}Rk)	Deviation*	Reference Temperature (^{o}Rk)	Thermocouple Temperature (^{o}Rk)	Deviation*	Reference Temperature (^{o}Rk)	Thermocouple Temperature (^{o}Rk)	Deviation*		
IO-1	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-2	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-3	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-4	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	669.67	-0.3%	JLS	01/30/20
IO-5	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-6	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-7	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-8	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	669.67	-0.3%	JLS	01/30/20
IO-9	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-10	491.67	492.67	0.2%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-11	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	672.67	0.1%	JLS	01/30/20
IO-12	491.67	492.67	0.2%	527.67	526.67	-0.2%	671.67	672.67	0.1%	JLS	01/30/20
IO-13	NA			NA			NA			JLS	01/30/20
IO-14	491.67	494.67	0.6%	527.67	526.67	-0.2%	671.67	670.67	-0.1%	JLS	01/30/20
IO-15	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	670.67	-0.1%	JLS	01/30/20
IO-16	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20
IO-17	NA			NA			NA			JLS	01/30/20
IO-18	491.67	493.67	0.4%	527.67	527.67	0.0%	671.67	669.67	-0.3%	JLS	01/30/20
IO-19	491.67	493.67	0.4%	527.67	526.67	-0.2%	671.67	671.67	0.0%	JLS	01/30/20

Reference Thermocouple: Fluke S/N: 83450033 or S/N 90460057 traceable to the Untied States National Institute of Standards and Technology
*Acceptable Deviation: 1.5%

Initial Oven Box Thermocouple Calibration

ID Number	Ice Bath			Ambient			Hot Water Bath			Technician	Date Performed
	Reference Temperature (°R)	Thermocouple Temperature (°R)	Deviation*	Reference Temperature (°R)	Thermocouple Temperature (°R)	Deviation*	Reference Temperature (°R)	Thermocouple Temperature (°R)	Deviation*		
OB-1	491.67	492.67	0.2%	524.67	523.67	-0.2%	671.67	673.67	0.3%	JLS	01/17/20
OB-2	491.67	492.67	0.2%	524.67	524.67	0.0%	671.67	669.67	-0.3%	JLS	01/17/20
OB-3	491.67	492.67	0.2%	524.67	524.67	0.0%	671.67	669.67	-0.3%	JLS	01/17/20
OB-4	491.67	493.67	0.4%	524.67	524.67	0.0%	671.67	670.67	-0.1%	JLS	01/17/20
OB-A	491.67	492.67	0.2%	524.67	526.67	0.4%	671.67	673.67	0.3%	JLS	01/17/20
OB-B	491.67	492.67	0.2%	524.67	526.67	0.4%	671.67	672.67	0.1%	JLS	01/17/20
OB-5	491.67	494.67	0.6%	524.67	523.67	-0.2%	671.67	669.67	-0.3%	JLS	01/17/20
OB-C	491.67	492.67	0.2%	524.67	525	0.0%	671.67	673.67	0.3%	JLS	01/17/20
OB-6	491.67	493.67	0.4%	524.67	525	0.0%	671.67	669.67	-0.3%	JLS	01/17/20
OB-7	491.67	494.67	0.6%	524.67	525	0.0%	671.67	671.67	0.0%	JLS	01/17/20
OB-E	491.67	494	0.4%	524.67	528	0.6%	671.67	668.67	-0.4%	JLS	01/17/20
OB-10	491.67	493.67	0.4%	524.67	525.67	0.2%	671.67	671.67	0.0%	JLS	01/17/20
OB-11	491.67	493.67	0.4%	524.67	525.67	0.2%	671.67	671.67	0.0%	JLS	01/17/20

Reference Thermocouple: Fluke S/N: 83450033 or S/N 90460057 traceable to the Untied States National Institute of Standards and Technology

*Acceptable Deviation: 1.5%

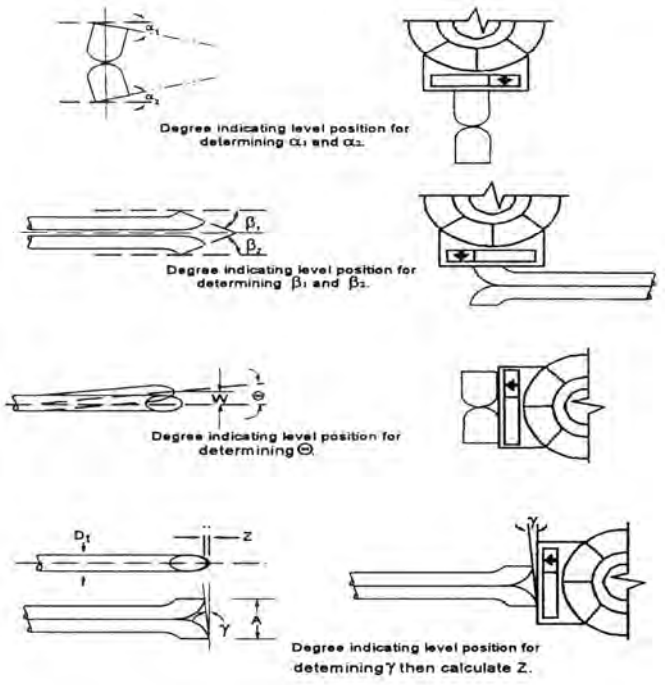
Initial Sample Probe Calibration Form

Probe ID: P4-2/TC-5D | Date: 06/16/20 | Technician: P. Grady

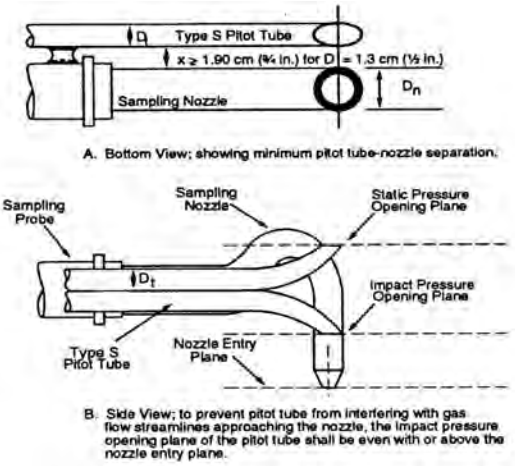
"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 ($-10^o = \alpha_1 = +10^o$)	2
α_2 ($-10^o = \alpha_2 = +10^o$)	1
β_1 ($-5^o = \beta_1 = +5^o$)	1
β_2 ($-5^o = \beta_2 = +5^o$)	1
γ	1
Θ	0
z = A Tan γ (< 0.125")	0.011
W = A Tan Θ (< 0.03125")	0.0000
D_t (3/16 = D_t = 3/8")	0.251
A	0.650
$A/2D_t$ (1.05 = P_A/D_t = 1.5)	1.295

Source: Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III, Stationary Source-Specific Methods. EPA/600/R-94/038c, September 30, 1994

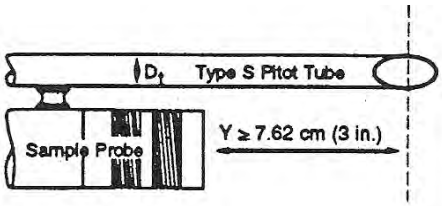


Verification of "S" Type Pitot, Thermocouple and Nozzle Placement



Does X Exceed 0.75 inches? Yes

Does Y Exceed 3 inches? NA



Thermocouple Calibration

	Ice Bath ^oR			Ambient ^oR			Boiling Water ^oR		
	1	2	3	1	2	3	1	2	3
Reference Temp	492.3	492.3	492.3	533.4	533.4	533.4	671.5	671.5	671.5
Thermocouple Temp	492.9	492.8	492.8	532.7	532.6	532.7	673.1	673	673
Difference (%)	0.1	0.1	0.1	-0.1	-0.1	-0.1	0.2	0.2	0.2

Temperature values must be within 1.5% of reference temperature

I certify that the probe ID P4-2/TC-5D meets or exceeds all specifications, criteria and/or applicable design features and is herby assigned a pitot tube calibration factor C_p of 0.84.

Certified By: P. Grady Date: 06/16/20

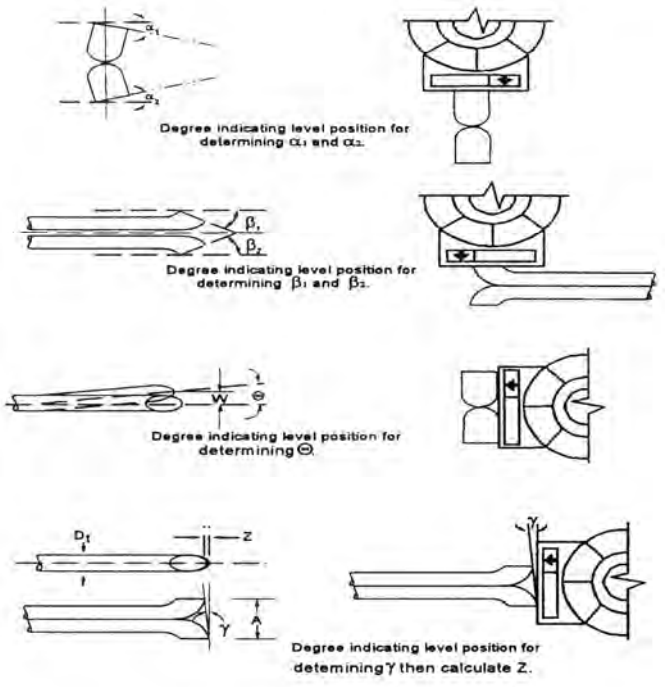
Initial Sample Probe Calibration Form

Probe ID: P4-3/TC-7D | Date: 06/16/20 | Technician: P. Grady

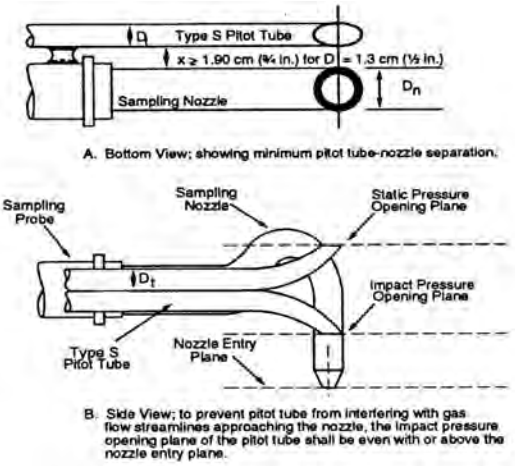
"S" Type Pitot Calibration

Is the Pitot Level and Perpindicular?	Yes
Is There any Obstruction?	No
Is the Pitot Damaged	No
α_1 ($-10^o = \alpha_1 = +10^o$)	1
α_2 ($-10^o = \alpha_2 = +10^o$)	0
β_1 ($-5^o = \beta_1 = +5^o$)	1
β_2 ($-5^o = \beta_2 = +5^o$)	1
γ	1
Θ	1
z = A Tan γ (< 0.125")	0.011
W = A Tan Θ (< 0.03125")	0.0110
D_t (3/16 = D_t = 3/8")	0.251
A	0.628
$A/2D_t$ (1.05 = P_A/D_t = 1.5)	1.251

Source: Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III, Stationary Source-Specific Methods. EPA/600/R-94/038c, September 30, 1994

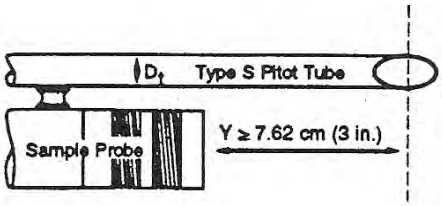


Verification of "S" Type Pitot, Thermocouple and Nozzle Placement



Does X Exceed 0.75 inches? Yes

Does Y Exceed 3 inches? NA



Thermocouple Calibration

	Ice Bath °R			Ambient °R			Boiling Water °R		
	1	2	3	1	2	3	1	2	3
Reference Temp	492.3	492.3	492.3	533.4	533.4	533.4	671.5	671.5	671.5
Thermocouple Temp	492.7	492.6	492.6	533.1	533.2	533.2	671.8	671.8	671.8
Difference (%)	0.1	0.1	0.1	-0.1	0.0	0.0	0.0	0.0	0.0

Temperature values must be within 1.5% of reference temperature

I certify that the probe ID P4-3/TC-7D meets or exceeds all specifications, criteria and/or applicable design features and is herby assigned a pitot tube calibration factor C_p of 0.84.

Certified By: P. Grady Date: 06/16/20

Post Test Equipment Calibration Data

POST TEST DRY GAS METER CALIBRATION

DATE:	07/30/20	METER BOX #:	8	BAROMETRIC PRESSURE (in Hg):	INITIAL 29.87	FINAL 29.87	AVG (P_{bar}) 29.87
TECHNICIAN:	A. Anderson	CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	$DH_@$
	1																		
	2																		
	3																		
																AVG =			
18	1	0.4961	21	739.340	746.025	6.685	74	69	70	69	69	69.25	10.00	1.2	6.6790	6.4145	0.960	-0.29	1.64
	2	0.4961	21	746.025	752.692	6.667	72	70	72	69	70	70.25	10.00	1.2	6.6484	6.4265	0.967	0.36	1.63
	3	0.4961	21	752.692	759.397	6.705	73	72	73	70	71	71.5	10.00	1.2	6.6706	6.4205	0.963	-0.07	1.63
																AVG =	0.963		
	1																		
	2																		
	3																		
																AVG =			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.963

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 0.975

PERCENT DIFFERENCE = -1.2

POST TEST DRY GAS METER CALIBRATION

DATE:	09/09/20	METER BOX #:	15	BAROMETRIC PRESSURE (in Hg):	INITIAL 30.22	FINAL 30.22	AVG (P_{bar}) 30.22
TECHNICIAN:	A. Anderson	CRITICAL ORIFICE SET SERIAL #:	1393				

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) q	DGM DH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y % Diff to Average Y	$DH_@$
	1																		
	2																		
	3																		
																AVG =			
18	1	0.4961	21.5	370.615	377.048	6.433	73	74	74	74	74	74	10.00	1.3	6.4460	6.4957	1.008	0.17	1.74
	2	0.4961	21.5	377.048	383.50	6.452	73	74	74	74	74	74	10.00	1.3	6.4650	6.4957	1.005	-0.12	1.74
	3	0.4961	21.5	383.50	389.941	6.441	74	74	74	74	74	74	10.00	1.3	6.4540	6.4896	1.006	-0.05	1.74
																AVG =	1.006		
	1																		
	2																		
	3																		
																AVG =			

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.006

PRE-DETERMINED DRY GAS METER CALIBRATION FACTOR, Y = 1.013

PERCENT DIFFERENCE = -0.7

Post-Test Sample Probe Calibration Form

Probe ID P4-2

Visual Inspection

Do pitot tips appear to be damaged?	NO
Do thermocouple wires appear broken or shorted?	NO
Do all components appear to be in good condition?	YES

Post-Test Thermocouple Calibration

Reference Temperature ^{O}F	Thermocouple Temperature ^{O}F	Difference ^{O}F
65	65	0

Reference Thermocouple: Fluke S/N: 83450033 traceable to the Untied States National Institute of Standards and Technology

Accepatable Deviation +/- 2 ^{O}F

x	Acceptable
	Unacceptable

Date 09/11/20 Technician AA

Post-Test Sample Probe Calibration Form

Probe ID P4-3

Visual Inspection

Do pitot tips appear to be damaged?	NO
Do thermocouple wires appear broken or shorted?	NO
Do all components appear to be in good condition?	YES

Post-Test Thermocouple Calibration

Reference Temperature ^{O}F	Thermocouple Temperature ^{O}F	Difference ^{O}F
65	65.8	0.8

Reference Thermocouple: Fluke S/N: 83450033 traceable to the Untied States National Institute of Standards and Technology

Accepatable Deviation +/- 2 ^{O}F

x	Acceptable
	Unacceptable

Date 09/11/20 Technician AA