

**FLUOROMONOMERS
MANUFACTURING PROCESS
VINYL ETHERS NORTH CARBON BED
REMOVAL EFFICIENCY TEST REPORT
TEST DATES: 26-28 FEBRUARY, 1 MARCH 2019**

**THE CHEMOURS COMPANY
FAYETTEVILLE, NORTH CAROLINA**

Prepared for:



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

Prepared by:



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

April 2019

W.O. No. 15418.002.010

TABLE OF CONTENTS

Section	Page
1. INTRODUCTION.....	1
1.1 FACILITY AND BACKGROUND INFORMATION	1
1.2 TEST OBJECTIVES	1
1.3 TEST PROGRAM OVERVIEW	1
2. SUMMARY OF TEST RESULTS	3
3. PROCESS DESCRIPTIONS	4
3.1 FLUOROMONOMERS	4
3.2 PROCESS OPERATIONS AND PARAMETERS	4
4. DESCRIPTION OF TEST LOCATIONS.....	6
4.1 VINYL ETHERS NORTH CARBON BED INLET AND OUTLET	6
5. SAMPLING AND ANALYTICAL METHODS.....	8
5.1 STACK GAS SAMPLING PROCEDURES	8
5.1.1 Pre-Test Determinations	8
5.2 STACK PARAMETERS	8
5.2.1 EPA Method 0010.....	8
5.2.2 EPA Method 0010 Sample Recovery	10
5.2.3 EPA Method 0010 Sample Analysis.....	13
5.3 GAS COMPOSITION	14
6. DETAILED TEST RESULTS AND DISCUSSION	16
APPENDIX A PROCESS OPERATIONS DATA	
APPENDIX B RAW AND REDUCED TEST DATA	
APPENDIX C LABORATORY ANALYTICAL REPORT	
APPENDIX D SAMPLE CALCULATIONS	
APPENDIX E EQUIPMENT CALIBRATION RECORDS	
APPENDIX F LIST OF PROJECT PARTICIPANTS	

LIST OF FIGURES

Title	Page
Figure 4-1 VE North Process Carbon Bed Inlet and Outlet Schematic.....	7
Figure 5-1 EPA Method 0010 Sampling Train.....	9
Figure 5-2 HFPO Dimer Acid Sample Recovery Procedures for Method 0010	12
Figure 5-3 WESTON Sampling System.....	15

LIST OF TABLES

Title	Page
Table 1-1 Sampling Plan for VEN Carbon Bed Testing.....	2
Table 2-1 Summary of HFPO Dimer Acid VEN Carbon Bed Test Results.....	3
Table 3-1 Test Campaign Process Conditions.....	5
Table 6-1 Summary of HFPO Dimer Acid Test Data and Test Results Carbon Bed Inlet – Runs 1-8.....	17
Table 6-2 Summary of HFPO Dimer Acid Test Data and Test Results Carbon Bed Outlet – Runs 1-8.....	23

1. INTRODUCTION

1.1 FACILITY AND BACKGROUND INFORMATION

The Chemours Fayetteville Works (Chemours) is located in Bladen County, North Carolina, approximately 10 miles south of the city of Fayetteville. Chemours operating areas on the site include the Fluoromonomers, IXM and Polymers Processing Aid (PPA) manufacturing areas, Wastewater Treatment, and Powerhouse.

Chemours contracted Weston Solutions, Inc. (Weston) to perform HFPO Dimer Acid Fluoride, captured as HFPO Dimer Acid, emission testing on the Vinyl Ethers North (VEN) Carbon Bed at the facility. Testing was performed on 26-28 February and 1 March 2019 and generally followed the “Emission Test Protocol” reviewed and approved by the North Carolina Department of Environmental Quality (NCDEQ). This report provides the results from the emission test program.

1.2 TEST OBJECTIVES

The specific objectives for this test program were as follows:

- Measure the emissions concentrations and mass emissions rates of HFPO Dimer Acid Fluoride from the Carbon Bed inlet and outlet which are located in the Fluoromonomers process area.
- Calculate the Carbon Bed removal efficiency for HFPO Dimer Acid.
- Monitor and record process and emissions control data in conjunction with the test program.
- Provide representative emissions data.

1.3 TEST PROGRAM OVERVIEW

During the emissions test program, the concentrations and mass emissions rates of HFPO Dimer Acid were measured at two locations.

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

**Table 1-1
Sampling Plan for VEN Carbon Bed Testing**

Sampling Point & Location	VE North Carbon Bed				
Number of Tests:	16 (8 Carbon Bed inlet, 8 Carbon Bed outlet)				
Parameters To Be Tested:	HFPO Dimer Acid (HFPO-DA)	Volumetric Flow Rate and Gas Velocity	Carbon Dioxide	Oxygen	Water Content
Sampling or Monitoring Method	EPA M-0010	EPA M1, M2, M3A, and M4 in conjunction with M-0010 tests	EPA M3/3A		EPA M4 in conjunction with M-0010 tests
Sample Extraction/ Analysis Method(s):	LC/MS/MS	NA ⁶	NA		NA
Sample Size	≥ 1.5m ³	NA	NA	NA	NA
Total Number of Samples Collected ¹	16	16	16	16	16
Reagent Blanks (Solvents, Resins) ¹	1 set	0	0	0	0
Field Blank Trains ¹	1 per source	0	0	0	0
Proof Blanks ¹	1 per train	0	0	0	0
Trip Blanks ^{1,2}	1 set	0	0	0	
Lab Blanks	1 per fraction ³	0	0	0	0
Laboratory or Batch Control Spike Samples (LCS)	1 per fraction ³	0	0	0	0
Laboratory or Batch Control Spike Sample Duplicate (LCSD)	1 per fraction ³	0	0	0	0
Media Blanks	1 set ⁴	0	0	0	0
Isotope Dilution Internal Standard Spikes	Each sample	0	0	0	0
Total No. of Samples	20 ⁵	16	16	16	16

Key:

¹ Sample collected in field.

² Trip blanks include one XAD-2 resin module and one methanol sample per sample shipment.

³ Lab blank and LCS/LCSD includes one set per analytical fraction (front half, back half and condensate).

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

⁵ Actual number of samples collected in field.

⁶ Not applicable.

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

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

2. SUMMARY OF TEST RESULTS

A total of eight test runs each were performed on the VEN Carbon Bed inlet and outlet. Table 2-1 provides a summary of the HFPO Dimer Acid emissions test results and Carbon Bed removal efficiencies. Detailed test results summaries are provided in Section 6.

It is important to note that emphasis is being placed on the characterization of the emissions based on the stack test results. Research conducted in developing the protocol for stack testing HFPO Dimer Acid Fluoride, HFPO Dimer Acid Ammonium Salt and HFPO Dimer Acid realized that the resulting testing, including collection of the air samples and extraction of the various fraction of the sampling train, would result in all three compounds being expressed as simply the HFPO Dimer Acid. However, it should be understood that the total HFPO Dimer Acid results provided on Table 2-1 and in this report include a percentage of each of the three compounds.

**Table 2-1
Summary of HFPO Dimer Acid VEN Carbon Bed Test Results**

Run Number and Condition	Inlet		Outlet		Removal Efficiency
	g/sec	lb/hr	g/sec	lb/hr	%
R1 ABR Op.	1.25E-02	9.96E-02	6.92E-05	5.50E-04	99.4
R2 Burnout Run	1.41E-02	1.12E-01	2.14E-05	1.70E-04	99.8
R3 ABR Off	6.58E-03	5.23E-02	3.15E-05	2.50E-04	99.5
R4 ABR Op.	7.11E-03	5.65E-02	1.42E-03	1.13E-02	80.0
R5 ABR Op.	6.41E-03	5.09E-02	6.30E-06	5.00E-05	99.9
R6 Burnout Run	7.11E-03	5.64E-02	8.81E-06	7.00E-05	99.9
R7 ABR Op.	5.97E-03	4.74E-02	5.04E-06	4.00E-05	99.9
R8 Burnout Run	4.39E-03	3.49E-02	6.30E-06	5.00E-05	99.9
Average	8.02E-03	6.37E-02	1.96E-04	1.56E-03	97.3

3. PROCESS DESCRIPTIONS

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

3.1 FLUOROMONOMERS

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

Process emissions are vented to the Division waste gas scrubber system (which includes the secondary scrubber) which then vents to the Carbon Bed and then to the Division Stack.

The VE North building air systems are also vented to the carbon bed and connected to the Tower Exhaust Blower.

3.2 PROCESS OPERATIONS AND PARAMETERS

The following table is a summary of the operation and products from the specific areas tested.

Source	Operation/Product	Batch or Continuous
VE North	PPVE	Condensation is continuous. Agitated Bed Reactor and Refining are batch.

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

- Fluoromonomers Process
 - VEN Precursor Rate
 - VEN Condensation Rate
 - VEN ABR Rate

The following table provides a summary of the process conditions established for each of the eight test runs:

**Table 3-1
Test Campaign Process Conditions**

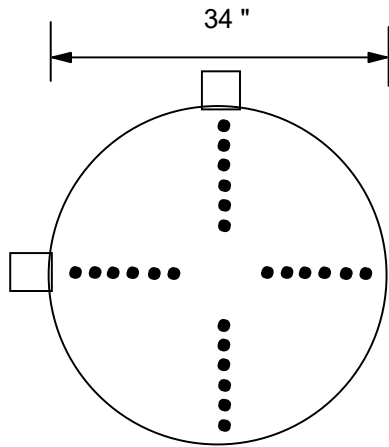
Run No.	Date	ABR
1	2/26/19	Feeding
2	2/26/19	Burnout
3	2/27/19	Off
4	2/27/19	Feeding
5	2/28/19	Feeding
6	2/28/19	Burnout
7	3/1/19	Feeding
8	3/1/19	Burnout

4. DESCRIPTION OF TEST LOCATIONS

4.1 VINYL ETHERS NORTH CARBON BED INLET AND OUTLET

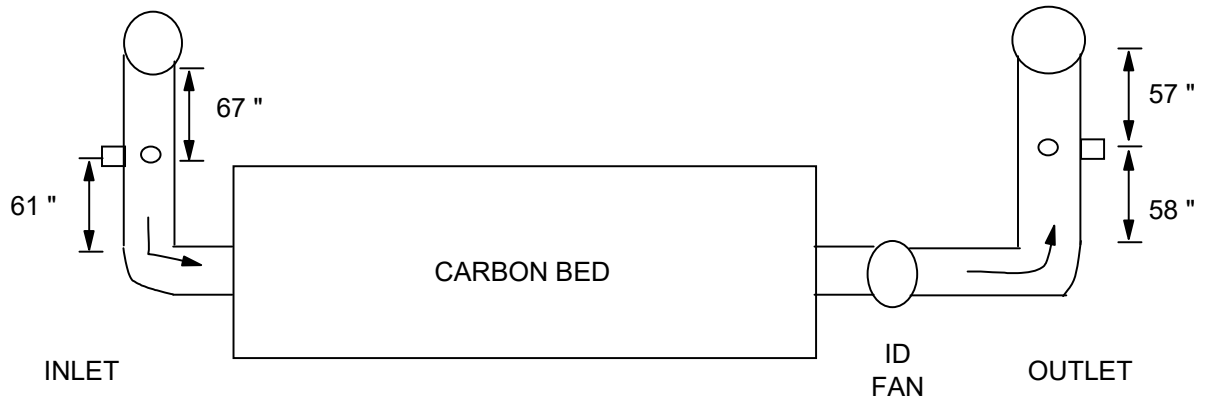
The fiberglass reinforced plastic (FRP) ducts at the inlet and outlet of the carbon bed are 34" ID. The test ports are located as shown below. Based on EPA Method 1, a total of 24 traverse points (12 per port) were required for HFPO Dimer Acid sampling at both locations. Figure 4-1 provides a schematic of the test port and traverse port locations.

Location	Distance from Flow Disturbance	
	Downstream (B)	Upstream (A)
Carbon Bed Inlet	67 inches > 1.9 duct diameters	61 inches > 1.8 duct diameters
Carbon Bed Outlet	58 inches > 1.7 duct diameters	57 inches > 1.5 duct diameters



TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE NEAR WALL (INCHES)
1	3/4
2	2 1/4
3	4
4	6
5	8 1/2
6	12 1/8
7	21 5/8
8	25 1/2
9	28
10	30
11	31 3/4
12	33 1/4

CEMENT BLOCK WALL



DRAWING NOT TO SCALE

**FIGURE 4-1
VE NORTH PROCESS CARBON BED INLET AND OUTLET SCHEMATIC**

5. SAMPLING AND ANALYTICAL METHODS

5.1 STACK GAS SAMPLING PROCEDURES

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

5.1.1 Pre-Test Determinations

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

A check for the presence or absence of cyclonic flow was previously conducted at each test location. The cyclonic flow checks were negative ($< 20^\circ$) verifying that the test locations were acceptable for testing.

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

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

5.2 STACK PARAMETERS

5.2.1 EPA Method 0010

The sampling train utilized to perform the HFPO Dimer Acid sampling at the outlet locations was an EPA Method 0010 train (see Figure 5-1). The Method 0010 consisted of a borosilicate nozzle that attached directly to a heated borosilicate probe. In order to minimize possible thermal degradation of the HFPO Dimer Acid, the probe and particulate filter were heated above stack temperature to minimize water vapor condensation before the filter. The probe was connected directly to a heated borosilicate filter holder containing a solvent extracted glass fiber filter.

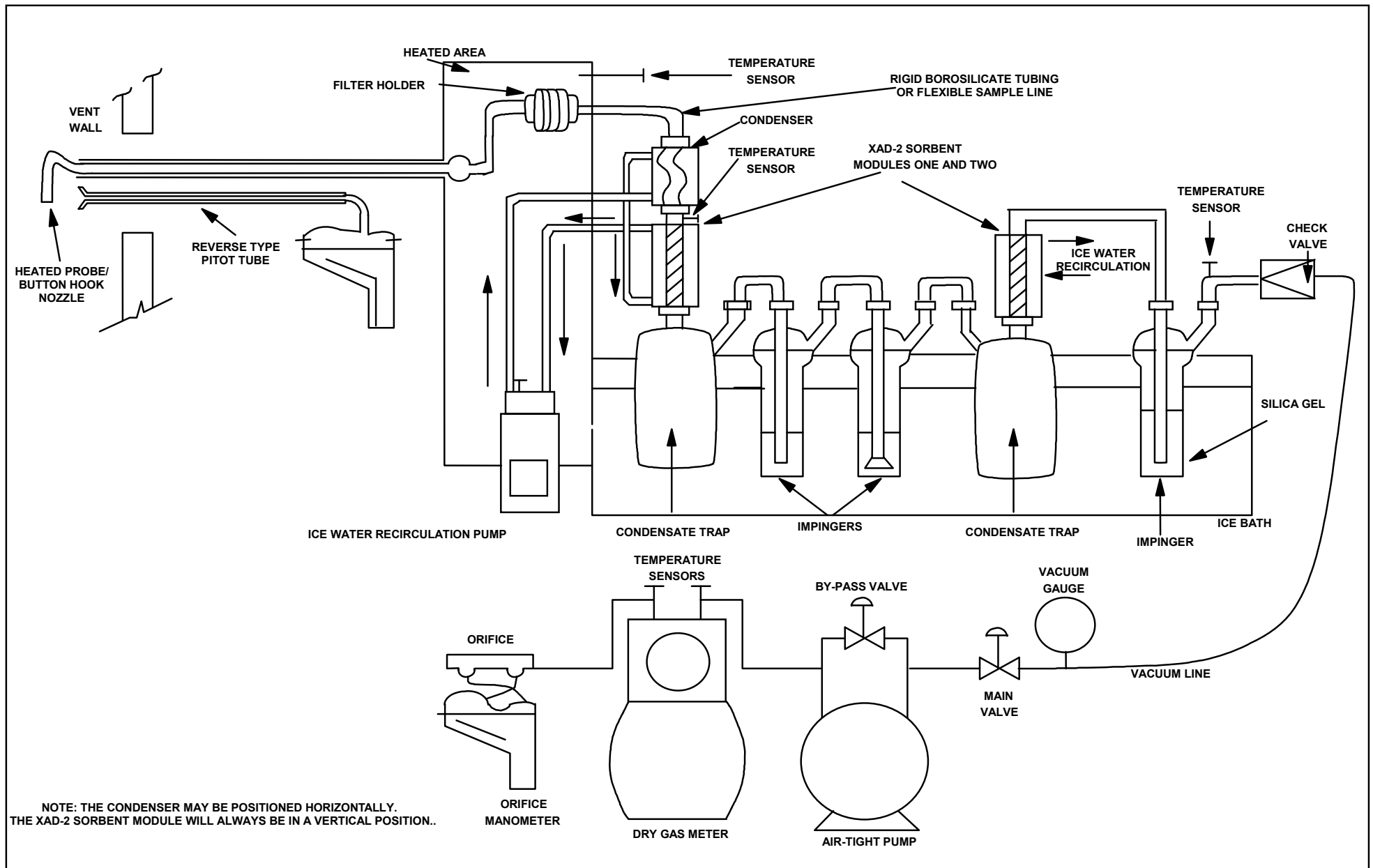


FIGURE 5-1
EPA METHOD 0010 SAMPLING TRAIN

A section of borosilicate glass or flexible polyethylene tubing connected the filter holder exit to a Graham (spiral) type ice water-cooled condenser, an ice water-jacketed sorbent module containing approximately 40 grams of XAD-2 resin. The XAD-2 resin tube was equipped with an inlet temperature sensor. The XAD-2 resin trap was followed by a condensate knockout impinger and a series of two impingers that contained 100 mL of high purity distilled water. The train also included a second XAD-2 resin trap behind the impinger section to evaluate possible sampling train breakthrough. Each XAD-2 resin trap was connected to a 1-liter condensate knockout trap. The final impinger contained 300 g of dry pre-weighed silica gel. All impingers and the condensate traps were maintained in an ice bath. Ice water was continuously circulated in the condenser and both XAD-2 modules to maintain method-required temperature. A control console with a leakless vacuum pump, a calibrated orifice, and dual inclined manometers was connected to the final impinger via an umbilical cord to complete the sample train.

HFPO Dimer Acid Fluoride (CAS No. 2062-98-8) that is present in the stack gas is expected to be captured in the sampling train along with HFPO Dimer Acid (CAS No. 13252-13-6). HFPO Dimer Acid Fluoride underwent hydrolysis instantaneously in water in the sampling train and during the sample recovery step, and was converted to HFPO Dimer Acid such that the amount of HFPO Dimer Acid emissions represented a combination of both HFPO Dimer Acid Fluoride and HFPO Dimer Acid.

During sampling, gas stream velocities were measured by attaching a calibrated S-type pitot tube into the gas stream adjacent to the sampling nozzle. The velocity pressure differential was observed immediately after positioning the nozzle at each traverse point, and the sampling rate adjusted to maintain isokineticity at $100\% \pm 10$. Flue gas temperature was monitored at each point with a calibrated panel meter and thermocouple. Isokinetic test data was recorded at each traverse point during all test periods, as appropriate. Leak checks were performed on the sampling apparatus according to reference method instructions, prior to and following each run, component change (if required) or during midpoint port changes.

5.2.2 EPA Method 0010 Sample Recovery

At the conclusion of each test, the sampling train was dismantled, the openings sealed, and the components transported to the field laboratory trailer for recovery.

A consistent procedure was employed for sample recovery:

1. The two XAD-2 covered (to minimize light degradation) sorbent modules (1 and 2) were sealed and labeled.
2. The glass fiber filter(s) were removed from the holder with tweezers and placed in a polyethylene container along with any loose particulate and filter fragments.
3. The particulate adhering to the internal surfaces of the nozzle, probe and front half of the filter holder were rinsed with a solution of methanol and ammonium hydroxide into a polyethylene container while brushing a minimum of three times until no visible particulate remains. Particulate adhering to the brush was rinsed with methanol/ammonium hydroxide into the same container. The container was sealed.
4. The volume of liquid collected in the first condensate trap was measured, the value recorded, and the contents poured into a polyethylene container.
5. All train components between the filter exit and the first condensate trap were rinsed with methanol/ammonium hydroxide. The solvent rinse was placed in a separate polyethylene container and sealed.
6. The volume of liquid in impingers one and two, and the second condensate trap, were measured, the values recorded, and the sample was placed in the same container as Step 4 above, then sealed.
7. The two impingers, condensate trap, and connectors were rinsed with methanol/ammonium hydroxide. The solvent sample was placed in a separate polyethylene container and sealed.
8. The silica gel in the final impinger was weighed and the weight gain value recorded.
9. Site (reagent) blank samples of the methanol/ammonium hydroxide, XAD resin, filter and distilled water were retained for analysis.

Each container was labeled to clearly identify its contents. The height of the fluid level was marked on the container of each liquid sample to provide a reference point for a leakage check during transport. All samples were maintained cool.

During each test campaign, a Method 0010 blank train was set up near the test location, leak-checked and recovered along with the respective sample train. Following sample recovery, all samples were transported to TestAmerica Laboratories, Inc. (TestAmerica) for sample extraction and analysis.

See Figure 5-2 for a schematic of the Method 0010 sample recovery process.

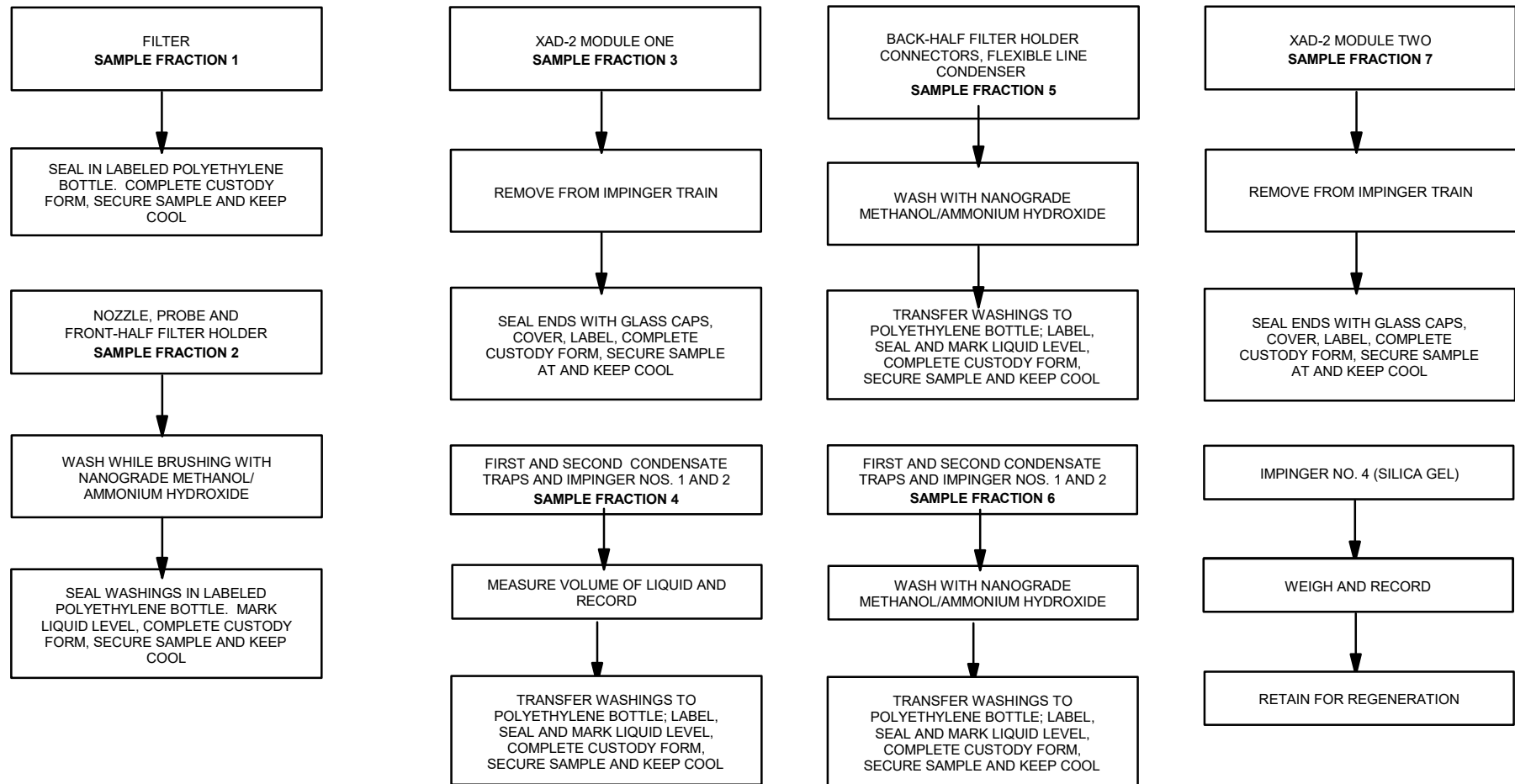


FIGURE 5-2
HFPO DIMER ACID SAMPLE RECOVERY PROCEDURES FOR METHOD 0010

5.2.3 EPA Method 0010 Sample Analysis

Method 0010 sampling trains resulted in four separate analytical fractions for HFPO Dimer Acid analysis according to SW-846 Method 3542:

- Front-half Composite—comprised of the particulate filter, and the probe, nozzle, and front-half of the filter holder solvent rinses;
- Back-half Composite—comprised of the first XAD-2 resin material and the back-half of the filter holder with connecting glassware solvent rinses;
- Condensate Composite—comprised of the aqueous condensates and the contents of impingers one and two with solvent rinses;
- Breakthrough XAD-2 Resin Tube—comprised of the resin tube behind the series of impingers.

The second XAD-2 resin material was analyzed separately to evaluate any possible sampling train HFPO-DA breakthrough.

The front-half and back-half composites and the second XAD-2 resin material were placed in polypropylene wide-mouth bottles and tumbled with methanol containing 5% NH₄OH for 18 hours. Portions of the extracts were processed analytically for the HFPO dimer acid by liquid chromatography and dual mass spectroscopy (HPLC/MS/MS). The condensate composite was concentrated onto a solid phase extraction (SPE) cartridge followed by desorption from the cartridge using methanol. Portions of those extracts were also processed analytically by HPLC/MS/MS.

Samples were spiked with isotope dilution internal standard (IDA) at the commencement of their preparation to provide accurate assessments of the analytical recoveries. Final data was corrected for IDA standard recoveries.

TestAmerica developed detailed procedures for the sample extraction and analysis for HFPO Dimer Acid. These procedures were incorporated into the test protocol.

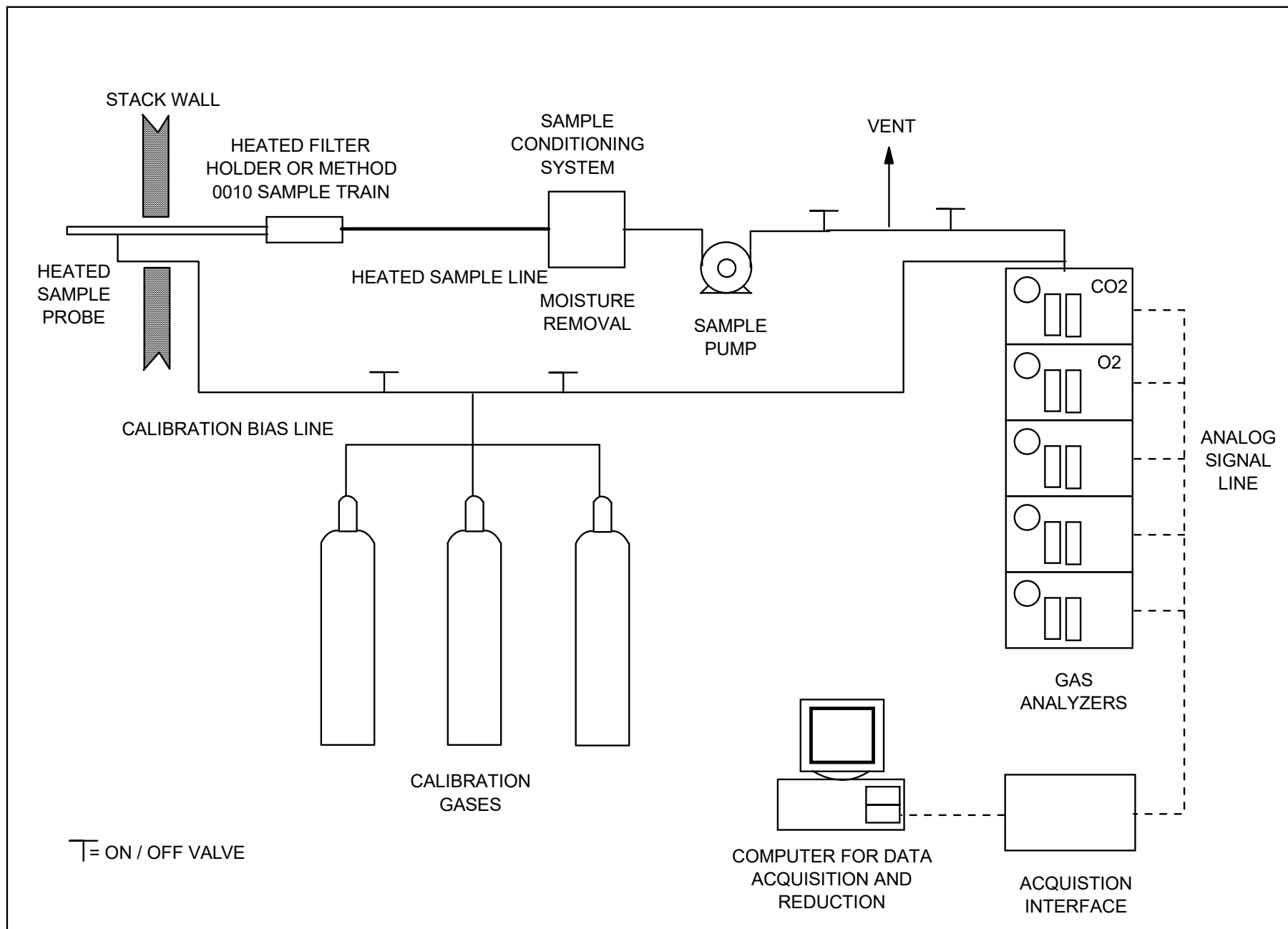
5.3 GAS COMPOSITION

The Weston mobile laboratory equipped with instrumental analyzers was used to measure carbon dioxide (CO₂) and oxygen (O₂) concentrations. A diagram of the Weston sampling system is presented in Figure 5-3.

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

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

The oxygen and carbon dioxide content of each stack gas was measured according to EPA Method 3A procedures which incorporate the latest updates of EPA Method 7E. A Servomex Model 4900 analyzer (or equivalent) was used to measure oxygen content. A Servomex Model 4900 analyzer (or equivalent) was used to measure carbon dioxide content of the stack gas. Both analyzers were calibrated with EPA Protocol gases prior to the start of the test program and performance was verified by sample bias checks before and after each test run.



**FIGURE 5-3
WESTON SAMPLING SYSTEM**

6. DETAILED TEST RESULTS AND DISCUSSION

Each test was a minimum of 96 minutes in duration. A total of eight test runs were performed at each location.

Tables 6-1 and 6-2 provide detailed test data and test results for the Carbon Bed inlet and the Carbon Bed outlet, respectively.

The Method 3A sampling on all sources indicated that the O₂ and CO₂ concentrations were at ambient air levels (20.9% O₂, 0% CO₂), therefore, 20.9% O₂ and 0% CO₂ values were used in all calculations.

The carbon bed removal efficiency was calculated based upon the HFPO Dimer Acid inlet and outlet mass emission rates in lb/hr.

Seven of the eight runs were >99% efficiency. The one run where the measured efficiency was 80% is being investigated further.

TABLE 6-1
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED INLET

Test Data

	1	2	3
Run number			
Location	CBed Inlet	CBed Inlet	CBed Inlet
Date	2/26/2019	2/26/2019	2/27/2019
Time period	0927-1143	1335-1530	0840-1035

SAMPLING DATA:

Sampling duration, min.	96.0	96.0	96.0
Nozzle diameter, in.	0.215	0.215	0.215
Cross sectional nozzle area, sq.ft.	0.000252	0.000252	0.000252
Barometric pressure, in. Hg	30.29	30.20	30.22
Avg. orifice press. diff., in H ₂ O	1.33	1.31	1.27
Avg. dry gas meter temp., deg F	58.7	74.0	60.2
Avg. abs. dry gas meter temp., deg. R	519	534	520
Total liquid collected by train, ml	24.7	20.4	28.5
Std. vol. of H ₂ O vapor coll., cu.ft.	1.2	1.0	1.3
Dry gas meter calibration factor	1.0027	1.0027	1.0027
Sample vol. at meter cond., dcf	52.809	56.260	55.079
Sample vol. at std. cond., dscf ⁽¹⁾	54.721	56.462	56.773
Percent of isokinetic sampling	93.9	99.6	100.4

GAS STREAM COMPOSITION DATA:

CO ₂ , % by volume, dry basis	0.0	0.0	0.0
O ₂ , % by volume, dry basis	20.9	20.9	20.9
N ₂ , % by volume, dry basis	79.1	79.1	79.1
Molecular wt. of dry gas, lb/lb mole	28.84	28.84	28.84
H ₂ O vapor in gas stream, prop. by vol.	0.021	0.017	0.023
Mole fraction of dry gas	0.979	0.983	0.977
Molecular wt. of wet gas, lb/lb mole	28.61	28.65	28.59

GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:

Static pressure, in. H ₂ O	-6.50	-6.50	-6.50
Absolute pressure, in. Hg	29.81	29.72	29.74
Avg. temperature, deg. F	69	78	71
Avg. absolute temperature, deg.R	529	538	531
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	24	24	24
Avg. gas stream velocity, ft./sec.	41.3	40.7	40.3
Stack/duct cross sectional area, sq.ft.	6.31	6.31	6.31
Avg. gas stream volumetric flow, wacf/min.	15613	15409	15264
Avg. gas stream volumetric flow, dscf/min.	15187	14774	14739

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

TABLE 6-1 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED INLET

TEST DATA			
Run number	1	2	3
Location	CBed Inlet	CBed Inlet	CBed Inlet
Date	2/26/2019	2/26/2019	2/27/2019
Time period	0927-1143	1335-1530	0840-1035
CONDITION	ABR Op.	Burnout Run	ABR off
LABORATORY REPORT DATA, ug.			
HFPO Dimer Acid	2713.12	3227.18	1521.59
EMISSION RESULTS, ug/dscm.			
HFPO Dimer Acid	1750.56	2018.04	946.27
EMISSION RESULTS, lb/dscf.			
HFPO Dimer Acid	1.09E-07	1.26E-07	5.91E-08
EMISSION RESULTS, lb/hr.			
HFPO Dimer Acid	9.96E-02	1.12E-01	5.23E-02
EMISSION RESULTS, g/sec.			
HFPO Dimer Acid	1.25E-02	1.41E-02	6.58E-03

TABLE 6-1 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED INLET

Test Data

	4	5	6
Run number			
Location	CBed Inlet	CBed Inlet	CBed Inlet
Date	2/27/2019	2/28/2019	2/28/2019
Time period	1231-1426	0823-1018	1429-1627

SAMPLING DATA:

Sampling duration, min.	96.0	96.0	96.0
Nozzle diameter, in.	0.215	0.215	0.215
Cross sectional nozzle area, sq.ft.	0.000252	0.000252	0.000252
Barometric pressure, in. Hg	30.17	29.95	29.95
Avg. orifice press. diff., in H ₂ O	1.28	1.25	1.28
Avg. dry gas meter temp., deg F	68.8	59.5	70.9
Avg. abs. dry gas meter temp., deg. R	529	519	531
Total liquid collected by train, ml	31.8	28.5	33.1
Std. vol. of H ₂ O vapor coll., cu.ft.	1.5	1.3	1.6
Dry gas meter calibration factor	1.0027	1.0027	1.0027
Sample vol. at meter cond., dcf	58.052	57.133	58.141
Sample vol. at std. cond., dscf ⁽¹⁾	58.762	58.444	58.199
Percent of isokinetic sampling	104.4	104.2	103.9

GAS STREAM COMPOSITION DATA:

CO ₂ , % by volume, dry basis	0.0	0.0	0.0
O ₂ , % by volume, dry basis	20.9	20.9	20.9
N ₂ , % by volume, dry basis	79.1	79.1	79.1
Molecular wt. of dry gas, lb/lb mole	28.84	28.84	28.84
H ₂ O vapor in gas stream, prop. by vol.	0.025	0.022	0.026
Mole fraction of dry gas	0.975	0.978	0.974
Molecular wt. of wet gas, lb/lb mole	28.57	28.59	28.55

GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:

Static pressure, in. H ₂ O	-6.50	-6.50	-6.50
Absolute pressure, in. Hg	29.69	29.47	29.47
Avg. temperature, deg. F	74	70	79
Avg. absolute temperature, deg.R	534	530	539
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	24	24	24
Avg. gas stream velocity, ft./sec.	40.5	40.2	41.1
Stack/duct cross sectional area, sq.ft.	6.31	6.31	6.31
Avg. gas stream volumetric flow, wacf/min.	15335	15222	15534
Avg. gas stream volumetric flow, dscf/min.	14667	14610	14589

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

TABLE 6-1 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED INLET

TEST DATA			
Run number	4	5	6
Location	CBed Inlet	CBed Inlet	CBed Inlet
Date	2/27/2019	2/28/2019	2/28/2019
Time period	1231-1426	0823-1018	1429-1627
CONDITION	ABR Op.	ABR Op.	Burnout Run
LABORATORY REPORT DATA, ug.			
HFPO Dimer Acid	1711.1700	1540.6200	1702.1090
EMISSION RESULTS, ug/dscm.			
HFPO Dimer Acid	1028.16	930.72	1032.60
EMISSION RESULTS, lb/dscf.			
HFPO Dimer Acid	6.42E-08	5.81E-08	6.45E-08
EMISSION RESULTS, lb/hr.			
HFPO Dimer Acid	5.65E-02	5.09E-02	5.64E-02
EMISSION RESULTS, g/sec.			
HFPO Dimer Acid	7.11E-03	6.41E-03	7.11E-03

TABLE 6-1 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED INLET

Test Data

Run number	7	8
Location	CBed Inlet	CBed Inlet
Date	3/1/2019	3/1/2019
Time period	0813-1008	1237-1433

SAMPLING DATA:

Sampling duration, min.	96.0	96.0
Nozzle diameter, in.	0.215	0.215
Cross sectional nozzle area, sq.ft.	0.000252	0.000252
Barometric pressure, in. Hg	30.09	30.08
Avg. orifice press. diff., in H ₂ O	1.29	1.26
Avg. dry gas meter temp., deg F	53.7	61.9
Avg. abs. dry gas meter temp., deg. R	514	522
Total liquid collected by train, ml	28.1	29.5
Std. vol. of H ₂ O vapor coll., cu.ft.	1.3	1.4
Dry gas meter calibration factor	1.0027	1.0027
Sample vol. at meter cond., dcf	57.793	57.189
Sample vol. at std. cond., dscf ⁽¹⁾	60.070	58.483
Percent of isokinetic sampling	104.9	104.7

GAS STREAM COMPOSITION DATA:

CO ₂ , % by volume, dry basis	0.0	0.0
O ₂ , % by volume, dry basis	20.9	20.9
N ₂ , % by volume, dry basis	79.1	79.1
Molecular wt. of dry gas, lb/lb mole	28.84	28.84
H ₂ O vapor in gas stream, prop. by vol.	0.022	0.023
Mole fraction of dry gas	0.978	0.977
Molecular wt. of wet gas, lb/lb mole	28.60	28.58

GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:

Static pressure, in. H ₂ O	-6.50	-6.50
Absolute pressure, in. Hg	29.61	29.60
Avg. temperature, deg. F	64	72
Avg. absolute temperature, deg.R	524	532
Pitot tube coefficient	0.84	0.84
Total number of traverse points	24	24
Avg. gas stream velocity, ft./sec.	40.4	40.1
Stack/duct cross sectional area, sq.ft.	6.31	6.31
Avg. gas stream volumetric flow, wacf/min.	15295	15173
Avg. gas stream volumetric flow, dscf/min.	14917	14557

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

TABLE 6-1 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULT
CARBON BED INLET

TEST DATA		
Run number	7	8
Location	CBed Inlet	CBed Inlet
Date	3/1/2019	3/1/2019
Time period	0813-1008	1237-1433
CONDITION	ABR Op.	Burnout Run
LABORATORY REPORT DATA, ug.		
HFPO Dimer Acid	1.44E+03	1.06E+03
EMISSION RESULTS, ug/dscm.		
HFPO Dimer Acid	8.49E+02	6.39E+02
EMISSION RESULTS, lb/dscf.		
HFPO Dimer Acid	5.30E-08	3.99E-08
EMISSION RESULTS, lb/hr.		
HFPO Dimer Acid	4.74E-02	3.49E-02
EMISSION RESULTS, g/sec.		
HFPO Dimer Acid	5.97E-03	4.39E-03

TABLE 6-2
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED OUTLET

Test Data

	1	2	3
Run number			
Location	CBed Outlet	CBed Outlet	CBed Outlet
Date	2/26/2019	2/26/2019	2/27/2019
Time period	0927-1143	1335-1530	0840-1035

SAMPLING DATA:

Sampling duration, min.	96.0	96.0	96.0
Nozzle diameter, in.	0.215	0.215	0.215
Cross sectional nozzle area, sq.ft.	0.000252	0.000252	0.000252
Barometric pressure, in. Hg	30.29	30.20	30.22
Avg. orifice press. diff., in H ₂ O	1.61	1.65	1.64
Avg. dry gas meter temp., deg F	60.2	79.4	63.3
Avg. abs. dry gas meter temp., deg. R	520	539	523
Total liquid collected by train, ml	17.9	28.3	33.8
Std. vol. of H ₂ O vapor coll., cu.ft.	0.8	1.3	1.6
Dry gas meter calibration factor	1.0010	1.0010	1.0010
Sample vol. at meter cond., dcf	54.493	55.964	55.596
Sample vol. at std. cond., dscf ⁽¹⁾	56.245	55.551	56.924
Percent of isokinetic sampling	95.3	93.6	98.6

GAS STREAM COMPOSITION DATA:

CO ₂ , % by volume, dry basis	0.0	0.0	0.0
O ₂ , % by volume, dry basis	20.9	20.9	20.9
N ₂ , % by volume, dry basis	79.1	79.1	79.1
Molecular wt. of dry gas, lb/lb mole	28.84	28.84	28.84
H ₂ O vapor in gas stream, prop. by vol.	0.015	0.023	0.027
Mole fraction of dry gas	0.985	0.977	0.973
Molecular wt. of wet gas, lb/lb mole	28.68	28.58	28.54

GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:

Static pressure, in. H ₂ O	3.50	3.50	3.50
Absolute pressure, in. Hg	30.55	30.46	30.48
Avg. temperature, deg. F	69	76	78
Avg. absolute temperature, deg.R	529	536	538
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	24	24	24
Avg. gas stream velocity, ft./sec.	40.6	41.7	40.9
Stack/duct cross sectional area, sq.ft.	6.31	6.31	6.31
Avg. gas stream volumetric flow, wacf/min.	15341	15789	15489
Avg. gas stream volumetric flow, dscf/min.	15383	15463	15044

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

TABLE 6-2 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED OUTLET

TEST DATA			
Run number	1	2	3
Location	CBed Outlet	CBed Outlet	CBed Outlet
Date	2/26/2019	2/26/2019	2/27/2019
Time period	0927-1143	1335-1530	0840-1035
CONDITION	ABR Op.	Burnout Run	ABR Off
LABORATORY REPORT DATA, ug.			
HFPO Dimer Acid	15.1080	4.6752	7.0900
EMISSION RESULTS, ug/dscm.			
HFPO Dimer Acid	9.48	2.97	4.40
EMISSION RESULTS, lb/dscf.			
HFPO Dimer Acid	5.92E-10	1.86E-10	2.75E-10
EMISSION RESULTS, lb/hr.			
HFPO Dimer Acid	5.50E-04	1.70E-04	2.50E-04
HFPO Dimer Acid (From Inlet Data)	9.96E-02	1.12E-01	5.23E-02
EMISSION RESULTS, g/sec.			
HFPO Dimer Acid	6.92E-05	2.14E-05	3.15E-05
Carbon Bed Removal Efficiency, %	99.4	99.8	99.5

TABLE 6-2 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED OUTLET

Test Data

	4	5	6
Run number			
Location	CBed Outlet	CBed Outlet	CBed Outlet
Date	2/27/2019	2/28/2019	2/27/2019
Time period	1231-1426	0823-1018	1429-1627

SAMPLING DATA:

Sampling duration, min.	320.1	96.0	1.3
Nozzle diameter, in.	0.215	0.215	0.215
Cross sectional nozzle area, sq.ft.	0.000252	0.000252	0.000252
Barometric pressure, in. Hg	30.17	29.95	29.95
Avg. orifice press. diff., in H ₂ O	1.63	1.67	1.61
Avg. dry gas meter temp., deg F	71.5	61.4	76.7
Avg. abs. dry gas meter temp., deg. R	532	521	537
Total liquid collected by train, ml	32.8	35.1	39.8
Std. vol. of H ₂ O vapor coll., cu.ft.	1.5	1.7	1.9
Dry gas meter calibration factor	1.0010	1.0010	1.0010
Sample vol. at meter cond., dcf	56.016	56.152	55.732
Sample vol. at std. cond., dscf ⁽¹⁾	56.369	57.190	55.132
Percent of isokinetic sampling	97.8	98.9	97.0

GAS STREAM COMPOSITION DATA:

CO ₂ , % by volume, dry basis	0.0	0.0	0.0
O ₂ , % by volume, dry basis	20.9	20.9	20.9
N ₂ , % by volume, dry basis	79.1	79.1	79.1
Molecular wt. of dry gas, lb/lb mole	28.84	28.84	28.84
H ₂ O vapor in gas stream, prop. by vol.	0.027	0.028	0.033
Mole fraction of dry gas	0.973	0.972	0.967
Molecular wt. of wet gas, lb/lb mole	28.55	28.53	28.48

GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:

Static pressure, in. H ₂ O	3.50	3.50	3.50
Absolute pressure, in. Hg	30.43	30.21	30.21
Avg. temperature, deg. F	82	78	81
Avg. absolute temperature, deg.R	542	538	541
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	24	24	24
Avg. gas stream velocity, ft./sec.	41.2	41.4	41.1
Stack/duct cross sectional area, sq.ft.	6.31	6.31	6.31
Avg. gas stream volumetric flow, wacf/min.	15581	15647	15534
Avg. gas stream volumetric flow, dscf/min.	15022	15065	14807

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

TABLE 6-2 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED OUTLET

TEST DATA			
Run number	4	5	6
Location	CBed Outlet	CBed Outlet	CBed Outlet
Date	2/27/2019	2/28/2019	2/27/2019
Time period	1231-1426	0823-1018	1429-1627
CONDITION	ABR Op.	ABR Op.	Burnout Run
LABORATORY REPORT DATA, ug.			
HFPO Dimer Acid	320.0500	1.3000	1.9400
EMISSION RESULTS, ug/dscm.			
HFPO Dimer Acid	200.46	0.80	1.24
EMISSION RESULTS, lb/dscf.			
HFPO Dimer Acid	1.25E-08	5.01E-11	7.76E-11
EMISSION RESULTS, lb/hr.			
HFPO Dimer Acid	1.13E-02	5.00E-05	7.00E-05
HFPO Dimer Acid (From Inlet Data)	5.65E-02	5.09E-02	5.64E-02
EMISSION RESULTS, g/sec.			
HFPO Dimer Acid	1.42E-03	6.30E-06	8.81E-06
Carbon Bed Removal Efficiency, %	80.0	99.9	99.9

TABLE 6-2 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED OUTLET

Test Data

Run number	7	8
Location	CBed Outlet	CBed Outlet
Date	3/1/2019	3/1/2019
Time period	0813-1008	1237-1433

SAMPLING DATA:

Sampling duration, min.	96.0	96.0
Nozzle diameter, in.	0.215	0.215
Cross sectional nozzle area, sq.ft.	0.000252	0.000252
Barometric pressure, in. Hg	30.09	30.08
Avg. orifice press. diff., in H ₂ O	1.67	1.64
Avg. dry gas meter temp., deg F	56.4	67.1
Avg. abs. dry gas meter temp., deg. R	516	527
Total liquid collected by train, ml	34.2	32.5
Std. vol. of H ₂ O vapor coll., cu.ft.	1.6	1.5
Dry gas meter calibration factor	1.0010	1.0010
Sample vol. at meter cond., dcf	55.779	55.822
Sample vol. at std. cond., dscf ⁽¹⁾	57.623	56.473
Percent of isokinetic sampling	98.6	98.0

GAS STREAM COMPOSITION DATA:

CO ₂ , % by volume, dry basis	0.0	0.0
O ₂ , % by volume, dry basis	20.9	20.9
N ₂ , % by volume, dry basis	79.1	79.1
Molecular wt. of dry gas, lb/lb mole	28.84	28.84
H ₂ O vapor in gas stream, prop. by vol.	0.027	0.026
Mole fraction of dry gas	0.973	0.974
Molecular wt. of wet gas, lb/lb mole	28.54	28.55

GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:

Static pressure, in. H ₂ O	3.50	3.50
Absolute pressure, in. Hg	30.35	30.34
Avg. temperature, deg. F	72	77
Avg. absolute temperature, deg.R	532	537
Pitot tube coefficient	0.84	0.84
Total number of traverse points	24	24
Avg. gas stream velocity, ft./sec.	41.2	40.9
Stack/duct cross sectional area, sq.ft.	6.31	6.31
Avg. gas stream volumetric flow, wacf/min.	15574	15486
Avg. gas stream volumetric flow, dscf/min.	15233	15018

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

TABLE 6-2 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
CARBON BED OUTLET

TEST DATA		
Run number	7	8
Location	CBed Outlet	CBed Outlet
Date	3/1/2019	3/1/2019
Time period	0813-1008	1237-1433
CONDITION	ABR Op.	Burnout Run
LABORATORY REPORT DATA, ug.		
HFPO Dimer Acid	1.2200	1.4400
EMISSION RESULTS, ug/dscm.		
HFPO Dimer Acid	0.75	0.90
EMISSION RESULTS, lb/dscf.		
HFPO Dimer Acid	4.67E-11	5.62E-11
EMISSION RESULTS, lb/hr.		
HFPO Dimer Acid	4.00E-05	5.00E-05
HFPO Dimer Acid (From Inlet Data)	4.74E-02	3.49E-02
EMISSION RESULTS, g/sec.		
HFPO Dimer Acid	5.04E-06	6.30E-06
Carbon Bed Removal Efficiency, %	99.9	99.9

APPENDIX A
PROCESS OPERATIONS DATA

Date 2/26/2019

Time	800	900	1000	1100	1200	1300	1400	1500	1600	
Stack Testing			Run 1				Run 2			
HFPO										
VEN Product	PPVE									
VEN Precursor										
VEN Condensation (HFPO)										
VEN ABR							Burnout			
VEN Refining										
Stripper Column Vent										
Division WGS Recirculation Flow	15000 kg/h									
Division WGS Inlet Flow	125 kg/h					105 kg/h		90 kg/h		70 kg/h

Date 2/27/2019

Time	800	900	1000	1100	1200	1300	1400	1500	1600	
Stack Testing		Run 3				Run 4				
HFPO										
VEN Product	PPVE									
VEN Precursor										
VEN Condensation (HFPO)										
VEN ABR										
VEN Refining										
Stripper Column Vent										
Division WGS Recirculation Flow	15000 kg/h									
Division WGS Inlet Flow	75 kg/h			98 kg/h		140 kg/h		125 kg/h		145 kg/h

Date **2/28/2019**

Time	800	900	1000	1100	1200	1300	1400	1500	1600
Stack Testing	Run 5						Run 6		
HFPO									
VEN Product	PPVE								
VEN Precursor									
VEN Condensation (HFPO)									
VEN ABR							Burnout		
VEN Refining									
Stripper Column Vent									
Division WGS Recirculation Flow	15000 kg/h								
Division WGS Inlet Flow	125 kg/h						100 kg/h		

Date **3/1/2019**

Time	800	900	1000	1100	1200	1300	1400	1500	1600
Stack Testing	Run 7				Run 8				
HFPO									
VEN Product	PPVE								
VEN Precursor									
VEN Condensation (HFPO)									
VEN ABR						Burnout			
VEN Refining									
Stripper Column Vent									
Division WGS Recirculation Flow	15000 kg/h								
Division WGS Inlet Flow	120 kg/h					80 kg/h			60 kg/h

APPENDIX B
RAW AND REDUCED TEST DATA

CHEMOURS - FAYETTEVILLE, NC
INPUTS FOR HFPO DIMER ACID CALCULATIONS
CARBON BED INLET

Test Data

	1	2	3
Run number			
Location	CBed Inlet	CBed Inlet	CBed Inlet
Date	2/26/2019	2/26/2019	2/27/2019
Time period	0927-1143	1335-1530	0840-1035
Operator	RS/JL	RS/JL	RS/JL

Inputs For Calcs.

Sq. rt. delta P	0.72952	0.71386	0.71111
Delta H	1.3292	1.3125	1.2667
Stack temp. (deg.F)	69.4	77.7	70.8
Meter temp. (deg.F)	58.7	74.0	60.2
Sample volume (act.)	52.809	56.260	55.079
Barometric press. (in.Hg)	30.29	30.20	30.22
Volume H ₂ O imp. (ml)	13.5	6.4	10.6
Weight change sil. gel (g)	11.2	14.0	17.9
% CO ₂	0.0	0.0	0.0
% O ₂	20.9	20.9	20.9
% N ₂	79.1	79.1	79.1
Area of stack (sq.ft.)	6.305	6.305	6.305
Sample time (min.)	96.0	96.0	96.0
Static pressure (in.H ₂ O)	-6.50	-6.50	-6.50
Nozzle dia. (in.)	0.215	0.215	0.215
Meter box cal.	1.0027	1.0027	1.0027
Cp of pitot tube	0.84	0.84	0.84
Traverse points	24	24	24

CHEMOURS - FAYETTEVILLE, NC
INPUTS FOR HFPO DIMER ACID CALCULATIONS
CARBON BED INLET

Test Data

	4	5	6
Run number			
Location	CBed Inlet	CBed Inlet	CBed Inlet
Date	2/27/2019	2/28/2019	2/28/2019
Time period	1231-1426	0823-1018	1429-1627
Operator	RS/JL/JD	RS/JL	RS/JL

Inputs For Calcs.

Sq. rt. delta P	0.71144	0.70689	0.71440
Delta H	1.2792	1.2542	1.2750
Stack temp. (deg.F)	74.0	69.5	79.1
Meter temp. (deg.F)	68.8	59.5	70.9
Sample volume (act.)	58.052	57.133	58.141
Barometric press. (in.Hg)	30.17	29.95	29.95
Volume H ₂ O imp. (ml)	14.0	12.0	13.8
Weight change sil. gel (g)	17.8	16.5	19.3
% CO ₂	0.0	0.0	0.0
% O ₂	20.9	20.9	20.9
% N ₂	79.1	79.1	79.1
Area of stack (sq.ft.)	6.305	6.305	6.305
Sample time (min.)	96.0	96.0	96.0
Static pressure (in.H ₂ O)	-6.50	-6.50	-6.50
Nozzle dia. (in.)	0.215	0.215	0.215
Meter box cal.	1.0027	1.0027	1.0027
Cp of pitot tube	0.84	0.84	0.84
Traverse points	24	24	24

CHEMOURS - FAYETTEVILLE, NC
INPUTS FOR HFPO DIMER ACID CALCULATIONS
CARBON BED INLET

Test Data

Run number	7	8
Location	CBed Inlet	CBed Inlet
Date	3/1/2019	3/1/2019
Time period	0813-1008	1237-1433
Operator	RS/JL	RS/JL

Inputs For Calcs.

Sq. rt. delta P	0.71577	0.70463
Delta H	1.2917	1.2583
Stack temp. (deg.F)	64.0	71.7
Meter temp. (deg.F)	53.7	61.9
Sample volume (act.)	57.793	57.189
Barometric press. (in.Hg)	30.09	30.08
Volume H ₂ O imp. (ml)	10.7	11.6
Weight change sil. gel (g)	17.4	17.9
% CO ₂	0.0	0.0
% O ₂	20.9	20.9
% N ₂	79.1	79.1
Area of stack (sq.ft.)	6.305	6.305
Sample time (min.)	96.0	96.0
Static pressure (in.H ₂ O)	-6.50	-6.50
Nozzle dia. (in.)	0.215	0.215
Meter box cal.	1.0027	1.0027
Cp of pitot tube	0.84	0.84
Traverse points	24	24

INLET

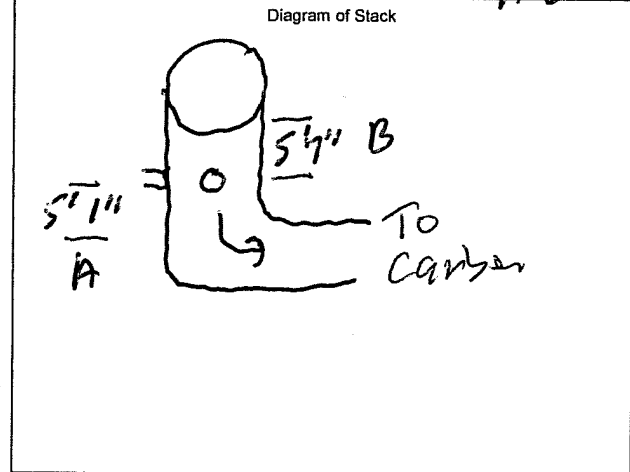
Sample and Velocity Traverse Point Data Sheet - Method 1

Client Chemours Operator AS
 Location/Plant Fayetteville NC Date 6-13-18
 Source VE Port Carbon Inlet W.O. Number _____

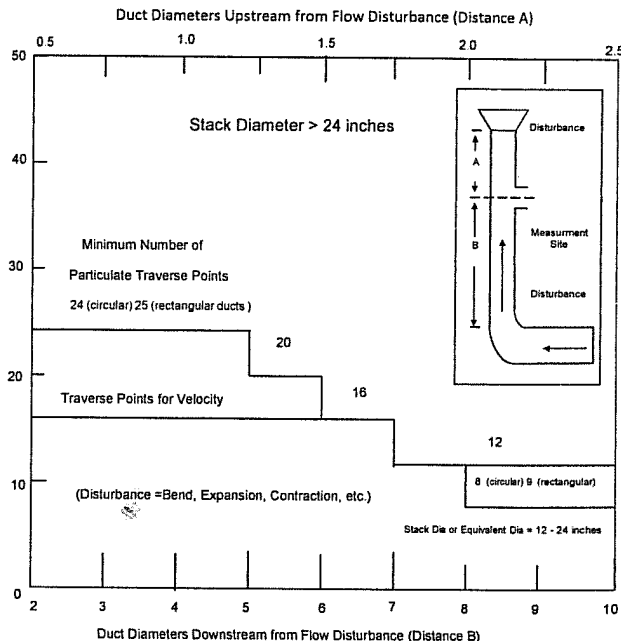
Duct Type	<input checked="" type="checkbox"/> Circular	<input type="checkbox"/> Rectangular Duct	Indicate appropriate type
Traverse Type	<input checked="" type="checkbox"/> Particulate Traverse	<input type="checkbox"/> Velocity Traverse	<input type="checkbox"/> CEM Traverse

Distance from far wall to outside of port (in.) = C	54 9/4"
Port Depth (in.) = D	20 5/8"
Depth of Duct, diameter (in.) = C-D	34"
Area of Duct (ft ²)	6.305
Total Traverse Points	24
Total Traverse Points per Port	12
Port Diameter (in.) ---(Flange-Threaded-Hole)	
Monorail Length	
Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	X
Total Ports (rectangular duct only)	
Equivalent Diameter = (2*L*W)/(L+W)	

Flow Disturbances	
Upstream - A (ft)	5' 7"
Downstream - B (ft)	5' 1"
Upstream - A (duct diameters)	1.97
Downstream - B (duct diameters)	1.80



Traverse Point Locations			
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	10.21	3 1/4	45 7/8
2	10.67	2 1/4	22 7/8
3	11.30	4	24 3/8
4	11.77	6	26 7/8
5	12.50	8 1/2	29 7/8
6	13.26	12 7/8	32 3/4
7	14.14	21 7/8	42 1/2
8	15.00	25 1/2	46 7/8
9	15.87	28	48 3/8
10	16.82	30	50 3/8
11	17.77	31 3/4	52 3/8
12	18.79	33 1/4	53 1/8



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

Traverse Point Location Percent of Stack -Circular													
		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
Traverse Point Location	1		14.6		6.7		4.4		3.2		2.6		2.1
	2		85.4		25		14.6		10.5		8.2		6.7
	3			75		29.6		19.4		14.6		11.8	
	4				93.3		70.4		32.3		22.6		17.7
	5					85.3		67.7		34.2		25	
	6						95.6		80.6		65.8		35.6
	7							89.5		77.4		64.4	
	8								96.8		85.4		75
	9									91.8		82.3	
	10										97.4		88.2
	11											93.3	
	12												97.9

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



ISOKINETIC FIELD DATA SHEET

Client	Chemours
W.O.#	15418
Project ID	Chemours
Mode/Source ID	Carbon Bed
Samp. Loc. ID	IN
Run No. ID	1
Test Method ID	M0010
Date ID	25FEB2019
Source/Location	VE North Inlet
Sample Date	2-26-2019 ✓
Baro. Press (in Hg)	30.29 ✓
Operator	RS / JL ✓

Stack Conditions

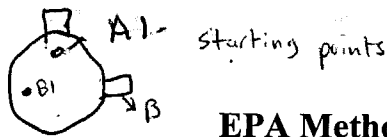
Assumed	Actual
2	
	0 ✓
	20.4 ✓
50	
50	
-6.5	-6.5 ✓
55	

EPA Method 0010 - HFPO Dimer Acid

Meter Box ID	28
Meter Box Y	1.0627 ✓
Meter Box Del H	2.0695
Probe ID / Length	P694 / P710
Probe Material	Boro
Pitot / Thermocouple ID	P694 / P710
Pitot Coefficient	0.84 ✓
Nozzle ID	215
Nozzle Measurements	.215 215 .215
Avg Nozzle Dia (in)	.215 ✓
Area of Stack (ft ²)	6.305 ✓
Sample Time	96 ✓
Total Traverse Pts	24 ✓

Page 1 of 1

K Factor	2.5	
Initial	Mid-Point	Final
0.007	0.004	0.012
15"	6"	17"
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pre-Test Set	Post-Test Set	
Pass / Fail	Pass / Fail	
yes / no	yes / no	



CB Inlet

2.5

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (oF)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (F)	COMMENTS
		0	9:27 ✓			935.965								
A	1	4		.40	1.0	338.0	68	52	120	120	46	4	47	
	2	8		.45	1.1	340.1	68	52	120	121	45	4	48	
	3	12		.46	1.1	342.2	68	53	119	122	43	4	48	
	4	16		.44	1.1	344.3	68	53	121	121	44	4.5	48	
	5	20		.49	1.2	346.6	68	54	120	120	44	4.5	48	
	6	24		.47	1.2	349.0	68	54	120	121	45	4.5	49	
	7	28		.54	1.3	351.1	67	55	120	120	45	4.5	49	
	8	32		.60	1.5	353.5	67	56	120	119	45	5	49	
	9	36		.67	1.7	356.1	67	56	120	121	45	5.5	50	
	10	40		.67	1.7	358.9	67	57	120	120	46	5.5	50	
	11	44		.65	1.6	361.4	67	58	120	119	47	5.5	51	
	12	48	10:15	.66	1.6	363.928	68	59	120	119	47	5.5	51	
B	1	4	10:55	.54	1.3	366.4	69	61	121	121	53	5	54	
	2	8		.51	1.3	368.8	70	61	120	122	51	5	54	
	3	12		.50	1.3	371.0	70	61	121	122	50	5	55	
	4	16		.48	1.2	373.3	71	61	119	120	49	5	55	
	5	20		.46	1.1	375.4	71	61	120	121	50	4.5	55	
	6	24		.49	1.2	377.6	71	62	120	120	50	4.5	55	
	7	28		.59	1.5	380.0	72	62	121	121	51	5	55	
	8	32		.60	1.5	382.5	72	63	120	119	51	5	56	
	9	36		.60	1.5	385.1	72	63	120	120	52	5	57	
	10	40		.57	1.4	387.5	72	64	119	119	52	5	57	
	11	44		.53	1.3	389.8	72	65	120	120	53	5	57	
	12	48	11:43 ✓	.47	1.2	392.010	72	66	120	119	53	4.5	57	



Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max
.5350 ✓	1.3291 ✓	55.809 ✓	69.375	58.7083	119/120	119/122	53	5.5	47/57
Avg Sqrt Delta P	Avg Sqrt Del H	Comments:							
.7295 ✓	1.1497 ✓	DGM start = 335.990 ✓							

EPA Method 0010 from EPA SW-846

✓
ama

Both probes 694/710
recovered.

DGM After mid point leak = 364.004
* 364.139 - 363.928 = .211 *
P694 used on point A = 100 ions for B used 710 for B

27.930
A.
99.1 %
9.0 %
1.520
57.8
28.000
27.006
27.871
B's

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

Client	Chemours
W.O.#	15418
Project ID	Chemours % Moisture
Mode/Source ID	Carbon Bed Impinger Vol (ml)
Samp. Loc. ID	IN Silica gel (g)
Run No. ID	2 CO2, % by Vol
Test Method ID	M0010 O2, % by Vol
Date ID	2625FEB2019 Temperature (°F)
Source/Location	VE North Inlet Meter Temp (°F)
Sample Date	2-26-2019 ✓ Static Press (In H2O)
Baro. Press (in Hg)	30.20 ✓ Ambient Temp (°F)
Operator	RS/JL ✓

Stack Conditions

Assumed	Actual
2	
0	✓
20.8	✓
70	
75	
-6.5	-6.5 ✓
	65°

Meter Box ID	28
Meter Box Y	1.0027 ✓
Meter Box Del H	2.0895
Probe ID / Length	P710
Probe Material	Boro
Pitot / Thermocouple ID	P710
Pitot Coefficient	0.84 ✓
Nozzle ID	.215
Nozzle Measurements	.215 .215 .215
Avg Nozzle Dia (in)	.215 ✓
Area of Stack (ft²)	6.305 ✓
Sample Time	96 ✓
Total Traverse Pts	24 ✓

Sample Train (ft³)	
Leak Check @ (in Hg)	15" 7" 7"
Pitot leak check good	yes / no yes / no yes / no
Pitot inspection good	yes / no yes / no yes / no
Method 3 System good	yes / no yes / no yes / no
Temp Check	Pre-Test Set Post-Test Set
Meter Box Temp	
Reference Temp	
Pass/Fail (+/- 2°)	Pass / Fail Pass / Fail
Temp Change Response	yes / no yes / no

K Factor 2.57		
Initial	Mid-Point	Final
0.009	0.005	0.004
15"	7"	7"
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pass / Fail	Pass / Fail	Pass / Fail
yes / no	yes / no	yes / no

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (In H2O)	ORIFICE PRESSURE Delta H (In H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (In Hg)	XAD EXIT TEMP (°F)	COMMENTS
	0		13:35 ✓			392.340								
A	1	4		.44	1.1	394.5	80	71	121	120	61	4	62	
	2	8		.45	1.1	396.7	80	71	120	120	56	4	62	
	3	12		.47	1.2	398.9	79	71	119	121	52	4	61	
	4	16		.47	1.2	401.2	78	71	120	120	50	4	55	
	5	20		.47	1.2	403.5	77	71	120	119	49	4	54	
	6	24		.48	1.2	405.6	77	72	120	121	49	4	54	
	7	28		.51	1.3	408.1	77	72	120	120	49	4.5	54	
	8	32		.53	1.4	410.4	77	73	120	120	49	4.5	54	28.195
	9	36		.59	1.5	412.9	76	73	119	120	49	4.5	54	
	10	40		.60	1.5	415.3	76	73	120	121	49	4.5	54	
	11	44		.62	1.6	418.0	76	74	120	120	49	5	54	
	12	48	14:23	.63	1.6	420.535	77	74	120	120	49	5	53	
B	1	4	14:42	.50	1.3	423.0	77	75	120	121	53	4	55	
	2	8		.49	1.3	425.4	77	75	119	120	53	4	55	99.52
	3	12		.48	1.2	427.5	78	75	121	121	50	4	54	
	4	16		.46	1.2	429.9	78	75	121	120	50	4	53	1.65
	5	20		.44	1.1	432.0	78	75	119	120	51	4	53	14800
	6	24		.47	1.2	434.3	78	76	120	121	51	4	54	
	7	28		.52	1.5	436.8	78	76	120	119	52	4.5	54	
	8	32		.57	1.5	439.3	78	76	120	122	52	4.5	55	56.47
	9	36		.57	1.5	441.8	78	76	119	120	51	4.5	54	✓
	10	40		.53	1.4	444.3	78	76	121	119	51	4.5	55	
	11	44		.47	1.2	446.5	78	77	120	121	52	4	55	
	12	48	15:30 ✓	.45	1.2	448.729	78	77	119	120	52	4	55	28.063

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max
.5112 ✓	1.3125 ✓	56.260 ✓	77.7083 ✓	73.958 ✓	119/121	119/122	61	5	53/62
Avg Sqrt Delta P	Avg Sqrt Del H	Comments	Midpoint leak check = 420.535 → 420.624						
.7138 ✓	1.1435 ✓		* = .129 *						

EPA Method 0010 from EPA SW-846

Port B 3200

.71386

77.67

amnd

ISOKINETIC FIELD DATA SHEET

Client: Chemours
 W.O.#: 15418
 Project ID: Chemours
 Mode/Source ID: Carbon Bed
 Samp. Loc. ID: IN
 Run No. ID: 3
 Test Method ID: M0010
 Date ID: 27 FEB 2019
 Source/Location: VE North Inlet
 Sample Date: 2-27-2019
 Baro. Press (in Hg): 30.22
 Operator: RS / JL

% Moisture
 Impinger Vol (ml)
 Silica gel (g)
 CO₂, % by Vol
 O₂, % by Vol
 Temperature (°F)
 Meter Temp (°F)
 Static Press (In H₂O)
 Ambient Temp (°F)

Stack Conditions

Assumed	Actual
2	
0	✓
20.9	✓
70	
60	
-6.5	-6.5 ✓
51°	

EPA Method 0010 - HFPO Dimer Acid

Meter Box ID: 28
 Meter Box Y: 1.0027
 Meter Box Del H: 2.0895
 Probe ID / Length: P710
 Probe Material: Boro
 Pitot / Thermocouple ID: P710
 Pitot Coefficient: 0.84 ✓
 Nozzle ID: .215
 Nozzle Measurements: .215 | .215 | .215
 Avg Nozzle Dia (in): .215 ✓
 Area of Stack (ft²): 6.305 ✓
 Sample Time: 96 ✓
 Total Traverse Pts: 24 ✓

Sample Train (ft³)
 Leak Check @ (in Hg)
 Pitot leak check good
 Pitot Inspection good
 Method 3 System good
 Temp Check
 Meter Box Temp
 Reference Temp
 Pass/Fail (+/- 2°)
 Temp Change Response

Page 1 of 1

K Factor: 2.5

Initial	Mid-Point	Final
0.009	0.008	0.009
15"	7"	7"
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pre-Test Set	Post-Test Set	
54	68	
54.5	68.2	
Pass / Fail	Pass / Fail	
yes / no	yes / no	

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H ₂ O)	ORIFICE PRESSURE Delta H (in H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
		0	8:40 ✓			449.414								
A	1	4		.42	1.0	451.4	68	54	119	118	52	4.5	42	
	2	8		.42	1.0	453.4	68	54	119	119	52	4.5	42	
	3	12		.47	1.2	455.7	68	54	120	121	48	4.5	42	
	4	16		.49	1.2	457.9	68	54	120	120	47	4.5	42	
	5	20		.47	1.2	460.0	68	55	120	121	48	4.5	41	
	6	24		.47	1.2	462.3	69	56	120	121	47	4.5	42	27.382
	7	28		.52	1.3	464.6	69	56	121	119	48	5	43	
	8	32		.48	1.2	466.9	69	57	120	119	48	5	44	
	9	36		.58	1.4	469.3	69	58	121	121	49	5	45	
	10	40		.62	1.5	471.8	69	58	120	120	49	5.5	45	
	11	44		.62	1.5	474.3	69	59	119	119	50	5.5	46	
	12	48	9:28	.63	1.6	476.796	69	59	120	121	51	5.5	46	
B	1	4	9:47	.48	1.2	479.3	71	61	120	119	54	5	48	
	2	8		.47	1.2	481.6	72	62	120	120	54	5	50	
	3	12		.47	1.2	483.8	72	62	120	121	53	5	50	
	4	16		.45	1.1	486.0	73	63	121	119	54	5	50	
	5	20		.45	1.1	488.1	73	63	120	120	56	5	51	27.01
	6	24		.46	1.2	490.4	74	64	120	121	58	5	51	
	7	28		.56	1.4	492.8	74	64	121	119	59	5.5	52	27.697
	8	32		.57	1.4	495.2	74	65	120	120	59	5.5	44	
	9	36		.56	1.4	497.5	74	66	119	120	59	5.5	42	
	10	40		.54	1.4	500.0	73	66	121	119	58	5.5	41	
	11	44		.52	1.3	502.4	73	67	120	120	56	5.5	40	
	12	48	10:35 ✓	.46	1.2	504.766	73	67	119	120	55	5.5	41	



Avg Delta P ✓ .5075	Avg Delta H ✓ 1.2666	Total Volume ✓ 55.079	Avg Ts ✓ 70.791	Avg Tm ✓ 60.1666	Min/Max 119/121	Min/Max 118/121	Max 59	Max Vac 5.5	Min/Max 41/52
Avg Sqrt Delta P .71106	Avg Sqrt Del H 1.1234	Comments: ✓ Midpoint leak check							

D_{SM} = 476.796 → 477.069
 39* .273 *

EPA Method 0010 from EPA SW-846

100.4 I →
 2.3 % M
 14740
 56.77 V

CB ~~Outlet~~ Inlet

SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client Chemours W.O. # 15418
 Location/Plant Fayetteville, NC Source & Location VE North Inlet

Run No. 1 FR 320 230 Sample Date 2/26/19 Recovery Date 2/26/19
 Sample I.D. Chemours - Carbon Bed - IN - 1 - M0010 - Analyst JM2/PAS Filter Number NA

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents	Empty	HPLC H2O	HPLC H2O						Silica Gel	
Final	2	100	100	0	303.6	300.2			311.2	
Initial	0	100	100	0	301	300.2			300	
Gain	2	0	0	0	292.6	0		13.2	11.2	24.7

Impinger Color all clear Labeled? 11.5 13.5
 Silica Gel Condition ble 90% Sealed?

Run No. 2 FR 320 230 B0 Sample Date 2/26/19 Recovery Date 2/26/19
 Sample I.D. Chemours - Carbon Bed - IN - 2 - M0010 - Analyst JM2/PAS Filter Number NA

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents	Empty	HPLC H2O	HPLC H2O		#1	#2			Silica Gel	
Final	4	100	100		309.8	319.9			314	
Initial	0	100	100		307.4	319.9			300	
Gain	4	0	0		2.4	0		6.4	14	20.4


Impinger Color all clear Labeled?
 Silica Gel Condition ble 90% Sealed?

Run No. 3 FR 230 Sample Date 2/27/19 Recovery Date 2/27/19
 Sample I.D. Chemours - Carbon Bed - IN - 3 - M0010 - Analyst JM2/PAS Filter Number NA

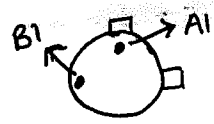
	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents	Empty	HPLC H2O	HPLC H2O						Silica Gel	
Final	6	100	100		297.1	306.1			317.9	
Initial	0	100	100		292.5	306.7			300	
Gain	6	0	0		4.6	0		10.6	17.9	28.5

Impinger Color all clear Labeled?
 Silica Gel Condition ble 90% Sealed?

Check COC for Sample IDs of Media Blanks

	Balance Cal	Actual	
2/26/19	weight 500.	499.8	<input checked="" type="checkbox"/>
2/27/19	500.	499.6	<input checked="" type="checkbox"/>

ISOKINETIC FIELD DATA SHEET



CB Inlet

EPA Method 0010 - HFPO Dimer Acid

Client	Chemours	Stack Conditions
W.O.#	15418	Assumed
Project ID	Chemours	Actual
Mode/Source ID	Carbon Bed	% Moisture
Samp. Loc. ID	IN	Impinger Vol (ml)
Run No. ID	4	Silica gel (g)
Test Method ID	M0010	CO ₂ , % by Vol
Date ID	2728FEB2019	CO ₂ , % by Vol
Source/Location	VE North Inlet	O ₂ , % by Vol
Sample Date	2-27-2019	Temperature (°F)
Baro. Press (in Hg)	30.17	Meter Temp (°F)
Operator	RS/JL/JD	Static Press (in H ₂ O)
		Ambient Temp (°F)

Assumed	Actual
2	
0	✓
20.9	✓
70	
70	
-6.5	-6.5 ✓
	62°

Meter Box ID	28
Meter Box Y	1.0027 ✓
Meter Box Del H	2.0895
Probe ID / Length	P710
Probe Material	Boro
Pitot / Thermocouple ID	P710
Pitot Coefficient	0.84 ✓
Nozzle ID	.215
Nozzle Measurements	.215 .215 .215
Avg Nozzle Dia (in)	.215 ✓
Area of Stack (ft ²)	6.305 ✓
Sample Time	96 ✓
Total Traverse Pts	24 ✓

Sample Train (ft ³)	
Leak Check @ (in Hg)	
Pitot leak check good	
Pitot Inspection good	
Method 3 System good	N/A
Temp Check	
Meter Box Temp	
Reference Temp	
Pass/Fail (+/- 2°)	
Temp Change Response	

K Factor	2.54	
Initial	Mid-Point	Final
0.014	0.004	0.005
15"	6"	5"
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pre-Test Set	Post-Test Set	
62	72	
61.1	71.5	
Pass / Fail	Pass / Fail	
yes / no	yes / no	

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H ₂ O)	ORIFICE PRESSURE Delta H (in H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
		0	12:31 ✓			506.584								
A	1	4		.43	1.1	508.9	70	65	119	121	58	4	56	
	2	8		.45	1.1	511.1	72	65	119	120	57	4	42	
	3	12		.47	1.2	513.4	72	65	120	121	54	4	42	
	4	16		.45	1.1	515.7	73	65	120	120	53	4	40	
	5	20		.47	1.2	518.1	73	66	119	121	53	4	40	
	6	24		.48	1.2	520.4	74	66	120	121	53	4	40	
	7	28		.46	1.2	522.7	74	67	121	120	53	4	42	
	8	32		.54	1.4	521.4	74	67	121	120	53	4.5	42	
	9	36		.55	1.4	527.7	74	68	120	121	53	4.5	43	
	10	40		.61	1.5	530.4	74	68	120	120	53	4.5	44	
	11	44		.65	1.6	533.1	74	69	120	119	54	4.5	43	
	12	48	13:19	.65	1.6	535.760	74	69	121	119	54	4.5	42	29.176
B	1	4	13:38	.48	1.2	538.2	73	70	119	120	54	4	42	
	2	8		.47	1.2	540.6	75	70	120	119	54	4	42	
	3	12		.46	1.2	543.0	75	70	120	120	52	4	38	
	4	16		.44	1.1	545.2	75	70	120	120	50	4	37	
	5	20		.42	1.1	547.5	75	70	121	119	50	4	37	
	6	24		.45	1.1	549.8	75	70	119	120	50	4	38	
	7	28		.57	1.4	552.2	75	70	120	120	50	5	38	
	8	32		.57	1.4	554.8	75	71	121	121	50	5	39	
	9	36		.58	1.5	557.4	75	71	120	119	50	5	39	
	10	40		.56	1.4	559.9	75	71	119	120	50	5	39	
	11	44		.53	1.3	562.4	75	71	120	121	51	5	40	
	12	48	14:26 ✓	.46	1.2	564.750	75	72	121	120	52	5	40	104.4

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max
.5083 ✓	1.2791 ✓	58.052 ✓	74.0 ✓	68.5833 ✓	119/121	119/121	58	5	37/56
Avg Sqrt Delta P	Avg Sqrt Del H	Comments:	Mid point leak check						
.711436 ✓	1.1288 ✓		DGM = 535.760 → 535.874						

* ±1.14 *

✓
AMM

ISOKINETIC FIELD DATA SHEET



CB Inlet

EPA Method 0010 - HFPO Dimer Acid

Client	Chemours
W.O.#	15418
Project ID	Chemours
Mode/Source ID	Carbon Bed
Samp. Loc. ID	IN
Run No. ID	5
Test Method ID	M0010
Date ID	28 FEB 2019
Source/Location	VE North Inlet
Sample Date	2-28-2019
Baro. Press (in Hg)	29.95
Operator	RS / JL

Stack Conditions	
Assumed	Actual
2	
0	✓
20.9	✓
60	
60	
-6.5	-6.5 ✓
53°	

Meter Box ID	28
Meter Box Y	1.0027 ✓
Meter Box Del H	2.0895
Probe ID / Length	P710
Probe Material	Boro
Pitot / Thermocouple ID	P710
Pitot Coefficient	0.84 ✓
Pitot Inspection good	
Method 3 System good	N/A
Temp Check	
Meter Box Temp	215
Reference Temp	215
Pass/Fail (+/- 2°)	215 ✓
Temp Change Response	24 ✓

K Factor	2.5		
	Initial	Mid-Point	Final
	0.015	0.013	0.014
Leak Check @ (in Hg)	15"	7"	6"
Pitot leak check good	yes / no	yes / no	yes / no
Pitot Inspection good	yes / no	yes / no	yes / no
Method 3 System good	yes / no	yes / no	yes / no
	Pre-Test Set		Post-Test Set
Meter Box Temp	54	65	
Reference Temp	55.1	65.7	
Pass/Fail (+/- 2°)	Pass / Fail	Pass / Fail	
Temp Change Response	yes / no	yes / no	

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
		0	8:23 ✓			565.160								
A	1	4		.42	1.1	567.4	67	54	120	120	54	4	39	
	2	8		.45	1.1	569.6	68	54	120	121	52	4	37	
	3	12		.45	1.1	571.9	68	54	121	120	49	4	38	
	4	16		.47	1.2	574.2	69	55	120	119	48	4.5	36	
	5	20		.47	1.2	576.6	69	55	119	119	47	4.5	35	
	6	24		.48	1.2	578.8	69	56	120	121	47	4.5	35	
	7	28		.50	1.2	581.1	69	56	121	120	47	4.5	35	28.62
	8	32		.52	1.3	583.7	69	57	120	121	47	4.5	35	
	9	36		.56	1.4	586.0	69	57	120	120	46	5	35	
	10	40		.57	1.4	588.6	69	58	119	120	46	5	36	
	11	44		.61	1.5	591.2	69	59	121	120	46	5	35	
	12	48	9:11	.61	1.5	593.780	69	59	121	120	47	5	36	
B	1	4	9:30	.48	1.2	596.2	69	61	119	120	52	4.5	39	
	2	8		.47	1.2	598.6	70	61	119	119	48	4.5	37	
	3	12		.45	1.1	600.8	70	62	120	121	47	4.5	37	
	4	16		.44	1.1	603.1	70	62	120	120	46	4.5	37	28.513
	5	20		.43	1.1	605.3	70	62	119	120	48	4.5	37	
	6	24		.44	1.1	607.6	70	62	120	121	47	4.5	37	
	7	28		.55	1.4	610.1	70	63	121	119	48	5	40	
	8	32		.56	1.4	612.5	71	63	120	121	48	5	38	104.2 I
	9	36		.57	1.4	615.1	71	64	119	121	48	5	39	
	10	40		.54	1.4	617.6	71	64	120	120	49	5	38	146.10
	11	44		.52	1.3	620.1	71	64	120	121	50	5	39	
	12	48	10:18 ✓	.47	1.2	622.429	71	65	120	119	50	5	40	2.75
				Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max	
				.5012 ✓	1.2541 ✓	57.133 ✓	69.5 ✓	59.4583	119/121	119/121	54	5	35/40	58.4



✓ MMA

Avg Sqrt Delta P	Avg Sqrt Del H
.706888	1.1182

Comments: ✓ midpoint leak check
 DGM = 593.780 → 593.916
 * .4236 *

ISOKINETIC FIELD DATA SHEET



EPA Method 0010 - HFPO Dimer Acid

Client	Chemours
W.O.#	15418
Project ID	Chemours
Mode/Source ID	Carbon Bed
Samp. Loc. ID	IN
Run No. ID	6
Test Method ID	M0010
Date ID	28 FEB 2019
Source/Location	VE North Inlet
Sample Date	2-28-2019 ✓
Baro. Press (in Hg)	29.95 ✓
Operator	RS / JL ✓

Stack Conditions	
Assumed	Actual
2	
0	✓
20.4	✓
3	
75	
-6.5	-6.5 ✓
	68°

Meter Box ID	28
Meter Box Y	1.027 ✓
Meter Box Del H	2.0895
Probe ID / Length	P710
Probe Material	Bofo
Pitot / Thermocouple ID	P710
Pitot Coefficient	0.84 ✓
Pitot Inspect good	
Method 3 System good	N/A yes / no
Temp Check	
Meter Box Temp	
Reference Temp	6.305 ✓
Pass/Fail (+/- 2°)	96 ✓
Temp Change Response	24 ✓

K Factor 2.5		
Initial	Mid-Point	Final
0.010	0.007	0.016
15"	6"	7"
Leak Check @ (in Hg)		
Pitot leak check good	yes / no	yes / no
Pitot Inspection good	yes / no	yes / no
Method 3 System good	yes / no	yes / no
Pre-Test Set		Post-Test Set
Meter Box Temp	69	71
Reference Temp	68.8	71.4
Pass/Fail	Pass / Fail	Pass / Fail
Temp Change Response	yes / no	yes / no

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
A	1	4	14:29 ✓	.43	1.1	626.7	80	70	120	121	60	5	49	
	2	8		.45	1.1	629.0	80	70	120	120	60	5	49	
	3	12		.47	1.2	631.3	80	70	121	119	58	5	44	
	4	16		.47	1.2	633.7	80	70	120	120	57	5	43	
	5	20		.48	1.2	636.1	79	70	119	121	58	5	42	
	6	24		.49	1.2	638.4	79	71	121	119	56	5	43	
	7	28		.52	1.3	640.9	79	71	121	120	55	5.5	44	
	8	32		.53	1.3	643.3	79	71	120	121	54	5.5	44	
	9	36		.55	1.4	645.9	79	71	119	119	54	6	44	
	10	40		.60	1.5	648.5	79	71	120	121	54	6	44	
	11	44		.63	1.6	651.1	79	72	121	119	54	6	44	
	12	48	15:17	.63	1.6	653.864	79	72	120	120	54	6	44	
B	1	4	15:39	.50	1.2	656.3	78	71	121	119	60	6	45	
	2	8		.47	1.2	658.7	79	71	121	119	60	6	45	
	3	12		.45	1.1	660.9	79	71	119	120	58	5.5	42	
	4	16		.44	1.1	663.2	79	71	119	119	58	5	39	
	5	20		.44	1.1	665.4	79	71	119	120	58	5	43	
	6	24		.46	1.1	667.7	79	71	121	121	58	5	41	
	7	28		.57	1.4	670.3	79	71	120	119	57	6	40	
	8	32		.58	1.4	672.7	79	71	119	119	56	6	41	
	9	36		.57	1.4	675.3	79	71	120	120	56	6	40	
	10	40		.56	1.4	677.8	79	71	120	119	57	6	40	
	11	44		.52	1.3	680.3	79	71	120	120	57	6	41	
	12	48	16:27 ✓	.48	1.2	682.635	79	71	120	120	57	6	41	

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max
.5120	1.275	58.141 ✓	79.125 ✓	70.875 ✓	119/121	119/121	60	7	39/49
Avg Sqrt Delta P	Avg Sqrt Del H	Comments: midpoint leak check							
.714395	1.1271	DGM = 653.864 → 653.985							

WESTON
V MMA

VV

VV

* .121 *

14600
58.19

CB Inlet

SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client Chemours W.O. # 15418
 Location/Plant Fayetteville, NC Source & Location VE North Inlet

Run No. 4 Sample Date 2/27/19 Recovery Date 2/27/19
 Sample I.D. Chemours - Carbon Bed - IN - 4 - M0010 - Analyst JM/MS Filter Number NA

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents	Empty	HPLC H2O	HPLC H2O						Silica Gel	
Final	8	100	100	0		305.7	306.4		317.8	
Initial	0	100	100	0		302.7	306.8		300	
Gain	8	0	0	0		6	0	14	17.8	31.8

Impinger Color all clear Labeled?
 Silica Gel Condition ble 90% Sealed?

Run No. 5 Sample Date 2/28/19 Recovery Date 2/28/19
 Sample I.D. Chemours - Carbon Bed - IN - 5 - M0010 - Analyst JM/MS Filter Number NA

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents	Empty	HPLC H2O	HPLC H2O						Silica Gel	
Final	5	100	100	0		299.7	306.7		316.5	
Initial	0	100	100	0		292.7	307.4		300	
Gain	5	0	0	0		7	0	17	16.5	28.5

Impinger Color all clear Labeled?
 Silica Gel Condition ble 95% Sealed?

Run No. 6 FR 150 B0 Sample Date 2/28/19 Recovery Date 2/28/19
 Sample I.D. Chemours - Carbon Bed - IN - 6 - M0010 - Analyst JM/MS Filter Number NA

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents	Empty	HPLC H2O	HPLC H2O						Silica Gel	
Final	8	100	100	0		312.5	303.8		319.3	
Initial	0	100	100	0		306.7	303.9		300	
Gain	8	0	0	0		5.8	0	13.8	19.3	33.1

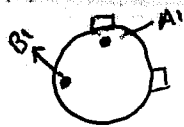
Impinger Color all clear Labeled?
 Silica Gel Condition ble 90% Sealed?

Check COC for Sample IDs of Media Blanks

Balance
 2/28/19 weight 500.0 result 499.8



✓



CB Inlet

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

Client	Chemours	Stack Conditions
W.O.#	15418	Assumed
Project ID	Chemours	% Moisture
Mode/Source ID	Carbon Bed	Impinger Vol (ml)
Samp. Loc. ID	IN	Silica gel (g)
Run No. ID	7	CO2, % by Vol
Test Method ID	M0010	O2, % by Vol
Date ID	25FEB2019	Temperature (°F)
Source/Location	VE North Inlet	Meter Temp (°F)
Sample Date	3-1-2019	Static Press (in H ₂ O)
Baro. Press (in Hg)	30.09	Ambient Temp (°F)
Operator	RS / JS	

Assumed	Actual
2	
0	
20.9	
65	
55	
-6.5	-6.5
	47°

Meter Box ID	28
Meter Box Y	1.0027
Meter Box Del H	2.0895
Probe ID / Length	p710
Probe Material	B600
Pitot / Thermocouple ID	p710
Pitot Coefficient	0.84
Nozzle ID	.215
Nozzle Measurements	.215 .215 .215
Avg Nozzle Dia (in)	.215
Area of Stack (ft ²)	6.305
Sample Time	96
Total Traverse Pts	24

Sample Train (ft ³)	
Leak Check @ (in Hg)	
Pitot leak check good	
Pitot Inspection good	
Method 3 System good	N/A
Temp Check	
Meter Box Temp	
Reference Temp	
Pass/Fail (+/- 2°)	
Temp Change Response	

K Factor	2.5	
Initial	Mid-Point	Final
0.016	0.014	0.009
15"	6"	5"
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pre-Test Set	Post-Test Set	
48	52	
48.7	51.4	
Pass / Fail	Pass / Fail	
yes / no	yes / no	

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H ₂ O)	ORIFICE PRESSURE Delta H (in H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (oF)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (F)	COMMENTS
		0	8:13			683.505								
A	1	4		.43	1.1	685.8	61	49	120	120	49	4	40	
	2	8		.45	1.1	688.0	62	50	120	121	48	4	39	
	3	12		.45	1.1	690.2	63	50	120	119	47	4	38	
	4	16		.47	1.2	692.5	63	50	120	121	46	4	38	
	5	20		.47	1.2	694.9	64	51	121	121	46	4	38	
	6	24		.50	1.2	697.2	64	51	119	120	46	4	39	
	7	28		.50	1.2	699.6	64	51	119	120	46	4	38	29.075
	8	32		.53	1.3	702.0	64	52	119	120	45	4	39	
	9	36		.59	1.5	704.6	64	53	121	120	46	4	39	
	10	40		.62	1.6	707.3	64	53	120	120	46	4.5	40	
	11	44		.62	1.6	710.0	64	54	121	120	46	4.5	40	
	12	48	9:01	.62	1.6	712.580	64	54	119	120	48	4.5	41	
B	1	4	9:20	.48	1.2	713.1	63	55	119	120	49	4	44	
	2	8		.47	1.2	717.4	64	55	119	121	49	4	40	
	3	12		.47	1.2	719.7	64	55	119	120	46	4	38	
	4	16		.45	1.1	721.9	65	55	121	120	46	4	38	28.718
	5	20		.45	1.1	724.2	65	55	121	120	46	4	38	
	6	24		.46	1.2	726.6	65	55	119	120	47	4	38	
	7	28		.60	1.5	729.2	65	56	119	120	47	4.5	39	
	8	32		.58	1.5	731.6	65	56	120	121	46	4.5	38	104.9
	9	36		.57	1.4	734.2	65	57	121	120	47	4.5	38	2.2
	10	40		.55	1.4	736.7	65	57	119	120	48	4.5	39	149.10
	11	44		.53	1.3	739.1	65	57	119	119	48	4.5	40	
	12	48	10:08	.48	1.2	741.437	65	57	119	120	48	4.5	40	60.07

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max
.5141	1.2916	57.793	64.04	53.66	119/121	119/121	49	4.5	38/44
Avg Sqrt Delta P	Avg Sqrt Del H	Comments							
.71577	1.1341	midpoint leak check							

PGM = 712.580 → 712.719
.139

✓
MMA

11

ISOKINETIC FIELD DATA SHEET



CBS Inlet

EPA Method 0010 - HFPO Dimer Acid

Client: Chemours
 W.O.#: 15418
 Project ID: Chemours % Moisture
 Mode/Source ID: Carbon Bed Impinger Vol (ml)
 Samp. Loc. ID: IN Silica gel (g)
 Run No. ID: 8 CO2, % by Vol
 Test Method ID: M0010 O2, % by Vol
 Date ID: 25 FEB 2019 Temperature (°F)
 Source/Location: VE North Inlet Meter Temp (°F)
 Sample Date: 3-1-2019 Static Press (in H2O)
 Baro. Press (in Hg): 30.08
 Operator: RS/JL/KA Ambient Temp (°F): 52

Stack Conditions	
Assumed	Actual
2	
0	✓
20.9	✓
-6.5	-6.5 ✓
52	

Meter Box ID: 28
 Meter Box Y: 1.0027 ✓
 Meter Box Del H: 2.0895
 Probe ID / Length: P710
 Probe Material: Boro
 Pitot / Thermocouple ID: P710
 Pitot Coefficient: 0.84 ✓
 Nozzle ID: .215
 Nozzle Measurements: .215 .215 .215
 Avg Nozzle Dia (in): .215 ✓
 Area of Stack (ft²): 6.305 ✓
 Sample Time: 96 ✓
 Total Traverse Pts: 24 ✓

Sample Train (ft³):
 Leak Check @ (in Hg): 15" ✓
 Pitot leak check good: (yes) no ✓
 Pitot inspection good: (yes) no ✓
 Method 3 System good: NA yes / no ✓
Temp Check
 Meter Box Temp: 61
 Reference Temp: 61.2
 Pass/Fail (+/- 2°): Pass / Fail
 Temp Change Response: yes / no

K Factor	Initial	Mid-Point	Final
25	0.019	0.010	0.010
	15"	7"	6"
	(yes) no ✓	(yes) / no ✓	(yes) / no ✓
	(yes) / no ✓	(yes) / no ✓	(yes) / no ✓
	NA yes / no ✓	yes / no ✓	yes / no ✓
	61		67
	61.2		66.6
	Pass / Fail		Pass / Fail
	yes / no		yes / no

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
		0	12:37			741.740								
A	1	4		.41	1.0	744.0	68	57	121	120	56	4.5	52	
	2	8		.41	1.0	745.5	69	57	121	119	55	4.5	45	
	3	12		.43	1.1	748.2	70	55	121	121	55	5	44	
	4	16		.45	1.1	750.4	70	57	120	122	54	5	42	
	5	20		.45	1.1	752.6	71	58	120	120	53	4.5	42	
	6	24		.47	1.2	755.0	71	58	119	121	54	5	43	
	7	28		.50	1.3	757.4	71	59	120	119	53	5	44	
	8	32		.53	1.3	759.9	71	60	120	120	52	5	44	
	9	36		.57	1.4	762.4	71	60	120	121	52	5	44	
	10	40		.63	1.6	765.0	71	61	120	119	52	5	44	
	11	44		.63	1.6	767.7	71	61	120	120	52	5	45	
	12	48	13:25	.63	1.6	770.419	71	62	120	119	53	5	46	
B	1	4	13:45	.46	1.2	772.9	72	64	120	120	57	5	48	
	2	8		.47	1.2	775.2	73	64	120	120	55	5	45	
	3	12		.45	1.1	777.5	73	64	119	119	54	5	44	
	4	16		.45	1.1	779.7	73	64	119	121	54	5	44	
	5	20		.42	1.1	781.9	73	64	121	120	53	5	42	
	6	24		.45	1.1	784.1	73	64	121	119	53	5	44	
	7	28		.55	1.4	787.5	73	65	120	120	53	5	45	
	8	32		.55	1.4	789.2	73	65	121	120	54	5	44	
	9	36		.55	1.4	791.6	73	66	120	120	54	5.5	44	
	10	40		.55	1.4	792.742	73	66	120	119	55	5.5	45	
	11	44		.50	1.3	796.7	73	67	120	120	55	5.5	46	
	12	48	14:33	.46	1.2	799.051	73	67	119	121	55	5.5	46	
				Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max	
				.4987 ✓	1.2583 ✓	57.189 ✓	71.66 ✓	61.875 ✓	119/121	119/121	57	5.5	42/52	
				Avg Sqrt Delta P	Avg Sqrt Del H	Comments:								
				.7046 ✓	1.1189 ✓	Midpoint leak check								



✓ AMMA

DGM = 770.419 → 770.541

* .46 *
* .122 *

CB Inlet

SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client Chemours W.O. # 15418
Location/Plant Fayetteville, NC Source & Location VE North Inlet

Run No. 7 Sample Date 3/1/19 Recovery Date 3/1/19
Sample I.D. Chemours - Carbon Bed - IN - 7 - M0010 - Analyst JDO/MS Filter Number N/A
Impinger table with columns 1-7, Imp.Total, 8, Total. Contents: Empty, HPLC H2O, HPLC H2O. Final: 6, 100, 100, 0, 311.8, 306.4, 317.4. Initial: 0, 100, 100, 0, 307.1, 306.9, 300. Gain: 6, 0, 0, 0, 4.7, 0, 10.7, 17.4, 28.2.
Impinger Color all clear Labeled? [checked] Sealed? [checked]

Run No. 8 Sample Date 3/1/19 Recovery Date 3/1/19
Sample I.D. Chemours - Carbon Bed - IN - 8 - M0010 - Analyst JDO/MS Filter Number N/A
Impinger table with columns 1-7, Imp.Total, 8, Total. Contents: Empty, HPLC H2O, HPLC H2O. Final: 6, 100, 100, 0, 301.2, 299.4, 317.9. Initial: 0, 100, 100, 0, 295.6, 300.2, 300. Gain: 6, 0, 0, 0, 5.6, 0, 11.6, 17.9.
Impinger Color all clear Labeled? [checked] Sealed? [checked]

Run No. Sample Date Recovery Date
Sample I.D. Chemours - Carbon Bed - IN - 0 - M0010 - Analyst Filter Number
Impinger table with columns 1-7, Imp.Total, 8, Total. Contents: Empty, HPLC H2O, HPLC H2O. Final: Initial: 100, 100, 300. Gain:
Impinger Color Labeled? Sealed?

Check COC for Sample IDs of Media Blanks



SAMPLE RECOVERY FIELD DATA

Client Chemours W.O. # Fayetteville NC
 Location/Plant CD In/Out Source & Location VE N Center Bed

Run No. BT Sample Date 3/1/19 Recovery Date 3/1/19
 Sample I.D. _____ Analyst JHO Filter Number N/A

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents									Silica Gel	
Final	0	100	100			299.5	306.1		300	
Initial	0	100	100			299.6	306.1		300	
Gain	0	0	0			0	0	0	0	

Impinger Color all clear Labeled?
 Silica Gel Condition blue 100% Sealed?

Run No. _____ Sample Date _____ Recovery Date _____
 Sample I.D. _____ Analyst _____ Filter Number _____

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents									Silica Gel	
Final										
Initial										
Gain										

Impinger Color _____ Labeled? _____
 Silica Gel Condition _____ Sealed? _____

Run No. _____ Sample Date _____ Recovery Date _____
 Sample I.D. _____ Analyst _____ Filter Number _____

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents									Silica Gel	
Final										
Initial										
Gain										

Impinger Color _____ Labeled? _____
 Silica Gel Condition _____ Sealed? _____

Check COC for Sample IDs of Media Blanks



**CHEMOURS - FAYETTEVILLE, NC
 INPUTS FOR HFPO DIMER ACID CALCULATIONS
 CARBON BED OUTLET**

Test Data

	1	2	3
Run number			
Location	CBed Outlet	CBed Outlet	CBed Outlet
Date	2/26/2019	2/26/2019	2/27/2019
Time period	0927-1143	1335-1530	0840-1035
Operator	KA/AS	KA/AS	KA/AS

Inputs For Calcs.

Sq. rt. delta P	0.72636	0.74086	0.72467
Delta H	1.6079	1.6463	1.6433
Stack temp. (deg.F)	69.5	75.8	78.5
Meter temp. (deg.F)	60.2	79.4	63.3
Sample volume (act.)	54.493	55.964	55.596
Barometric press. (in.Hg)	30.29	30.20	30.22
Volume H ₂ O imp. (ml)	2.9	10.1	10.6
Weight change sil. gel (g)	15.0	18.2	23.2
% CO ₂	0.0	0.0	0.0
% O ₂	20.9	20.9	20.9
% N ₂	79.1	79.1	79.1
Area of stack (sq.ft.)	6.305	6.305	6.305
Sample time (min.)	96.0	96.0	96.0
Static pressure (in.H ₂ O)	3.50	3.50	3.50
Nozzle dia. (in.)	0.215	0.215	0.215
Meter box cal.	1.0010	1.0010	1.0010
Cp of pitot tube	0.84	0.84	0.84
Traverse points	24	24	24

CHEMOURS - FAYETTEVILLE, NC
INPUTS FOR HFPO DIMER ACID CALCULATIONS
CARBON BED OUTLET

Test Data

	4	5	6
Run number			
Location	CBed Outlet	CBed Outlet	CBed Outlet
Date	2/27/2019	2/28/2019	2/27/2019
Time period	1231-1426	0823-1018	1429-1627
Operator	KA/AS/JO	KA/AS/JO	KA/AS/JO

Inputs For Calcs.

Sq. rt. delta P	0.72615	0.72908	0.72133
Delta H	1.6338	1.6721	1.6075
Stack temp. (deg.F)	81.8	77.9	80.6
Meter temp. (deg.F)	71.5	61.4	76.7
Sample volume (act.)	56.016	56.152	55.732
Barometric press. (in.Hg)	30.17	29.95	29.95
Volume H ₂ O imp. (ml)	10.3	14.1	17.8
Weight change sil. gel (g)	22.5	21.0	22.0
% CO ₂	0.0	0.0	0.0
% O ₂	20.9	20.9	20.9
% N ₂	79.1	79.1	79.1
Area of stack (sq.ft.)	6.305	6.305	6.305
Sample time (min.)	96.0	96.0	96.0
Static pressure (in.H ₂ O)	3.50	3.50	3.50
Nozzle dia. (in.)	0.215	0.215	0.215
Meter box cal.	1.0010	1.0010	1.0010
Cp of pitot tube	0.84	0.84	0.84
Traverse points	24	24	24

**CHEMOURS - FAYETTEVILLE, NC
 INPUTS FOR HFPO DIMER ACID CALCULATIONS
 CARBON BED OUTLET**

Test Data

Run number	7	8
Location	CBed Outlet	CBed Outlet
Date	3/1/2019	3/1/2019
Time period	0813-1008	1237-1433
Operator	KA/AS/JO	KA/RS/JO/AS

Inputs For Calcs.

Sq. rt. delta P	0.73119	0.72378
Delta H	1.6713	1.6425
Stack temp. (deg.F)	72.4	77.3
Meter temp. (deg.F)	56.4	67.1
Sample volume (act.)	55.779	55.822
Barometric press. (in.Hg)	30.09	30.08
Volume H ₂ O imp. (ml)	16.8	12.8
Weight change sil. gel (g)	17.4	19.7
% CO ₂	0.0	0.0
% O ₂	20.9	20.9
% N ₂	79.1	79.1
Area of stack (sq.ft.)	6.305	6.305
Sample time (min.)	96.0	96.0
Static pressure (in.H ₂ O)	3.50	3.50
Nozzle dia. (in.)	0.215	0.215
Meter box cal.	1.0010	1.0010
Cp of pitot tube	0.84	0.84
Traverse points	24	24

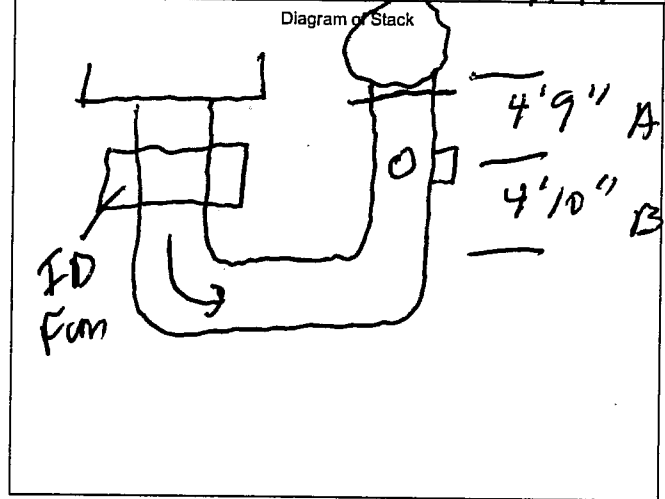
OUTLET Sample and Velocity Traverse Point Data Sheet - Method 1

Client Chemours Operator WCS
 Location/Plant Fayetteville NC Date 6/13/18
 Source VE North Carbon Outlet W.O. Number _____

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

Distance from far wall to outside of port (in.) = C	54 5/8
Port Depth (in.) = D	20 7/8
Depth of Duct, diameter (in.) = C-D	34
Area of Duct (ft ²)	6.205
Total Traverse Points	24
Total Traverse Points per Port	12
Port Diameter (in.) --(Flange-Threaded-Hole)	
Monorail Length	
Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	X
Total Ports (rectangular duct only)	X
Equivalent Diameter = (2*L*W)/(L+W)	X

Flow Disturbances	
Upstream - A (ft)	4' 4"
Downstream - B (ft)	4' 10"
Upstream - A (duct diameters)	6.53
Downstream - B (duct diameters)	1.77



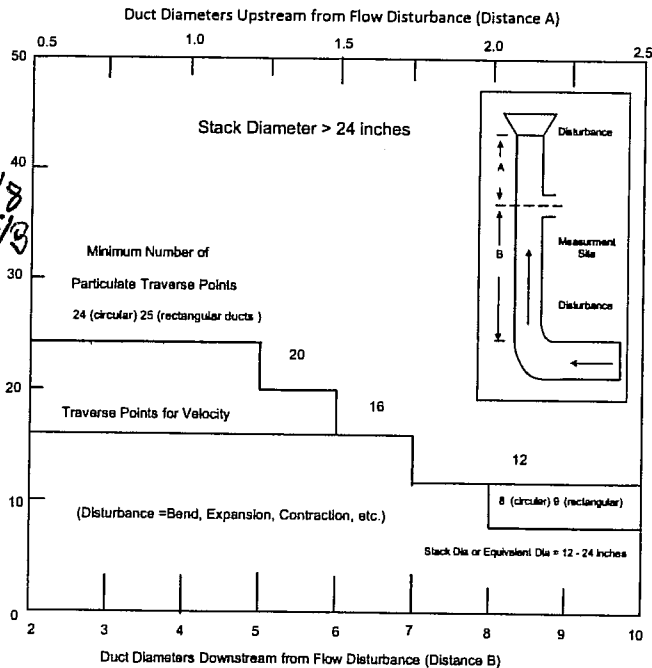
Traverse Point Locations			
Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	10.21	3 1/4	21 7/8
2	10.67	2 1/4	22 7/8
3	11.18	4	24 5/8
4	11.77	6	26 5/8
5	12.50	8 1/2	29 1/8
6	13.56	12 1/8	32 3/4
7	14.44	21 5/8	42 1/2
8	17.5	25 1/2	48 5/8
9	18.23	28	50 5/8
10	18.82	30	50 5/8
11	19.33	31 3/4	52 1/8
12	19.79	33 1/4	53 7/8

46 1/8
48 5/8

CEM 3 Point (Long Measurement Line) Stratification Point Locations		
1	0.167	
2	0.50	
3	0.833	

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

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



Traverse Point Location Percent of Stack - Circular													
		Number of Traverse Points											
		1	2	3	4	5	6	7	8	9	10	11	12
T r a v e r s e P o i n t	1		14.6		6.7		4.4		3.2		2.6		2.1
	2		85.4		25.3		14.6		10.5		8.2		6.7
	3			75		29.6		19.4		14.6		11.8	
	4				93.3		70.4		52.3		42.6		37.7
	5					85.4		67.7		54.2		45	
	6						95.6		80.6		65.8		55.6
	7							89.5		77.4		64.4	
	8								96.8		85.4		75.8
	9									91.8		82.3	
	10										97.4		88.2
	11											93.3	
	12												97.9

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



ISOKINETIC FIELD DATA SHEET



EPA Method 0010 - HFPO Dimer Acid

Client: Chemours
 W.O.#: 15418 002000
 Project ID: Chemours
 Mode/Source ID: Carbon Bed
 Samp. Loc. ID: OUT
 Run No. ID: 1
 Test Method ID: M0010
 Date ID: 26 FEB 2019
 Source/Location: VE North Outlet
 Sample Date: 2/26/19
 Baro. Press (in Hg): 30.24
 Operator: KNA/AS

Stack Conditions

Assumed	Actual
4	
6.0	
70.9	
73	
50	
3.5	3.5
39	

Meter Box ID: 22
 Meter Box Y: 1.0010
 Meter Box Del H: 2.4674
 Probe ID / Length: P706 / 6'
 Probe Material: Boro
 Pitot / Thermocouple ID: P706
 Pitot Coefficient: 0.84
 Nozzle ID: .215
 Nozzle Measurements: .215, .215, .15
 Avg Nozzle Dia (in): .215
 Area of Stack (ft²): 6.305
 Sample Time: 96
 Total Traverse Pts: 24

Sample Train (ft³):
 Leak Check @ (in Hg): 15"
 Pitot leak check good: (yes/no)
 Pitot inspection good: (yes/no)
 Method 3 System go: (yes/no)
Temp Check
 Meter Box Temp:
 Reference Temp:
 Pass/Fall (+/- 2°):
 Temp Change Response:

K Factor: 2.8, 2.9

Initial	Mid-Point	Final
0.005	0.010	0.012
15"	7"	15"
(yes/no)	(yes/no)	(yes/no)
(yes/no)	(yes/no)	(yes/no)
(yes/no)	(yes/no)	(yes/no)
Pre-Test Set		Post-Test Set
Pass / Fall		Pass / Fall
yes / no		yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
	0	0927J			648.394								
A 1	4		.54	1.6	650.0	67	48	126	126	47	5	45	
2	8		.54	1.6	653.0	67	51	125	125	47	5	36	
3	12		.57	1.7	655.2	67	52	125	127	43	6	37	
4	16		.49	1.4	657.5	68	53	126	126	46	5	37	
5	20		.50	1.5	659.7	68	54	126	126	48	5	37	
6	24		.51	1.5	661.9	68	54	126	126	49	5	37	
7	28		.52	1.5	664.1	68	56	126	126	50	5	37	
8	32		.49	1.4	666.2	68	56	126	126	51	5	39	
9	36		.46	1.3	668.3	68	57	126	126	51	5	39	A ~ 26.113
10	40		.44	1.3	670.4	68	58	126	126	51	5	39	
11	44		.42	1.2	672.5	69	59	126	120	51	4	40	
12	48	1015	.42	1.2	674.507	69	59	120	120	52	4	41	Min Point LC
B 1	4	1055	.25	.73	676.3	70	63	126	125	56	3	51	674.63
2	8		.27	.78	677.9	70	63	125	125	52	3	41	(0.156)
3	12		.28	.81	679.6	70	64	126	126	52	3	42	
4	16		.30	.87	681.3	70	64	125	125	52	3	42	95.4 10%
5	20		.35	1.0	683.2	71	65	125	125	53	4	42	1.5 10 m
6	24		.40	1.2	685.2	71	65	125	125	54	4	41	1.7 10 m
7	28		.75	2.2	688.0	71	66	126	126	55	7	41	
8	32		.88	2.6	690.9	71	66	125	125	56	8	42	
9	36		.92	2.7	693.9	72	67	125	125	58	8	41	15400
10	40		.95	2.8	697.0	72	67	126	126	59	9	42	
11	44		.95	2.8	700.0	72	69	126	126	61	9	44	56.2 Vm
12	48	1143 J	.95	2.8	703.043	72	69	126	126	61	9	44	

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max	B = 28.38
549	1.608	54493	69.5	60.208	125/126	125/126	61	9	36/51	
Avg Sqrt Delta P	Avg Sqrt Del H	Comments								
.720	1.242									



ISOKINETIC FIELD DATA SHEET

Client: Chemours
 W.O.#: 15418
 Project ID: Chemours
 Mode/Source ID: Carbon Bed
 Samp. Loc. ID: OUT
 Run No. ID: 2
 Test Method ID: M0010
 Date ID: 25FEB2019
 Source/Location: VE North Outlet
 Sample Date: 26 Feb 19
 Baro. Press (in Hg): 30.21
 Operator: KA/AS

Stack Conditions

Assumed	Actual
4	
0.0	✓
20.0	✓
77	75.75
69	74.35
	3.5 ✓
67	

EPA Method 0010 - HFPO Dimer Acid

Meter Box ID: 22
 Meter Box Y: 1.0010 ✓
 Meter Box Del H: 2.4674
 Probe ID / Length: P706 6'
 Probe Material: Boro
 Pitot / Thermocouple ID: P706
 Pitot Coefficient: 0.84 ✓
 Nozzle ID: .215
 Nozzle Measurements: .215 | .215 | .215
 Avg Nozzle Dia (in): .215 ✓
 Area of Stack (ft²): 6.305 ✓
 Sample Time: 96 ✓
 Total Traverse Pts: 24 ✓

Sample Train (ft³):
 Leak Check @ (in Hg):
 Pitot leak check good
 Pitot inspection good
 Method 3 System gma
 Temp Check: Pre-Test Set
 Meter Box Temp:
 Reference Temp:
 Pass/Fail (+/- 2°):
 Temp Change Response:

Page 1 of 1

K Factor 2.9

Initial	Mid-Point	Final
0.003	0.005	0.016
15"	7"	12"
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pass / Fail	Pass / Fail	Pass / Fail
yes / no	yes / no	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
	0	1335 ✓			703.416								
A 1	4		.53	1.5	705.7	72	80	125	125	62	5	57	
2	8		.53	1.5	708.1	74	79	125	127	55	5	38	
3	12		.53	1.5	710.2	74	79	125	126	51	5	40	
4	16		.56	1.6	712.6	75	79	126	126	50	5	39	
5	20		.54	1.6	714.9	74	79	126	126	52	KA 5	38	
6	24		.52	1.5	717.1	75	79	126	126	55	5	38	
7	28		.50	1.5	719.5	75	79	125	125	55	5	38	
8	32		.48	1.4	721.6	75	80	125	125	55	5	39	A = 26.797
9	36		.48	1.4	723.8	75	80	126	126	55	5	40	
10	40		.46	1.3	726.0	75	79	125	125	55	4	39	B = 29.167
11	44		.46	1.3	728.1	74	80	126	126	55	4	38	
12	48	1423	.45	1.3	730.213	75	80	125	125	56	4	40	mid LC
B 1	4	1442	.28	.81	732.1	75	79						730.368
2	8		.30	.87	733.8	76	79	125	126	62	3	54	(0.155)
3	12		.32	.93	735.6	76	79	126	126	54	3	41	
4	16		.35	1.0	737.4	76	79	125	125	53	3	41	
5	20		.38	1.1	739.4	77	79	126	126	51	3	42	93.6
6	24		.45	1.3	741.7	77	79	125	125	52	4	40	
7	28		.78	2.3	744.2	77	79	126	126	52	4	41	
8	32		.89	2.6	747.2	77	79	126	126	54	6	42	2.3%
9	36		.95	2.8	750.3	78	80	125	125	56	7	41	
10	40		.97	2.8	753.4	78	80	126	126	57	8	40	15500
11	44		.97	2.8	756.5	79	80	125	125	58	8	41	
12	48	1530 ✓	.96	2.8	759.535	79	80	126	126	57	8	41	48.4

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max
.568 ✓	1.646 ✓	55.964 ✓	75.75 ✓	79.375 ✓	125/126	125/126	62	8	38/57
Avg Sqrt Delta P	Avg Sqrt Del H	Comments:							
.741 ✓	1.260 ✓	✓							

EPA Method 0010 from EPA SW-846



V. M. M. A.

074086

CB Outlet

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

Client	Chemours	Stack Conditions
W.O.#	15418	Assumed
Project ID	Chemours	Actual
Mode/Source ID	Carbon Bed	% Moisture
Samp. Loc. ID	OUT	Impinger Vol (ml)
Run No. ID	3	Silica gel (g)
Test Method ID	M0010	CO ₂ , % by Vol
Date ID	25FEB2019	O ₂ , % by Vol
Source/Location	VE North Outlet	Temperature (°F)
Sample Date	27 Feb 19	Meter Temp (°F)
Baro. Press (in Hg)	30.20	Static Press (in H ₂ O)
Operator	KA/AS	Ambient Temp (°F)

Assumed	Actual
4	
0.0	✓
20.9	✓
70	78.458
55	63.25
	3.5
51	

Meter Box ID	22
Meter Box Y	1.0010 ✓
Meter Box Del H	2.4674
Probe ID / Length	P706 6'
Probe Material	Boro
Pitot / Thermocouple ID	P706
Pitot Coefficient	0.84 ✓
Nozzle ID	.215
Nozzle Measurements	.215 .215 .215
Avg Nozzle Dia (in)	.215 ✓
Area of Stack (ft ²)	6.305 ✓
Sample Time	96 ✓
Total Traverse Pts	24 ✓

Sample Train (ft ³)	
Leak Check @ (in Hg)	15"
Pitot leak check good	yes / no
Pitot inspection good	yes / no
Method 3 System good	yes / no
Temp Check	
Meter Box Temp	54
Reference Temp	53.9
Pass/Fail (+/- 2°)	Pass / Fail
Temp Change Response	yes / no

K Factor 2.9 3.0		
Initial	Mid-Point	Final
0.002	0.004	0.014
15"	6"	12"
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pre-Test Set	Post-Test Set	
54	62	
53.9	61.3	
Pass / Fail	Pass / Fail	
yes / no	yes / no	

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
		0	0840			759.913								
A	1	4		.50	1.5	762.2	76	55	125	125	53	5	52	
	2	8		.50	1.5	764.4	76	57	125	125	52	5	41	
	3	12		.51	1.5	766.7	76	57	126	126	51	5	40	
	4	16		.51	1.5	768.9	76	58	125	125	52	5	41	
	5	20		.50	1.5	771.2	76	59	126	126	53	5	41	
	6	24		.52	1.6	773.5	76	59	125	125	54	5	42	26.505
	7	28		.48	1.4	775.7	76	60	126	126	53	5	41	
	8	32		.46	1.4	777.9	77	61	125	125	53	5	43	
	9	36		.46	1.4	780.0	77	61	126	126	53	5	43	
	10	40		.47	1.4	782.2	77	62	126	126	54	5	43	
	11	44		.44	1.3	784.3	77	62	125	125	54	4	44	
	12	48	0928	.42	1.3	786.418	77	63	126	126	55	4	44	Mid-Point LC 786.573 (0.155)
B	1	4	0947	.27	.81	788.2	76	64	125	125	57	3	50	
	2	8		.29	.87	790.0	80	65	126	126	54	3	47	
	3	12		.30	.90	791.8	80	65	126	126	54	3	47	
	4	16		.32	.96	793.6	81	66	125	125	54	3	47	
	5	20		.34	1.0	795.4	81	66	125	125	59	4	49	
	6	24		.43	1.3	797.6	81	66	126	126	60	4	50	
	7	28		.73	2.2	800.3	81	67	125	125	62	5	50	29.091
	8	32		.85	2.6	803.3	81	68	126	126	64	6	51	
	9	36		.93	2.8	806.4	82	68	125	125	64	8	49	
	10	40		.95	2.9	809.5	81	69	126	126	66	8	45	
	11	44		.95	2.9	812.6	81	70	125	125	65	8	46	
	12	48	1035	.95	2.9	815.664	81	70	126	126	64	8	45	

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max
.545 ✓	1.643 ✓	55596 ✓	78.458 ✓	63.25 ✓	125/126	125/126	60	8	40/52
Avg Sqrt Delta P	Avg Sqrt Del H	Comments:							
.725 ✓	1.258 ✓	✓							



EPA Method 0010 from EPA SW-846

✓ AMMA

.72467

98.6
2.72 %M
15040
56.9 Vm

CB Outlet

SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client Chemours W.O. # 15418
 Location/Plant Fayetteville, NC Source & Location VE North Outlet

Run No. 1 FR320 230 Sample Date 2/26/19 Recovery Date 2/26/19
 Sample I.D. Chemours - Carbon Bed - OUT - 1 - M0010 - Analyst JM2/AS Filter Number NA

Contents	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Empty		HPLC H2O	HPLC H2O						Silica Gel	
Final	2	100	98	0	309.1	304.2			315	
Initial	0	100	100	0	306.2	304.2			300	
Gain	2	0	-2	0	2.9	0		2.9	15	17.9

Impinger Color all clear Labeled?
 Silica Gel Condition ble 90% Sealed?

Run No. 2 FR320 B0 Sample Date 2/26/19 Recovery Date 2/26/19
 Sample I.D. Chemours - Carbon Bed - OUT - 2 - M0010 - Analyst JM2/AS Filter Number NA

Contents	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Empty		HPLC H2O	HPLC H2O						Silica Gel	
Final	5	100	100		291.4	310.3			318.2	
Initial	0	100	100		286.3	310.3			300	
Gain	5	0	0		5.1	0		10.1	18.2	28.3

Impinger Color all clear Labeled?
 Silica Gel Condition ble 90% Sealed?

Run No. 3 FR 230 Sample Date 2/27/19 Recovery Date 2/27/19
 Sample I.D. Chemours - Carbon Bed - OUT - 3 - M0010 - Analyst JM2/AS Filter Number NA

Contents	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Empty		HPLC H2O	HPLC H2O						Silica Gel	
Final	4	100	100		308.1	300.6			323.2	
Initial	0	100	100		301.5	301.9			300	
Gain	4	0	0		6.6	0		10.6	23.2	33.8

Impinger Color all clear Labeled?
 Silica Gel Condition ble 90% Sealed?

Check COC for Sample IDs of Media Blanks



ISOKINETIC FIELD DATA SHEET



EPA Method 0010 - HFPO Dimer Acid

Client: Chemours
 W.O.#: 15418
 Project ID: Chemours
 Mode/Source ID: Carbon Bed
 Smp. Loc. ID: OUT
 Run No. ID: 4
 Test Method ID: M0010
 Date ID: 25FEB2019
 Source/Location: VE North Outlet
 Sample Date: 27 Feb 19
 Baro. Press (in Hg): KA 30.21 30.17
 Operator: KA/AS/JO

Stack Conditions	
Assumed	Actual
4	
00	✓
20.0	✓
83	81.833
71	71.500
	3.5 ✓
62	

Meter Box ID: 22
 Meter Box Y: 1.0010 ✓
 Meter Box Del H: 2.4674
 Probe ID / Length: P706 / 6'
 Probe Material: Boros
 Pitot / Thermocouple ID: P706
 Pitot Coefficient: 0.89 ✓
 Nozzle ID: .215
 Nozzle Measurements: .215 | .215 | .215
 Avg Nozzle Dia (in): .215 ✓
 Area of Stack (ft²): 6.305 ✓
 Sample Time: 96 ✓
 Total Traverse Pts: 24 ✓

Sample Train (ft³):
 Leak Check @ (in Hg): 15" / 6" / 13"
 Pitot leak check good: yes / no / yes / no
 Pitot Inspection good: yes / no / yes / no
 Method 3 System good: yes / no / yes / no
Temp Check
 Meter Box Temp: 63
 Reference Temp: 62
 Pass/Fail (+/- 2°): Pass / Fail
 Temp Change Response: yes / no

K Factor 3.0		
Initial	Mid-Point	Final
0.012	0.009	0.014
15"	6"	13"
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pre-Test Set		Post-Test Set
63		65
62		62
Pass / Fail		Pass / Fail
yes / no		yes / no

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
A	1	4	1231 ✓	.54	.66	816.009	81	68	126	126	59	5	57	
	2	8		.51	.5	820.6	81	68	126	126	57	5	46	
	3	12		.50	.5	822.9	81	68	125	125	56	5	43	
	4	16		.49	.5	825.2	81	68	125	125	58	5	41	
	5	20		.50	.5	827.4	81	69	126	126	59	5	41	
	6	24		.49	.5	829.7	81	69	126	125	58	5	40	26.884
	7	28		.47	.4	831.9	81	70	126	126	57	5	41	
	8	32		.46	.4	834.1	81	70	126	126	56	5	41	
	9	36		.46	.4	836.3	82	71	125	125	56	5	41	
	10	40		.46	.4	838.5	82	71	126	126	56	5	43	
	11	44		.45	.4	840.6	82	72	125	125	56	5	43	
	12	48	1319	.44	.3	842.893	82	72	126	126	57	5	44	MP LC 843.001 (0.108)
B	1	4	1338	.27	.81	844.6	82	72	126	126	60	3	52	
	2	8		.28	.84	846.4	82	73	125	125	57	3	47	
	3	12		.30	.90	848.2	82	73	126	126	56	3	47	
	4	16		.32	.96	850.0	82	73	125	125	58	3	47	
	5	20		.35	1.1	852.0	82	73	126	125	58	3	48	
	6	24		.44	1.3	854.1	82	73	125	125	60	4	48	29.137
	7	28		.76	2.3	857.0	82	73	126	126	60	6	49	
	8	32		.88	2.6	859.9	82	73	125	126	62	7	49	
	9	36		.92	2.8	863.0	83	74	126	126	64	7	50	97.8%
	10	40		.97	2.8	866.1	83	74	125	125	65	7	50	101
	11	44		.94	2.7	869.1	83	74	126	126	66	7	48	
	12	48	1426 ✓	.94	2.7	872.133	83	75	125	125	65	7	46	2.7

Avg Delta P .548 ✓	Avg Delta H 1.634 ✓	Total Volume 56.016 ✓	Avg T _{st} 81.833	Avg T _m 71.500 ✓	Min/Max 125/126	Min/Max 125/126	Max 66	Max Vac 7	Min/Max 40/57
Avg Sqrt Delta P .72615 ✓	Avg Sqrt Del H 1.256 ✓	Comments: ✓							

EPA Method 0010 from EPA SW-846

15000
56.4

V AMM

V

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

Page 1 of 1

Client: Chemours
 W.O.#: 15418
 Project ID: Chemours % Moisture
 Mode/Source ID: Carbon Bed Impinger Vol (ml)
 Samp. Loc. ID: OUT Silica gel (g)
 Run No. ID: 5 CO₂, % by Vol
 Test Method ID: M0010 O₂, % by Vol
 Date ID: 25FEB2019 Temperature (°F)
 Source/Location: VE North Outlet Meter Temp (°F)
 Sample Date: 28 Feb 19 ✓ Static Press (In H₂O)
 Baro. Press (In Hg): 29.95 ✓
 Operator: KA/AS/JO ✓ Ambient Temp (°F): 53

Stack Conditions	
Assumed	Actual
4	
0.0	✓
20.9	✓
73	77.875
66	61.375
3.5	3.5 ✓
53	

Meter Box ID: 22
 Meter Box Y: 1.0010 ✓
 Meter Box Del H: 2.4674
 Probe ID / Length: P706 6'
 Probe Material: Boron
 Pitot / Thermocouple ID: P706
 Pitot Coefficient: 0.84 ✓
 Nozzle ID: .215
 Nozzle Measurements: .215 | .215 | .215 ✓
 Avg Nozzle Dia (in): .215 ✓
 Area of Stack (ft²): 6.305
 Sample Time: 96 ✓
 Total Traverse Pts: 24 ✓

Sample Train (ft³):
 Leak Check @ (in Hg): 15" 5" 11"
 Pitot leak check good: Yes / no
 Pitot Inspection good: Yes / no
 Method 3 System good: Yes / no
Temp Check
 Meter Box Temp: 53
 Reference Temp: 51
 Pass/Fail (+/- 2°): Pass / Fail
 Temp Change Response: yes / no

K Factor: 3.0		
Initial	Mid-Point	Final
0.010	0.004	0.018
15"	5"	11"
Yes / no	Yes / no	Yes / no
Yes / no	Yes / no	Yes / no
Yes / no	Yes / no	Yes / no
Pre-Test Set		Post-Test Set
53		63
51		62.8
Pass / Fail		Pass / Fail
yes / no		yes / no

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (In H ₂ O)	ORIFICE PRESSURE Delta H (In H ₂ O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DCM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (In Hg)	XAD EXIT TEMP (°F)	COMMENTS
		0	0823 ✓			872.476								
A	1	4		.53	1.6	874.8	76	55	125	125	51	4	44	
	2	8		.55	1.7	877.2	77	55	125	125	48	4	35	
	3	12		.49	1.5	879.4	77	56	126	126	46	4	35	
	4	16		.50	1.5	881.5	77	57	126	126	48	4	36	
	5	20		.49	1.5	883.9	77	58	126	126	49	4	36	
	6	24		.49	1.5	886.2	77	58	125	125	49	4	36	
	7	28		.53	1.6	888.5	77	59	126	126	49	4	37	
	8	32		.50	1.5	890.7	77	59	126	126	49	4	37	26.919
	9	36		.47	1.4	892.9	78	60	125	125	50	4	37	
	10	40		.45	1.4	895.1	78	61	126	126	50	4	38	
	11	44		.43	1.3	897.2	77	61	126	126	50	4	38	
	12	48	0911	.43	1.3	899.395	77	62	125	125	50	4	38	MP LC
B	1	4	0930	.28	.84	901.2	77	62	126	126	53	3	48	899.519
	2	8		.30	.90	902.9	78	63	125	125	50	3	40	(0.124)
	3	12		.30	.90	904.7	78	63	126	126	49	3	41	
	4	16		.33	.99	906.6	78	64	126	126	50	3	41	
	5	20		.35	1.1	908.6	79	64	126	127	51	3	42	
	6	24		.43	1.3	910.7	79	64	126	126	52	4	43	24.233
	7	28		.76	2.3	913.4	79	64	125	126	53	6	43	
	8	32		.85	2.6	916.4	79	65	126	126	55	7	44	
	9	36		.93	2.8	919.4	79	65	125	125	58	7	44	
	10	40		.95	2.9	922.6	79	66	126	126	60	7	45	
	11	44		.95	2.9	925.7	79	66	125	126	61	7	46	
	12	48	1018 ✓	.93	2.8	928.752	80	66	126	126	61	7	46	

Avg Delta P: .551 ✓	Avg Delta H: 1.672 ✓	Total Volume: 56.152 ✓	Avg Ts: 77.875 ✓	Avg Tm: 61.375 ✓	Min/Max: 125/126	Min/Max: 125/127	Max: 61	Max Vac: 7	Min/Max: 35/48
Avg Sqrt Delta P: .72908	Avg Sqrt Del H: 1.270 ✓	Comments: ✓							

EPA Method 0010 from EPA SW-846



✓ ANNA

✓

98.9 I
 2.8
 15065
 57.7

CB OUTLET

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

Client	Chemours	Stack Conditions	
W.O.#	15418	Assumed	Actual
Project ID	Chemours	4	
Mode/Source ID	Carbon Bed		
Samp. Loc. ID	OUT		
Run No. ID	8 9 6 KA		
Test Method ID	M0010	0.0	✓
Date ID	25FEB2019	20.9	✓
Source/Location	VE North Outlet	84	90.625
Sample Date	27 Feb 19	74	16.708
Baro. Press (In Hg)	30.05, 29.95 KA	3.5	3.5 ✓
Operator	KA/AS/JO	69	

Meter Box ID	22
Meter Box Y	1.0010
Meter Box Del H	2.4674
Probe ID / Length	P706 16'
Probe Material	Boro
Pitot / Thermocouple ID	P706
Pitot Coefficient	0.84 ✓
Nozzle ID	.215
Nozzle Measurements	.215 .215 .215
Avg Nozzle Dia (in)	.215 ✓
Area of Stack (ft ²)	6.305 ✓
Sample Time	96 ✓
Total Traverse Pts	27 ✓

Sample Train (ft ³)	
Leak Check @ (In Hg)	
Pitot leak check good	
Pitot inspection good	
Method 3 System good	yes / no
Temp Check	
Meter Box Temp	71
Reference Temp	70
Pass/Fail (+/- 2°)	Pass / Fail
Temp Change Response	yes / no

K Factor 3.0		
Initial	Mid-Point	Final
0.008	0.011	0.010
15"	5"	12"
Pass / no	Pass / no	Pass / no
Pass / no	Pass / no	Pass / no
Pass / no	Pass / no	Pass / no
Pre-Test Set		Post-Test Set
71	75	
70	74	
Pass / Fail		Pass / Fail
yes / no		yes / no

TRAVERSE POINT	SAMPLE NO.	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft ³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
	0	1429 ✓			929.208								
A	1	4	.51	1.5	931.5	80	74	125	126	65	5	57	
	2	8	.51	1.5	933.8	80	75	125	125	57	5	41	
	3	12	.48	1.4	936.0	80	75	126	126	54	4	41	
	4	16	.49	1.5	938.3	81	75	125	125	55	4	41	
	5	20	.47	1.4	940.5	80	76	126	126	59	4	44	
	6	24	.48	1.4	942.8	80	76	126	126	60	4	44	
	7	28	.50	1.5	945.0	80	76	126	126	60	4	43	
	8	32	.48	1.4	947.2	81	76	126	125	61	4	42	26.71
	9	36	.47	1.4	949.4	81	77	126	126	60	4	43	
	10	40	.45	1.4	951.7	81	77	126	126	60	4	42	
	11	44	.42	1.3	953.7	81	77	125	125	60	4	43	
	12	48	1517	1.3	955.918	81	77	125	125	60	4	44	MP LC
B	1	4	.27	.81	957.8	80	77	126	126	65	3	57	956.065
	2	8	.28	.84	959.5	80	77	126	126	60	3	44	(0.147)
	3	12	.30	.90	961.2	81	77	125	125	58	3	43	
	4	16	.31	.93	963.1	81	77	126	126	57	3	44	
	5	20	.34	1.0	965.0	81	77	125	125	58	3	45	
	6	24	.40	1.2	967.0	81	77	126	126	58	3	45	29.922
	7	28	.74	2.2	969.7	81	78	126	126	59	5	45	
	8	32	.86	2.6	972.7	81	78	126	126	60	7	45	
	9	36	.92	2.7	975.8	80	78	125	125	60	7	46	97.01
	10	40	.97	2.8	978.8	81	78	126	126	61	7	46	
	11	44	.97	2.8	982.1	81	78	126	126	62	7	47	3.3 M
	12	48	1627 ✓	2.8	985.087	81	78	126	126	62	7	47	

Avg Delta F ✓	Avg Delta H ✓	Total Volume ✓	Avg Tsv ✓	Avg Tm ✓	Min/Max	Min/Max	Max	Max Vac	Min/Max
.541	1.608	55.732	80.625	76.708	125/126	125/126	65	7	41/57
Avg Sqrt Delta F ✓	Avg Sqrt Del H ✓	Comments:							
.72133 ✓	1.244 ✓	✓✓							



✓
amd

✓✓

14800
55.1
V_m

CB Outlet

SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client Chemours W.O. # 15418
Location/Plant Fayetteville, NC Source & Location VE North Outlet

Run No. 4 Sample Date 2/27/19 Recovery Date 2/27/19
Sample I.D. Chemours - Carbon Bed - OUT - 4 - M0010 - Analyst JDD/KS Filter Number 1014
Impinger table with columns 1-8 and Total. Contents: Empty, HPLC H2O, HPLC H2O, Imp.Total, Silica Gel. Final: 4, 100, 100, 298.0, 305.3, 322.5. Initial: 0, 100, 100, 291.7, 306.4, 300. Gain: 4, 0, 0, 6.3, 0, 10.3, 22.9, 32.0.
Impinger Color: all clear Labeled? Sealed?
Silica Gel Condition: ble 90%

Run No. 5 Sample Date 2/28/19 Recovery Date 2/28/19
Sample I.D. Chemours - Carbon Bed - OUT - 5 - M0010 - Analyst JDD/KS Filter Number 1114
Impinger table with columns 1-8 and Total. Contents: Empty, HPLC H2O, HPLC H2O, Imp.Total, Silica Gel. Final: 6, 100, 100, 294.8, 304.0, 321.0. Initial: 0, 100, 100, 286.7, 304.7, 300. Gain: 6, 0, 0, 8.1, 0, 14.1, 21, 35.1.
Impinger Color: all clear Labeled? Sealed?
Silica Gel Condition: ble 90%

Run No. 6 FR 150 B30 Sample Date 2/28/19 Recovery Date 2/28/19
Sample I.D. Chemours - Carbon Bed - OUT - 6 - M0010 - Analyst JDD/KS Filter Number 1114
Impinger table with columns 1-8 and Total. Contents: Empty, HPLC H2O, HPLC H2O, Imp.Total, Silica Gel. Final: 8, 100, 100, 309.1, 297.4, 322.0. Initial: 0, 100, 100, 299.3, 297.7, 300. Gain: 8, 0, 0, 9.8, 0, 17.8, 22, 39.8.
Impinger Color: all clear Labeled? Sealed?
Silica Gel Condition: ble 95%

Check COC for Sample IDs of Media Blanks



Balance weight result
2/28/19 500.0 499.8

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

Client	Chemours	Stack Conditions
W.O.#	15418	Assumed
Project ID	Chemours	Actual
Mode/Source ID	Carbon Bed	% Moisture
Samp. Loc. ID	OUT	Impinger Vol (ml)
Run No. ID	7	Silica gel (g)
Test Method ID	M0010	CO2, % by Vol
Date ID	25FEB2019	O2, % by Vol
Source/Location	VE North Outlet	Temperature (°F)
Sample Date	1 Mar 19	Meter Temp (°F)
Baro. Press (In Hg)	30.09	Static Press (In H2O)
Operator	KA/AS/JO	Ambient Temp (°F)

Meter Box ID	A22
Meter Box Y	1.0010 ✓
Meter Box Del H	2.4674
Probe ID / Length	P706 / 6
Probe Material	Boro
Pitot / Thermocouple ID	P706
Pitot Coefficient	0.84 ✓
Nozzle ID	.215
Nozzle Measurements	.215 .215 .215
Avg Nozzle Dia (in)	.215 ✓
Area of Stack (ft²)	6.305 ✓
Sample Time	96 ✓
Total Traverse Pts	24 ✓

Sample Train (ft³)	
Leak Check @ (in Hg)	
Pitot leak check good	
Pitot inspection good	
Method 3 System good	
Temp Check	
Meter Box Temp	
Reference Temp	
Pass/Fail (+/- 2°)	
Temp Change Response?	

K Factor	3.0	
Initial	Mid-Point	Final
0.008	0.003	0.006
15"	5"	10"
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pre-Test Set	Post-Test Set	
49	53	
49	52	
Pass / Fail	Pass / Fail	
yes / no	yes / no	

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (oF)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (F)	COMMENTS
A	0	0813 ✓			985.420								
1	4		.54	.6	987.7	71	51	126	126	47	4	49	
2	8		.53	.6	990.0	72	51	126	126	48	4	36	
3	12		.53	.6	992.4	72	52	126	126	49	4	35	
4	16		.55	.7	994.6	72	53	126	126	51	4	35	
5	20		.51	.5	996.9	72	53	126	126	51	4	36	
6	24		.50	.5	999.2	72	54	126	126	50	4	36	
7	28		.49	.5	1001.4	72	54	125	125	49	4	35	26.646
8	32		.45	.4	1003.6	72	55	125	125	49	4	34	
9	36		.45	.4	1005.8	72	55	125	126	48	4	35	
10	40		.44	.3	1007.8	72	56	125	125	49	4	35	
11	44		.42	.3	1009.9	72	56	126	126	48	4	35	
12	48	0901	.42	.3	1012.066	72	57	126	126	48	4	35	MP LC
B													1012.205 (0.139)
1	4	0920	.27	.81	1013.9	72	58	125	126	48	3	44	
2	8		.27	.81	1015.6	73	57	125	126	45	3	35	
3	12		.30	.90	1017.3	73	58	126	125	45	3	36	
4	16		.33	.99	1019.2	73	58	126	126	45	3	36	
5	20		.37	1.1	1021.2	73	58	125	125	46	3	36	
6	24		.44	1.3	1023.4	73	58	126	126	46	4	37	29.133
7	28		.77	2.2	1026.0	73	59	125	125	47	5	35	
8	32		.90	2.7	1029.0	73	59	126	125	49	6	35	
9	36		.97	2.9	1032.1	73	60	126	126	51	7	36	
10	40		.98	2.9	1035.2	73	60	126	125	50	7	36	98.6 ↓
11	44		.97	2.9	1038.2	73	61	126	125	50	7	36	
12	48	1008 ✓	.95	2.9	1041.338	73	61	125	126	50	7	36	2:7 PM

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max
.556 ✓	1.671 ✓	55.779 ✓	72.417 ✓	56.417 ✓	125/126	125/126	51	7	35/49
Avg Sqrt Delta P	Avg Sqrt Del H	Comments:							
.73119 ✓	1.268 ✓								

EPA Method 0010 from EPA SW-846



V
MMMA

W

W

15200
57.6

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

Client Chemours
 W.O.# 15418
 Project ID Chemours % Moisture
 Mode/Source ID Carbon Bed Impinger Vol (ml)
 Samp. Loc. ID OUT Silica gel (g)
 Run No. ID 8 CO2, % by Vol
 Test Method ID M0010 O2, % by Vol
 Date ID 25FEB2019 Temperature (°F)
 Source/Location VE North Outlet Meter Temp (°F)
 Sample Date 1 Mar 19 ✓ Static Press (in H2O)
 Baro. Press (in Hg) 30.08 ✓ Ambient Temp (°F)
 Operator KA/BS/JO/AS ✓

Stack Conditions	
Assumed	Actual
4	
0.0	✓
20.9	✓
77	77.50
68	67.125
3.5	3.5 ✓
52	

Meter Box ID 22
 Meter Box Y 1.0010 ✓
 Meter Box Del H 2.4629
 Probe ID / Length P106 6'
 Probe Material Boro
 Pitot / Thermocouple ID P706
 Pitot Coefficient 0.84 ✓
 Nozzle ID .215
 Nozzle Measurements .215 | .215 | .215
 Avg Nozzle Dia (in) .215 ✓
 Area of Stack (ft²) 6.305 ✓
 Sample Time 96
 Total Traverse Pts 24 ✓

Sample Train (ft³)
 Leak Check @ (in Hg)
 Pitot leak check good
 Pitot Inspection good
 Method 3 System good
Temp Check
 Meter Box Temp
 Reference Temp
 Pass/Fail (+/- 2°)
 Temp Change Response ?

K Factor 3.0		
Initial	Mid-Point	Final
0.005	0.010	0.007
15'	5'	8'
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
yes / no	yes / no	yes / no
Pre-Test Set	Post-Test Set	
59	63	
57	62	
Pass / Fail	Pass / Fail	
yes / no	yes / no	

TRAVERSE POINT	NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (°F)	COMMENTS
		0	1237 ✓			041.641								
A	1	4		.50	1.5	43.9	72	63	126	126	56	4	52	
	2	8		.49	1.5	45.6	76	63	125	125	53	4	43	
	3	12		.52	1.6	48.5	76	63	125	125	52	4	40	
	4	16		.54	1.6	50.8	77	64	126	126	56	4	38	
	5	20		.54	1.6	53.1	77	64	125	125	56	4	37	
	6	24		.53	1.6	55.5	77	65	126	126	56	4	37	
	7	28		.50	1.5	57.8	77	65	125	125	56	4	37	
	8	32		.48	1.4	59.9	77	66	126	126	54	4	38	
	9	36		.47	1.4	62.1	77	66	125	125	54	4	37	
	10	40		.45	1.4	64.5	77	67	125	125	53	4	37	
	11	44		.45	1.4	66.5	77	67	126	126	53	4	38	
	12	48	1325	.42	1.3	68.643	77	67	126	126	52	4	38	
B	1	4	1345	.26	.78	70.5	74	68	125	126	58	3	49	MP LC
	2	8		.27	.81	72.1	78	68	126	126	54	3	40	68.896
	3	12		.29	.87	73.8	78	68	126	126	51	3	40	.253
	4	16		.32	.96	75.8	78	69	126	126	52	3	40	
	5	20		.35	1.1	77.7	78	69	126	126	52	3	39	
	6	24		.42	1.3	79.9	78	69	126	126	53	3	40	
	7	28		.72	2.2	82.6	78	69	126	126	53	5	40	
	8	32		.83	2.5	85.5	79	70	125	126	54	6	39	
	9	36		.90	2.7	88.5	79	70	126	126	57	7	39	
	10	40		.92	2.8	91.6	79	70	126	126	58	7	40	
	11	44		.93	2.8	94.7	79	70	125	125	58	7	40	
	12	48	1433 ✓	.93	2.8	97.116	79	71	126	126	58	7	41	

Avg Delta P ✓	Avg Delta H ✓	Total Volume ✓	Avg Ts ✓	Avg Tm ✓	Min/Max	Min/Max	Max	Max Vac	Min/Max
543	1.643	55.822	77.250	67.125	125/126	125/126	58	7	37/52
Avg Sqrt Delta P ✓	Avg Sqrt Del H ✓	Comments:							
.723	1.259								



CB OAC

SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client Chemours W.O. # 15418
Location/Plant Fayetteville, NC Source & Location VE North Outlet

Run No. 7 Sample Date 3/1/19 Recovery Date 3/1/19
 Sample I.D. Chemours - Carbon Bed - OUT - 7 - M0010 - Analyst SNO/AS Filter Number N/A

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents	Empty	HPLC H2O	HPLC H2O						Silica Gel	
Final	8	100	100	0		311.7	269.0		317.4	
Initial	0	100	100	0		302.9	269.7		300	
Gain	8	0	0	0		8.8	0	16.8	17.4	34.2

Impinger Color all clear Labeled?
 Silica Gel Condition 54 95% Sealed?

Run No. 8 Sample Date 3/1/19 Recovery Date 3/1/19
 Sample I.D. Chemours - Carbon Bed - OUT - 8 - M0010 - Analyst SNO/AS Filter Number N/A

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents	Empty	HPLC H2O	HPLC H2O						Silica Gel	
Final	5	100	100			322.3	302.5		319.7	
Initial	0	100	100			314.5	303.2		300	
Gain	5	0	0			7.8	0	12.8	19.7	

Impinger Color all clear Labeled?
 Silica Gel Condition 54 95% Sealed?

Run No. Sample Date Recovery Date
 Sample I.D. Chemours - Carbon Bed - OUT - 0 - M0010 - Analyst Filter Number

	Impinger							Imp.Total	8	Total
	1	2	3	4	5	6	7			
Contents	Empty	HPLC H2O	HPLC H2O						Silica Gel	
Final										
Initial		100	100						300	
Gain										

Impinger Color Labeled?
 Silica Gel Condition Sealed?

Check COC for Sample IDs of Media Blanks

Balance Known 500, Result 499.8 ✓
 3/1/19



METHODS AND ANALYZERS

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division**

Project Number: **15418.002.010**
Operator: **SD**
Date: **25 Feb 2019**

Folders.A-F\Chemours Fayetteville\15418.002.010 VE North 2019\Data\FEBUARY_MARCH 2019\022519 DIVISION

Program Version: 2.1, built 19 May 2017 **File Version:** 2.03

Computer: WSWCAIRSERVICES **Trailer:** 27

Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Servomex 4900
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	21.0

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Servomex 4900
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	16.6

CALIBRATION DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division**

Project Number: **15418.002.010**
Operator: **SD**
Date: **25 Feb 2019**

Start Time: 10:59

O₂

Method: EPA 3A

Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
12.0	CC18055
21.0	SG9169108

Calibration Results

Zero	6 mv
Span, 21.0 %	7997 mv

Curve Coefficients

Slope	Intercept
380.5	6

CO₂

Method: EPA 3A

Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
8.9	CC18055
16.6	SG9169108

Calibration Results

Zero	4 mv
Span, 16.6 %	8287 mv

Curve Coefficients

Slope	Intercept
499.6	4

CALIBRATION ERROR DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **25 Feb 2019**

Start Time: 10:59

O₂

Method: EPA 3A

Span Conc. 21.0 %

Slope 380.5

Intercept 6.0

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

CO₂

Method: EPA 3A

Span Conc. 16.6 %

Slope 499.6

Intercept 4.0

Standard	Result	Difference	Error	Status
%	%	%	%	
Zero	0.0	0.0	0.0	Pass
8.9	8.9	0.0	0.0	Pass
16.6	16.6	0.0	0.0	Pass

BIAS

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **25 Feb 2019**

Start Time: 11:05

O₂
Method: EPA 3A
Span Conc. 21.0 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.0	12.0	0.0	0.0	Pass

CO₂
Method: EPA 3A
Span Conc. 16.6 %

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

RUN DATA

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **25 Feb 2019**

Time	O ₂ %	CO ₂ %
response times		
11:07:50	12.1	8.8
11:08:00	16.9	4.7
11:08:10	20.4	0.9
11:08:20	20.7	0.4
11:08:30	12.4	2.0
11:08:40	1.6	0.6
11:08:50	0.1	0.1
O2/CO2 UP		
11:09:00	0.0	0.0
11:09:10	0.0	0.0
11:09:20	0.0	0.0
11:09:30	3.0	1.8
11:09:40	10.4	7.1
11:09:50	11.8	8.6
11:10:00	12.0	8.8
O2/CO2 DOWN		
11:10:10	12.0	8.8
11:10:20	12.0	8.8
11:10:30	12.0	8.8
11:10:40	9.6	7.2
11:10:50	1.5	1.8
11:11:00	0.1	0.3
11:11:10	0.0	0.1
END		
11:11:20	0.0	0.1
11:11:30	0.0	0.1
Avg	7.3	3.5

RUN SUMMARY

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **25 Feb 2019**

Method	O₂	CO₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 11:07:40 to 11:11:30

Run Averages

7.3 3.5

Pre-run Bias at 11:05

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

Post-run Bias at 07:37

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

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

7.3 3.4

BIAS AND CALIBRATION DRIFT

Number 2

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Start Time: 07:37

O₂
Method: EPA 3A
Span Conc. 21.0 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.0	12.0	0.0	0.0	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.0	12.0	0.0	0.0	Pass

*Bias No. 1

CO₂
Method: EPA 3A
Span Conc. 16.6 %

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

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.8	8.9	0.1	0.6	Pass

*Bias No. 1

RUN DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Time	O ₂ %	CO ₂ %
RUN 1		
PORT 1		
09:27	20.9	0.1
09:28	20.9	0.1
09:29	20.9	0.1
09:30	20.9	0.1
09:31	20.9	0.1
09:32	20.9	0.1
09:33	20.9	0.2
09:34	20.9	0.2
09:35	20.9	0.2
09:36	20.9	0.2
09:37	20.9	0.2
09:38	20.9	0.2
09:39	20.9	0.2
09:40	20.9	0.2
09:41	20.9	0.2
09:42	20.9	0.2
09:43	20.9	0.2
09:44	20.9	0.2
09:45	20.9	0.2
09:46	20.9	0.2
09:47	20.9	0.2
09:48	20.9	0.2
09:49	20.9	0.2
09:50	20.9	0.2
09:51	20.9	0.2
09:52	20.9	0.2
09:53	20.9	0.2
09:54	20.9	0.2
09:55	20.9	0.2
09:56	20.9	0.2
09:57	20.9	0.2
09:58	20.9	0.2
09:59	20.9	0.2
10:00	20.9	0.2
10:01	20.9	0.2
10:02	20.9	0.2
10:03	20.9	0.2
10:04	20.9	0.2

RUN DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Time	O ₂ %	CO ₂ %
10:05	20.9	0.2
10:06	20.9	0.2
10:07	20.9	0.2
10:08	20.9	0.2
10:09	20.9	0.2
10:10	20.9	0.2
10:11	20.9	0.2
10:12	20.9	0.2
10:13	20.9	0.2
10:14	20.9	0.2
10:15	20.9	0.2
PORT CHANGE		
PORT 2		
10:55	20.9	0.1
10:56	20.9	0.1
10:57	20.8	0.1
10:58	20.8	0.2
10:59	20.8	0.2
11:00	20.9	0.2
11:01	20.9	0.3
11:02	20.9	0.3
11:03	20.9	0.3
11:04	20.9	0.2
11:05	20.9	0.2
11:06	20.9	0.2
11:07	20.9	0.2
11:08	20.9	0.2
11:09	20.9	0.2
11:10	20.9	0.2
11:11	20.9	0.2
11:12	20.9	0.2
11:13	20.9	0.2
11:14	20.9	0.2
11:15	20.9	0.2
11:16	20.9	0.2
11:17	20.9	0.2
11:18	20.9	0.2
11:19	20.9	0.2
11:20	20.9	0.2
11:21	20.9	0.2

RUN DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Time	O ₂ %	CO ₂ %
11:22	20.9	0.2
11:23	20.9	0.2
11:24	20.9	0.2
11:25	20.9	0.2
11:26	20.9	0.2
11:27	20.9	0.2
11:28	20.9	0.2
11:29	20.9	0.2
11:30	20.9	0.1
11:31	20.9	0.1
11:32	20.9	0.1
11:33	20.9	0.1
11:34	20.9	0.1
11:35	20.9	0.1
11:36	20.9	0.1
11:37	20.9	0.1
11:38	20.9	0.1
11:39	20.9	0.1
11:40	20.9	0.1
11:41	20.9	0.1
11:42	20.9	0.1
11:43	20.9	0.1
Avg	20.9	0.2

RUN SUMMARY

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Method	O ₂	CO ₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 09:26 to 11:43

Run Averages

20.9 0.2

Pre-run Bias at 07:37

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

Post-run Bias at 11:44

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

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

20.9 0.1

BIAS AND CALIBRATION DRIFT

Number 3

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Start Time: 11:44

O₂
Method: EPA 3A
Span Conc. 21.0 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.0	12.0	0.0	0.0	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.0	12.0	0.0	0.0	Pass

*Bias No. 2

CO₂
Method: EPA 3A
Span Conc. 16.6 %

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

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.1	0.1	0.0	0.0	Pass
Span	8.9	8.9	0.0	0.0	Pass

*Bias No. 2

RUN DATA

Number 2

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Time	O ₂ %	CO ₂ %
R2 START		
13:35	20.8	0.1
13:36	20.7	0.5
13:37	20.7	0.6
13:38	20.8	0.4
13:39	20.8	0.3
13:40	20.8	0.3
13:41	20.8	0.2
13:42	20.8	0.2
13:43	20.8	0.2
13:44	20.8	0.2
13:45	20.8	0.2
13:46	20.8	0.2
13:47	20.9	0.2
13:48	20.9	0.2
13:49	20.9	0.1
13:50	20.9	0.2
13:51	20.9	0.2
13:52	20.8	0.2
13:53	20.8	0.2
13:54	20.8	0.2
13:55	20.8	0.2
13:56	20.8	0.2
13:57	20.8	0.1
13:58	20.8	0.1
13:59	20.8	0.1
14:00	20.8	0.1
14:01	20.8	0.1
14:02	20.8	0.1
14:03	20.8	0.1
14:04	20.8	0.1
14:05	20.8	0.1
14:06	20.8	0.1
14:07	20.8	0.1
14:08	20.8	0.1
14:09	20.9	0.1
14:10	20.8	0.1
14:11	20.8	0.1
14:12	20.8	0.1
14:13	20.8	0.1

RUN DATA

Number 2

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Time	O ₂ %	CO ₂ %
14:14	20.8	0.1
14:15	20.8	0.1
14:16	20.8	0.1
14:17	20.8	0.1
14:18	20.8	0.1
14:19	20.8	0.1
14:20	20.8	0.1
14:21	20.8	0.1
14:22	20.8	0.1
14:23	20.8	0.1
PORT CHANGE		
PORT 2		
14:42	20.8	0.1
14:43	20.8	0.1
14:44	20.8	0.1
14:45	20.8	0.1
14:46	20.8	0.1
14:47	20.8	0.1
14:48	20.8	0.1
14:49	20.8	0.1
14:50	20.8	0.1
14:51	20.8	0.1
14:52	20.8	0.1
14:53	20.8	0.1
14:54	20.8	0.1
14:55	20.8	0.1
14:56	20.8	0.1
14:57	20.8	0.1
14:58	20.8	0.1
14:59	20.8	0.1
15:00	20.8	0.1
15:01	20.8	0.1
15:02	20.8	0.1
15:03	20.8	0.1
15:04	20.8	0.1
15:05	20.8	0.1
15:06	20.8	0.1
15:07	20.8	0.1
15:08	20.8	0.1
15:09	20.8	0.1

RUN DATA

Number 2

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Time	O ₂ %	CO ₂ %
15:10	20.8	0.1
15:11	20.8	0.1
15:12	20.8	0.1
15:13	20.8	0.1
15:14	20.8	0.1
15:15	20.8	0.1
15:16	20.8	0.1
15:17	20.8	0.1
15:18	20.8	0.1
15:19	20.8	0.1
15:20	20.8	0.1
15:21	20.8	0.1
15:22	20.8	0.1
15:23	20.8	0.1
15:24	20.8	0.1
15:25	20.8	0.1
15:26	20.8	0.1
15:27	20.8	0.1
15:28	20.8	0.1
15:29	20.8	0.1
15:30	20.8	0.1
Avg	20.8	0.1

RUN SUMMARY

Number 2

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Method	O ₂	CO ₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 13:34 to 15:30

Run Averages

20.8 0.1

Pre-run Bias at 11:44

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

Post-run Bias at 15:33

Zero Bias	0.0	0.1
Span Bias	11.9	9.0
Span Gas	12.0	8.9

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

20.9 0.0

BIAS AND CALIBRATION DRIFT

Number 4

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **26 Feb 2019**

Start Time: 15:33

O₂
Method: EPA 3A
Span Conc. 21.0 %

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

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

*Bias No. 3

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.9	9.0	0.1	0.6	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.1	0.1	0.0	0.0	Pass
Span	8.9	9.0	0.1	0.6	Pass

*Bias No. 3

METHODS AND ANALYZERS

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division**

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Folders.A-F\Chemours Fayetteville\15418.002.010 VE North 2019\Data\FEBUARY_MARCH 2019\022719DIVISION

Program Version: 2.1, built 19 May 2017 **File Version:** 2.03

Computer: WSWCAIRSERVICES **Trailer:** 27

Analog Input Device: Keithley KUSB-3108

Channel 1

Analyte	O₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Servomex 4900
Full-Scale Output, mv	10000
Analyzer Range, %	25.0
Span Concentration, %	21.0

Channel 2

Analyte	CO₂
Method	EPA 3A, Using Bias
Analyzer Make, Model & Serial No.	Servomex 4900
Full-Scale Output, mv	10000
Analyzer Range, %	20.0
Span Concentration, %	16.6

CALIBRATION DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division**

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Start Time: 07:29

O₂

Method: EPA 3A

Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
12.0	CC18055
21.0	SG9169108

Calibration Results

Zero	-3 mv
Span, 21.0 %	8006 mv

Curve Coefficients

Slope	Intercept
381.4	-3

CO₂

Method: EPA 3A

Calibration Type: Linear Zero and High Span

Calibration Standards

%	Cylinder ID
8.9	CC18055
16.6	SG9169108

Calibration Results

Zero	-5 mv
Span, 16.6 %	8288 mv

Curve Coefficients

Slope	Intercept
500.2	-5

CALIBRATION ERROR DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Start Time: 07:29

O₂

Method: EPA 3A

Span Conc. 21.0 %

Slope 381.4

Intercept -3.0

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

CO₂

Method: EPA 3A

Span Conc. 16.6 %

Slope 500.2

Intercept -5.0

Standard	Result	Difference	Error	Status
%	%	%	%	
Zero	0.0	0.0	0.0	Pass
8.9	8.6	-0.3	-1.8	Pass
16.6	16.6	0.0	0.0	Pass

BIAS

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Start Time: 07:39

O₂
Method: EPA 3A
Span Conc. 21.0 %

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

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.6	8.4	-0.2	-1.2	Pass

RUN DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Time	O ₂ %	CO ₂ %
RUN 3		
POINT 1		
08:40	20.8	0.1
08:41	20.7	0.1
08:42	20.8	0.1
08:43	20.8	0.1
08:44	20.8	0.1
08:45	20.8	0.1
08:46	20.8	0.1
08:47	20.8	0.1
08:48	20.8	0.1
08:49	20.8	0.1
08:50	20.8	0.1
08:51	20.8	0.1
08:52	20.8	0.1
08:53	20.8	0.1
08:54	20.8	0.1
08:55	20.9	0.1
08:56	20.9	0.1
08:57	20.9	0.1
08:58	20.9	0.1
08:59	20.9	0.1
09:00	20.9	0.1
09:01	20.9	0.1
09:02	20.9	0.1
09:03	20.9	0.1
09:04	20.9	0.1
09:05	20.9	0.1
09:06	20.9	0.1
09:07	20.9	0.1
09:08	20.9	0.1
09:09	20.9	0.1
09:10	20.9	0.1
09:11	20.9	0.1
09:12	20.9	0.1
09:13	20.9	0.1
09:14	20.9	0.1
09:15	20.9	0.1
09:16	20.9	0.1
09:17	20.9	0.1

RUN DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Time	O ₂ %	CO ₂ %
09:18	20.9	0.1
09:19	20.9	0.1
09:20	20.9	0.1
09:21	20.9	0.1
09:22	20.9	0.1
09:23	20.9	0.1
09:24	20.9	0.1
09:25	20.9	0.1
09:26	20.9	0.1
09:27	20.9	0.1
09:28	20.9	0.1
PORT CHANGE		
PORT 2		
09:47	20.8	0.1
09:48	20.8	0.1
09:49	20.8	0.1
09:50	20.8	0.1
09:51	20.7	0.1
09:52	20.7	0.1
09:53	20.7	0.1
09:54	20.8	0.1
09:55	20.9	0.1
09:56	20.9	0.1
09:57	20.9	0.1
09:58	20.9	0.1
09:59	20.9	0.1
10:00	20.9	0.1
10:01	20.9	0.1
10:02	20.9	0.1
10:03	20.9	0.1
10:04	20.9	0.1
10:05	20.9	0.1
10:06	20.9	0.1
10:07	20.9	0.1
10:08	20.9	0.1
10:09	20.9	0.1
10:10	20.9	0.1
10:11	20.9	0.1
10:12	20.9	0.1
10:13	20.9	0.1

RUN DATA

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Time	O ₂ %	CO ₂ %
10:14	20.9	0.1
10:15	20.9	0.1
10:16	20.9	0.1
10:17	20.9	0.1
10:18	20.9	0.1
10:19	20.9	0.1
10:20	20.9	0.1
10:21	20.9	0.1
10:22	20.9	0.1
10:23	20.9	0.1
10:24	20.9	0.1
10:25	20.9	0.1
10:26	20.9	0.1
10:27	20.9	0.1
10:28	20.9	0.1
10:29	20.9	0.1
10:30	20.9	0.1
10:31	20.9	0.1
10:32	20.9	0.1
10:33	20.9	0.1
10:34	20.9	0.1
10:35	20.9	0.1
Avg	20.9	0.1

RUN SUMMARY

Number 1

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Method	O ₂	CO ₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 08:39 to 10:35

Run Averages

20.9 0.1

Pre-run Bias at 07:39

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

Post-run Bias at 10:36

Zero Bias	0.0	0.1
Span Bias	12.1	8.4
Span Gas	12.0	8.9

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

20.8 0.0

BIAS AND CALIBRATION DRIFT

Number 2

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Start Time: 10:36

O₂
Method: EPA 3A
Span Conc. 21.0 %

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

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

*Bias No. 1

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.6	8.4	-0.2	-1.2	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.1	0.1	0.0	0.0	Pass
Span	8.4	8.4	0.0	0.0	Pass

*Bias No. 1

RUN DATA

Number 2

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Time	O ₂ %	CO ₂ %
------	---------------------	----------------------

RUN 4
PORT 1 ONLY (SEE NEXT RUN FOR SECOND PORT)

12:31	20.7	0.1
12:32	20.7	0.1
12:33	20.7	0.1
12:34	20.7	0.1
12:35	20.7	0.1
12:36	20.7	0.1
12:37	20.7	0.1
12:38	20.7	0.1
12:39	20.7	0.1
12:40	20.7	0.1
12:41	20.7	0.1
12:42	20.7	0.1
12:43	20.7	0.1
12:44	20.7	0.1
12:45	20.7	0.1
12:46	20.7	0.1
12:47	20.7	0.1
12:48	20.7	0.1
12:49	20.7	0.1
12:50	20.7	0.1
12:51	20.7	0.1
12:52	20.7	0.1
12:53	20.7	0.1
12:54	20.7	0.1
12:55	20.7	0.1
12:56	20.8	0.1
12:57	20.8	0.1
12:58	20.8	0.1
12:59	20.8	0.1
13:00	20.8	0.1
13:01	20.8	0.1
13:02	20.8	0.1
13:03	20.8	0.1
13:04	20.8	0.1
13:05	20.8	0.1
13:06	20.8	0.1
13:07	20.8	0.1
13:08	20.8	0.1

RUN DATA

Number 2

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Time	O ₂ %	CO ₂ %
13:09	20.8	0.1
13:10	20.8	0.1
13:11	20.8	0.1
13:12	20.8	0.1
13:13	20.8	0.1
13:14	20.8	0.1
13:15	20.8	0.1
13:16	20.8	0.1
13:17	20.8	0.1
13:18	20.8	0.1
13:19	20.8	0.1
Avg	20.7	0.1

RUN SUMMARY

Number 2

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Method	O ₂	CO ₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 12:30 to 13:19

Run Averages

20.7 0.1

Pre-run Bias at 10:36

Zero Bias	0.0	0.1
Span Bias	12.1	8.4
Span Gas	12.0	8.9

Post-run Bias at 13:21

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

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

20.7 0.1

BIAS AND CALIBRATION DRIFT

Number 3

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Start Time: 13:21

O₂
Method: EPA 3A
Span Conc. 21.0 %

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

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

*Bias No. 2

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.6	8.4	-0.2	-1.2	Pass

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

*Bias No. 2

RUN DATA

Number 3

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Time	O ₂ %	CO ₂ %
RUN 4		
PORT 2		
13:38	20.7	0.1
13:39	20.7	0.1
13:40	20.7	0.1
13:41	20.7	0.2
13:42	20.6	0.2
13:43	20.6	0.2
13:44	20.7	0.2
13:45	20.7	0.2
13:46	20.8	0.2
13:47	20.8	0.2
13:48	20.8	0.2
13:49	20.8	0.2
13:50	20.8	0.2
13:51	20.8	0.2
13:52	20.8	0.2
13:53	20.8	0.2
13:54	20.8	0.2
13:55	20.8	0.2
13:56	20.8	0.2
13:57	20.8	0.2
13:58	20.8	0.2
13:59	20.8	0.2
14:00	20.8	0.2
14:01	20.8	0.2
14:02	20.8	0.2
14:03	20.8	0.1
14:04	20.8	0.1
14:05	20.8	0.1
14:06	20.8	0.1
14:07	20.8	0.1
14:08	20.8	0.1
14:09	20.8	0.1
14:10	20.8	0.1
14:11	20.8	0.1
14:12	20.8	0.1
14:13	20.8	0.1
14:14	20.8	0.1
14:15	20.8	0.1

RUN DATA

Number 3

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Time	O ₂ %	CO ₂ %
14:16	20.8	0.1
14:17	20.8	0.1
14:18	20.8	0.1
14:19	20.8	0.1
14:20	20.8	0.1
14:21	20.8	0.1
14:22	20.8	0.1
14:23	20.8	0.1
14:24	20.8	0.1
14:25	20.8	0.1
14:26	20.8	0.1
Avg	20.8	0.1

RUN SUMMARY

Number 3

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Method	O ₂	CO ₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 13:37 to 14:26

Run Averages

20.8 0.1

Pre-run Bias at 13:21

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

Post-run Bias at 14:28

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

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

20.9 0.2

BIAS AND CALIBRATION DRIFT

Number 4

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **27 Feb 2019**

Start Time: 14:28

O₂
Method: EPA 3A
Span Conc. 21.0 %

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

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

*Bias No. 3

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.6	8.4	-0.2	-1.2	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.4	8.4	0.0	0.0	Pass

*Bias No. 3

BIAS AND CALIBRATION DRIFT

Number 5

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Start Time: 07:19

O₂
Method: EPA 3A
Span Conc. 21.0 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.1	11.8	-0.3	-1.4	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.1	0.0	-0.1	-0.5	Pass
Span	12.0	11.8	-0.2	-1.0	Pass

*Bias No. 4

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.6	8.3	-0.3	-1.8	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.4	8.3	-0.1	-0.6	Pass

*Bias No. 4

RUN DATA

Number 4

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Time	O ₂ %	CO ₂ %
08:14	20.6	0.1
08:15	20.6	0.1
08:16	20.6	0.1
08:17	20.6	0.1
08:18	20.6	0.1
08:19	20.6	0.1
08:20	20.6	0.1
08:21	20.6	0.1
08:22	20.6	0.1
	RUN 5	
	PORT 1	
08:23	20.6	0.1
08:24	20.6	0.1
08:25	20.6	0.1
08:26	20.6	0.1
08:27	20.6	0.1
08:28	20.6	0.1
08:29	20.6	0.1
08:30	20.6	0.1
08:31	20.6	0.1
08:32	20.6	0.1
08:33	20.6	0.1
08:34	20.6	0.1
08:35	20.6	0.1
08:36	20.6	0.1
08:37	20.6	0.1
08:38	20.6	0.1
08:39	20.6	0.1
08:40	20.6	0.1
08:41	20.6	0.1
08:42	20.6	0.1
08:43	20.6	0.1
08:44	20.6	0.1
08:45	20.6	0.1
08:46	20.6	0.1
08:47	20.6	0.1
08:48	20.6	0.1
08:49	20.6	0.1
08:50	20.6	0.1
08:51	20.6	0.1

RUN DATA

Number 4

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Time	O ₂ %	CO ₂ %
08:52	20.6	0.1
08:53	20.6	0.1
08:54	20.6	0.1
08:55	20.6	0.1
08:56	20.6	0.1
08:57	20.6	0.1
08:58	20.6	0.1
08:59	20.6	0.1
09:00	20.6	0.1
09:01	20.6	0.1
09:02	20.6	0.1
09:03	20.6	0.1
09:04	20.6	0.1
09:05	20.6	0.1
09:06	20.6	0.1
09:07	20.7	0.1
09:08	20.7	0.1
09:09	20.7	0.1
09:10	20.7	0.1
09:11	20.7	0.1
PORT CHANGE		
09:12	20.7	0.1
09:13	20.7	0.1
09:14	20.7	0.1
09:15	20.7	0.1
09:16	20.6	0.1
09:17	20.6	0.1
09:18	20.6	0.1
09:19	20.6	0.1
09:20	20.6	0.1
09:21	20.6	0.1
09:22	20.6	0.1
09:23	20.6	0.1
09:24	20.6	0.1
09:25	20.6	0.1
09:26	20.6	0.1
09:27	20.6	0.1
09:28	20.6	0.1
09:29	20.6	0.1

RUN DATA

Number 4

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Time	O ₂ %	CO ₂ %
PORT 2		
09:30	20.6	0.1
09:31	20.6	0.1
09:32	20.6	0.1
09:33	20.6	0.1
09:34	20.6	0.2
09:35	20.6	0.2
09:36	20.6	0.2
09:37	20.6	0.2
09:38	20.6	0.2
09:39	20.6	0.2
09:40	20.6	0.2
09:41	20.7	0.2
09:42	20.7	0.2
09:43	20.7	0.2
09:44	20.7	0.2
09:45	20.7	0.2
09:46	20.7	0.2
09:47	20.7	0.2
09:48	20.7	0.2
09:49	20.7	0.2
09:50	20.7	0.2
09:51	20.7	0.2
09:52	20.7	0.2
09:53	20.7	0.2
09:54	20.7	0.2
09:55	20.7	0.2
09:56	20.7	0.1
09:57	20.8	0.1
09:58	20.8	0.1
09:59	20.8	0.1
10:00	20.8	0.1
10:01	20.8	0.1
10:02	20.8	0.1
10:03	20.8	0.1
10:04	20.8	0.1
10:05	20.8	0.1
10:06	20.8	0.1
10:07	20.8	0.1
10:08	20.8	0.1

RUN DATA

Number 4

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Time	O ₂ %	CO ₂ %
10:09	20.8	0.1
10:10	20.8	0.1
10:11	20.8	0.1
10:12	20.8	0.1
10:13	20.8	0.1
10:14	20.8	0.1
10:15	20.8	0.1
10:16	20.8	0.1
10:17	20.8	0.1
10:18	20.8	0.1
Avg	20.7	0.1

RUN SUMMARY

Number 4

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Method	O ₂	CO ₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 08:13 to 10:18

Run Averages

20.7 0.1

Pre-run Bias at 07:19

Zero Bias	0.0	0.1
Span Bias	11.8	8.3
Span Gas	12.0	8.9

Post-run Bias at 10:21

Zero Bias	0.0	0.0
Span Bias	12.0	8.3
Span Gas	12.0	8.9

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

20.8 0.1

BIAS AND CALIBRATION DRIFT

Number 6

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Start Time: 10:21

O₂
Method: EPA 3A
Span Conc. 21.0 %

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

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.8	12.0	0.2	1.0	Pass

*Bias No. 5

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.6	8.3	-0.3	-1.8	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.1	0.0	-0.1	-0.6	Pass
Span	8.3	8.3	0.0	0.0	Pass

*Bias No. 5

RUN DATA

Number 5

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Time	O ₂ %	CO ₂ %
14:12	20.6	0.1
14:13	20.6	0.1
14:14	20.6	0.1
14:15	20.6	0.1
14:16	20.6	0.1
14:17	20.6	0.1
14:18	20.6	0.1
14:19	20.6	0.1
14:20	20.6	0.1
14:21	20.6	0.1
14:22	20.6	0.1
14:23	20.6	0.1
14:24	20.6	0.1
14:25	20.6	0.1
14:26	20.6	0.1
14:27	20.6	0.1
14:28	20.6	0.1
	RUN 6	
	PORT 1	
14:29	20.6	0.1
14:30	20.5	0.2
14:31	20.5	0.4
14:32	20.5	0.2
14:33	20.6	0.2
14:34	20.6	0.1
14:35	20.6	0.1
14:36	20.6	0.1
14:37	20.6	0.1
14:38	20.6	0.1
14:39	20.6	0.1
14:40	20.6	0.1
14:41	20.6	0.1
14:42	20.6	0.1
14:43	20.6	0.1
14:44	20.6	0.1
14:45	20.6	0.1
14:46	20.6	0.1
14:47	20.6	0.1
14:48	20.6	0.1
14:49	20.6	0.1

RUN DATA

Number 5

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Time	O ₂ %	CO ₂ %
14:50	20.6	0.1
14:51	20.6	0.1
14:52	20.6	0.1
14:53	20.6	0.1
14:54	20.6	0.1
14:55	20.6	0.1
14:56	20.6	0.1
14:57	20.6	0.1
14:58	20.6	0.1
14:59	20.6	0.1
15:00	20.6	0.1
15:01	20.6	0.1
15:02	20.6	0.1
15:03	20.6	0.1
15:04	20.6	0.1
15:05	20.6	0.1
15:06	20.6	0.1
15:07	20.6	0.1
15:08	20.6	0.1
15:09	20.6	0.1
15:10	20.6	0.1
15:11	20.6	0.1
15:12	20.6	0.1
15:13	20.7	0.1
15:14	20.7	0.1
15:15	20.7	0.1
15:16	20.7	0.1
15:17	20.7	0.1
PORT CHANGE		
15:18	20.7	0.1
15:19	20.6	0.1
15:20	20.6	0.1
15:21	20.6	0.1
15:22	20.6	0.1
15:23	20.6	0.1
15:24	20.6	0.1
15:25	20.6	0.1
15:26	20.6	0.1
15:27	20.6	0.1
15:28	20.6	0.1

RUN DATA

Number 5

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Time	O ₂ %	CO ₂ %
15:29	20.6	0.1
15:30	20.6	0.1
15:31	20.6	0.1
15:32	20.6	0.1
15:33	20.6	0.1
15:34	20.6	0.1
15:35	20.6	0.1
15:36	20.6	0.1
15:37	20.6	0.1
15:38	20.6	0.1
	PORT 2	
15:39	20.6	0.1
15:40	20.6	0.1
15:41	20.6	0.1
15:42	20.6	0.1
15:43	20.6	0.1
15:44	20.6	0.1
15:45	20.6	0.1
15:46	20.6	0.1
15:47	20.6	0.1
15:48	20.7	0.1
15:49	20.7	0.1
15:50	20.7	0.1
15:51	20.7	0.1
15:52	20.7	0.1
15:53	20.7	0.1
15:54	20.7	0.1
15:55	20.7	0.1
15:56	20.7	0.1
15:57	20.7	0.1
15:58	20.7	0.1
15:59	20.7	0.1
16:00	20.7	0.1
16:01	20.7	0.1
16:02	20.7	0.1
16:03	20.7	0.1
16:04	20.7	0.1
16:05	20.7	0.1
16:06	20.7	0.1
16:07	20.7	0.1

RUN DATA

Number 5

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Time	O ₂ %	CO ₂ %
16:08	20.7	0.1
16:09	20.7	0.1
16:10	20.7	0.1
16:11	20.7	0.1
16:12	20.7	0.1
16:13	20.7	0.1
16:14	20.7	0.1
16:15	20.7	0.1
16:16	20.7	0.1
16:17	20.7	0.1
16:18	20.7	0.1
16:19	20.7	0.1
16:20	20.7	0.1
16:21	20.7	0.1
16:22	20.7	0.1
16:23	20.7	0.1
16:24	20.7	0.1
16:25	20.7	0.1
16:26	20.7	0.1
16:27	20.7	0.1
Avg	20.6	0.1

RUN SUMMARY

Number 5

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Method	O ₂	CO ₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 14:11 to 16:27

Run Averages

20.6 0.1

Pre-run Bias at 10:21

Zero Bias	0.0	0.0
Span Bias	12.0	8.3
Span Gas	12.0	8.9

Post-run Bias at 16:31

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

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

20.7 0.1

BIAS AND CALIBRATION DRIFT

Number 7

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **28 Feb 2019**

Start Time: 16:31

O₂
Method: EPA 3A
Span Conc. 21.0 %

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

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

*Bias No. 6

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.6	8.4	-0.2	-1.2	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.3	8.4	0.1	0.6	Pass

*Bias No. 6

BIAS AND CALIBRATION DRIFT

Number 8

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Start Time: 07:24

O₂
Method: EPA 3A
Span Conc. 21.0 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.1	12.2	0.1	0.5	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	11.9	12.2	0.3	1.4	Pass

*Bias No. 7

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.6	8.3	-0.3	-1.8	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.4	8.3	-0.1	-0.6	Pass

*Bias No. 7

RUN DATA

Number 6

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Time	O ₂ %	CO ₂ %
RUN 7		
PORT 1		
08:13	21.2	0.1
08:14	21.0	0.7
08:15	21.1	0.5
08:16	21.1	0.3
08:17	21.1	0.2
08:18	21.1	0.2
08:19	21.2	0.1
08:20	21.1	0.1
08:21	21.2	0.1
08:22	21.2	0.1
08:23	21.2	0.1
08:24	21.2	0.1
08:25	21.2	0.1
08:26	21.2	0.1
08:27	21.2	0.1
08:28	21.2	0.1
08:29	21.2	0.1
08:30	21.2	0.1
08:31	21.2	0.1
08:32	21.2	0.1
08:33	21.2	0.1
08:34	21.2	0.1
08:35	21.2	0.1
08:36	21.2	0.1
08:37	21.2	0.1
08:38	21.2	0.1
08:39	21.2	0.1
08:40	21.2	0.1
08:41	21.2	0.1
08:42	21.2	0.1
08:43	21.2	0.1
08:44	21.2	0.1
08:45	21.2	0.1
08:46	21.2	0.1
08:47	21.2	0.1
08:48	21.2	0.1
08:49	21.2	0.1
08:50	21.2	0.1

RUN DATA

Number 6

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Time	O ₂ %	CO ₂ %
08:51	21.2	0.1
08:52	21.2	0.1
08:53	21.2	0.1
08:54	21.2	0.1
08:55	21.2	0.1
08:56	21.2	0.1
08:57	21.2	0.1
08:58	21.2	0.1
08:59	21.2	0.1
09:00	21.2	0.1
09:01	21.3	0.1
PORT CHANGE		
PORT 2		
09:20	21.2	0.1
09:21	21.2	0.1
09:22	21.2	0.1
09:23	21.2	0.2
09:24	21.2	0.2
09:25	21.2	0.2
09:26	21.2	0.2
09:27	21.2	0.2
09:28	21.2	0.2
09:29	21.2	0.2
09:30	21.2	0.2
09:31	21.3	0.2
09:32	21.3	0.2
09:33	21.3	0.2
09:34	21.3	0.2
09:35	21.3	0.2
09:36	21.3	0.2
09:37	21.3	0.2
09:38	21.3	0.2
09:39	21.3	0.2
09:40	21.3	0.2
09:41	21.3	0.2
09:42	21.3	0.1
09:43	21.3	0.1
09:44	21.3	0.1
09:45	21.3	0.1
09:46	21.3	0.1

RUN DATA

Number 6

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Time	O ₂ %	CO ₂ %
09:47	21.3	0.1
09:48	21.3	0.1
09:49	21.3	0.1
09:50	21.3	0.1
09:51	21.3	0.1
09:52	21.3	0.1
09:53	21.3	0.1
09:54	21.3	0.1
09:55	21.3	0.1
09:56	21.3	0.1
09:57	21.3	0.1
09:58	21.3	0.1
09:59	21.3	0.1
10:00	21.3	0.1
10:01	21.3	0.1
10:02	21.3	0.1
10:03	21.3	0.1
10:04	21.3	0.1
10:05	21.3	0.1
10:06	21.3	0.1
10:07	21.3	0.1
10:08	21.3	0.1
Avg	21.2	0.1

RUN SUMMARY

Number 6

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Method	O ₂	CO ₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 08:12 to 10:08

Run Averages

21.2 0.1

Pre-run Bias at 07:24

Zero Bias	0.0	0.0
Span Bias	12.2	8.3
Span Gas	12.0	8.9

Post-run Bias at 10:12

Zero Bias	0.0	0.0
Span Bias	12.2	8.4
Span Gas	12.0	8.9

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

20.9 0.1

BIAS AND CALIBRATION DRIFT

Number 9

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Start Time: 10:12

O₂

Method: EPA 3A
Span Conc. 21.0 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.1	12.2	0.1	0.5	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.2	12.2	0.0	0.0	Pass

*Bias No. 8

CO₂

Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.6	8.4	-0.2	-1.2	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.3	8.4	0.1	0.6	Pass

*Bias No. 8

RUN DATA

Number 7

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Time	O ₂ %	CO ₂ %
RUN 8		
PORT 1		
12:37	21.1	0.1
12:38	21.1	0.1
12:39	21.1	0.1
12:40	21.1	0.1
12:41	21.1	0.1
12:42	21.1	0.1
12:43	21.1	0.1
12:44	21.1	0.1
12:45	21.1	0.1
12:46	21.1	0.1
12:47	21.1	0.1
12:48	21.1	0.1
12:49	21.1	0.1
12:50	21.1	0.1
12:51	21.1	0.1
12:52	21.1	0.1
12:53	21.1	0.1
12:54	21.1	0.1
12:55	21.1	0.1
12:56	21.1	0.1
12:57	21.1	0.1
12:58	21.1	0.1
12:59	21.1	0.1
13:00	21.1	0.1
13:01	21.1	0.1
13:02	21.1	0.1
13:03	21.1	0.1
13:04	21.1	0.1
13:05	21.1	0.1
13:06	21.1	0.1
13:07	21.1	0.1
13:08	21.1	0.1
13:09	21.1	0.1
13:10	21.2	0.1
13:11	21.2	0.1
13:12	21.2	0.1
13:13	21.2	0.1
13:14	21.2	0.1

RUN DATA

Number 7

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Time	O ₂ %	CO ₂ %
13:15	21.2	0.1
13:16	21.2	0.1
13:17	21.2	0.1
13:18	21.2	0.1
13:19	21.2	0.1
13:20	21.2	0.1
13:21	21.2	0.1
13:22	21.2	0.1
13:23	21.2	0.1
13:24	21.3	0.1
PORT CHANGE		
PORT 2		
13:45	21.1	0.1
13:46	21.1	0.1
13:47	21.1	0.1
13:48	21.1	0.1
13:49	21.1	0.1
13:50	21.1	0.1
13:51	21.1	0.1
13:52	21.1	0.1
13:53	21.1	0.1
13:54	21.1	0.1
13:55	21.1	0.1
13:56	21.2	0.1
13:57	21.2	0.1
13:58	21.2	0.1
13:59	21.2	0.1
14:00	21.2	0.1
14:01	21.2	0.1
14:02	21.2	0.1
14:03	21.2	0.1
14:04	21.2	0.1
14:05	21.2	0.1
14:06	21.3	0.1
14:07	21.2	0.1
14:08	21.2	0.1
14:09	21.2	0.1
14:10	21.2	0.1
14:11	21.2	0.1
14:12	21.2	0.1

RUN DATA

Number 7

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Time	O ₂ %	CO ₂ %
14:13	21.2	0.1
14:14	21.2	0.1
14:15	21.2	0.1
14:16	21.2	0.1
14:17	21.2	0.1
14:18	21.2	0.1
14:19	21.3	0.1
14:20	21.3	0.1
14:21	21.3	0.1
14:22	21.3	0.1
14:23	21.3	0.1
14:24	21.3	0.1
14:25	21.2	0.1
14:26	21.2	0.1
14:27	21.2	0.1
14:28	21.2	0.1
14:29	21.2	0.1
14:30	21.2	0.1
14:31	21.2	0.1
14:32	21.2	0.1
14:33	21.2	0.1
Avg	21.2	0.1

RUN SUMMARY

Number 7

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Method	O ₂	CO ₂
Conc. Units	EPA 3A	EPA 3A
	%	%

Time: 12:36 to 14:33

Run Averages

21.2 0.1

Pre-run Bias at 10:12

Zero Bias	0.0	0.0
Span Bias	12.2	8.4
Span Gas	12.0	8.9

Post-run Bias at 14:35

Zero Bias	0.0	0.0
Span Bias	12.1	8.3
Span Gas	12.0	8.9

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

20.9 0.1

BIAS AND CALIBRATION DRIFT

Number 10

Client: **Chemours**
Location: **CHEMOURS**
Source: **VE North Carbon Bed/Division** Calibration 1

Project Number: **15418.002.010**
Operator: **SD**
Date: **1 Mar 2019**

Start Time: 14:35

O₂
Method: EPA 3A
Span Conc. 21.0 %

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

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.2	12.1	-0.1	-0.5	Pass

*Bias No. 9

CO₂
Method: EPA 3A
Span Conc. 16.6 %

Bias Results					
Standard	Cal.	Bias	Difference	Error	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.6	8.3	-0.3	-1.8	Pass

Calibration Drift					
Standard	Initial*	Final	Difference	Drift	Status
Gas	%	%	%	%	
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.4	8.3	-0.1	-0.6	Pass

*Bias No. 9

APPENDIX C
LABORATORY ANALYTICAL REPORT

Note: The analytical report is included on the attached CD.

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: D-2422,2423 R1 DIV STACK CARBON BED INLET M0010 FH

Lab Sample ID: 140-14453-1

Date Collected: 02/26/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	103		1.51	0.163	ug/Sample		03/04/19 13:06	03/08/19 12:46	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	108	D	50 - 200				03/04/19 13:06	03/08/19 12:46	10

Client Sample ID: D-2424,2425,2427 R1 DIV STACK CARBON BED INLET M0010 BH

Lab Sample ID: 140-14453-2

Date Collected: 02/26/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2610		22.5	4.50	ug/Sample		03/04/19 05:45	03/08/19 14:51	100
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	76	D	50 - 200				03/04/19 05:45	03/08/19 14:51	100

Client Sample ID: D-2426 R1 DIV STACK CARBON BED INLET M0010 IMP 1,2&3 COND

Lab Sample ID: 140-14453-3

Date Collected: 02/26/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.120	J	0.190	0.00969	ug/Sample		03/06/19 06:51	03/08/19 13:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	85		50 - 200				03/06/19 06:51	03/08/19 13:29	1

Client Sample ID: D-2428 R1 DIV STACK CARBON BED INLET M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-14453-4

Date Collected: 02/26/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.200	0.0400	ug/Sample		03/04/19 05:45	03/08/19 14:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	20	X	50 - 200				03/04/19 05:45	03/08/19 14:54	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: K-2056,2057 R1 DIV STACK CARBON BED OUTLET M0010 FH

Lab Sample ID: 140-14453-5

Date Collected: 02/26/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	10.9		0.151	0.0163	ug/Sample		03/04/19 13:06	03/08/19 12:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	98		50 - 200				03/04/19 13:06	03/08/19 12:50	1

Client Sample ID: K-2058,2059,2061 R1 DIV STACK CARBON BED OUTLET M0010 BH

Lab Sample ID: 140-14453-6

Date Collected: 02/26/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	4.04		0.225	0.0450	ug/Sample		03/04/19 05:45	03/08/19 14:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	32	X	50 - 200				03/04/19 05:45	03/08/19 14:57	1

Client Sample ID: K-2060 R1 DIV STACK CARBON BED OUTLET M0010 IMP 1,2&3 COND

Lab Sample ID: 140-14453-7

Date Collected: 02/26/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.168	J	0.196	0.00999	ug/Sample		03/06/19 06:51	03/08/19 13:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		50 - 200				03/06/19 06:51	03/08/19 13:32	1

Client Sample ID: K-2062 R1 DIV STACK CARBON BED OUTLET M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-14453-8

Date Collected: 02/26/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.200	0.0400	ug/Sample		03/04/19 05:45	03/08/19 15:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	36	X	50 - 200				03/04/19 05:45	03/08/19 15:04	1

Client Sample Results

Client: Chemours Company FC, LLC The
 Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: H-2129,2130 R4 DIV STACK CARBON BED INLET M0010 FH

Lab Sample ID: 140-14453-17

Date Collected: 02/27/19 00:00
 Date Received: 02/27/19 16:30
 Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	51.4		1.01	0.109	ug/Sample		03/04/19 13:06	03/08/19 12:59	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	107	D	50 - 200				03/04/19 13:06	03/08/19 12:59	10

Client Sample ID: H-2131,2132,2134 R4 DIV STACK CARBON BED INLET M0010 BH

Lab Sample ID: 140-14453-18

Date Collected: 02/27/19 00:00
 Date Received: 02/27/19 16:30
 Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1540		12.5	2.50	ug/Sample		03/04/19 05:54	03/08/19 15:56	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	74	D	50 - 200				03/04/19 05:54	03/08/19 15:56	50

Client Sample ID: H-2133 R4 DIV STACK CARBON BED INLET M0010 IMP 1,2&3 COND

Lab Sample ID: 140-14453-19

Date Collected: 02/27/19 00:00
 Date Received: 02/27/19 16:30
 Sample Container: Air Train

Matrix: Air

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	118		2.10	0.107	ug/Sample		03/06/19 06:51	03/08/19 13:45	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	101	D	50 - 200				03/06/19 06:51	03/08/19 13:45	10

Client Sample ID: H-2135 R4 DIV STACK CARBON BED INLET M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-14453-20

Date Collected: 02/27/19 00:00
 Date Received: 02/27/19 16:30
 Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.77		0.200	0.0400	ug/Sample		03/04/19 05:54	03/08/19 15:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	21	X	50 - 200				03/04/19 05:54	03/08/19 15:59	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: C-1229,1230 R4 DIV STACK CARBON BED OUTLET M0010 FH

Lab Sample ID: 140-14453-21

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.05		0.0765	0.00826	ug/Sample		03/04/19 13:06	03/08/19 13:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	94		50 - 200				03/04/19 13:06	03/08/19 13:02	1

Client Sample ID: C-1231,1232,1234 R4 DIV STACK CARBON BED OUTLET M0010 BH

Lab Sample ID: 140-14453-22

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	318		2.75	0.550	ug/Sample		03/04/19 05:54	03/08/19 16:02	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	63	D	50 - 200				03/04/19 05:54	03/08/19 16:02	10

Client Sample ID: C-1233 R4 DIV STACK CARBON BED OUTLET M0010 IMP 1,2&3 COND

Lab Sample ID: 140-14453-23

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.204	0.0104	ug/Sample		03/06/19 06:51	03/08/19 13:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	93		50 - 200				03/06/19 06:51	03/08/19 13:52	1

Client Sample ID: C-1235 R4 DIV STACK CARBON BED OUTLET M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-14453-24

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.200	0.0400	ug/Sample		03/04/19 05:54	03/08/19 16:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	20	X	50 - 200				03/04/19 05:54	03/08/19 16:06	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: D-2429,2430 R3 DIV STACK CARBON BED INLET M0010 FH

Lab Sample ID: 140-14459-1

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	51.3		1.01	0.109	ug/Sample		03/07/19 09:38	03/11/19 13:10	10
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	121	D	50 - 200				03/07/19 09:38	03/11/19 13:10	10

Client Sample ID: D-2431,,2432,2434 R3 DIV STACK CARBON BED INLET M0010 BH

Lab Sample ID: 140-14459-2

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1430		12.5	2.50	ug/Sample		03/06/19 08:09	03/18/19 10:22	50
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	101	D	50 - 200				03/06/19 08:09	03/18/19 10:22	50

Client Sample ID: D-2433 R3 DIV STACK CARBON BED INLET M0010 IMP 1,2&3 COND

Lab Sample ID: 140-14459-3

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	38.4		0.408	0.0208	ug/Sample		03/06/19 11:22	03/11/19 12:02	2
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	132	D	50 - 200				03/06/19 11:22	03/11/19 12:02	2

Client Sample ID: D-2435 R3 DIV STACK CARBON BED INLET M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-14459-4

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.89		0.200	0.0400	ug/Sample		03/06/19 08:09	03/18/19 10:25	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	60		50 - 200				03/06/19 08:09	03/18/19 10:25	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: K-2063,2064 R3 DIV STACK CARBON BED OUTLET M0010 FH

Lab Sample ID: 140-14459-5

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	5.76		0.101	0.0109	ug/Sample		03/07/19 09:38	03/11/19 13:14	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	126		50 - 200				03/07/19 09:38	03/11/19 13:14	1

Client Sample ID: K-2065,2066,2068 R3 DIV STACK CARBON BED OUTLET M0010 BH

Lab Sample ID: 140-14459-6

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.33		0.250	0.0500	ug/Sample		03/06/19 08:09	03/18/19 10:28	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	21	X	50 - 200				03/06/19 08:09	03/18/19 10:28	1

Client Sample ID: K-2067 R3 DIV STACK CARBON BED OUTLET M0010 IMP 1,2&3 COND

Lab Sample ID: 140-14459-7

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.204	0.0104	ug/Sample		03/06/19 11:22	03/11/19 12:05	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	118		50 - 200				03/06/19 11:22	03/11/19 12:05	1

Client Sample ID: K-2069 R3 DIV STACK CARBON BED OUTLET M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-14459-8

Date Collected: 02/27/19 00:00
Date Received: 02/27/19 16:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.200	0.0400	ug/Sample		03/06/19 08:09	03/18/19 10:32	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	20	X	50 - 200				03/06/19 08:09	03/18/19 10:32	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: H-2122,2123 DIV STACK CB INLET M0010

Lab Sample ID: 140-14464-1

R2 FH 230 KG/HR

Date Collected: 02/26/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	55.5		1.26	0.136	ug/Sample		03/04/19 13:06	03/08/19 13:06	10
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	89	D	50 - 200				03/04/19 13:06	03/08/19 13:06	10

Client Sample ID: H-2124,2125,2127 DIV STACK CB INLET

Lab Sample ID: 140-14464-2

M0010 R2 BH 230 KG/HR

Date Collected: 02/26/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	3140		20.0	4.00	ug/Sample		03/04/19 05:45	03/08/19 15:20	100
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	79	D	50 - 200				03/04/19 05:45	03/08/19 15:20	100

Client Sample ID: H-2126 DIV STACK CB INLET M0010 R2 IMP

Lab Sample ID: 140-14464-3

1,2&3 COND 230 KG/HR

Date Collected: 02/26/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	24.0		0.204	0.0104	ug/Sample		03/06/19 06:51	03/08/19 14:08	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	82		50 - 200				03/06/19 06:51	03/08/19 14:08	1

Client Sample ID: H-2128 DIV STACK CB INLET M0010 R2

Lab Sample ID: 140-14464-4

BREAKTHROUGH XAD-2 RESIN TUBE 230 KG/HR

Date Collected: 02/26/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	7.68		0.200	0.0400	ug/Sample		03/04/19 05:45	03/08/19 15:23	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	40	X	50 - 200				03/04/19 05:45	03/08/19 15:23	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: C-1222,1223 DIV STACK CB OUTLET M0010

Lab Sample ID: 140-14464-5

R2 FH 230 KG/HR

Date Collected: 02/26/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	4.20		0.126	0.0136	ug/Sample		03/04/19 13:06	03/08/19 13:09	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	102		50 - 200				03/04/19 13:06	03/08/19 13:09	1

Client Sample ID: C-1224,1225,1227 DIV STACK CB OUTLET

Lab Sample ID: 140-14464-6

M0010 R2 BH 230 KG/HR

Date Collected: 02/26/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.380		0.225	0.0450	ug/Sample		03/04/19 05:54	03/08/19 15:33	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	41	X	50 - 200				03/04/19 05:54	03/08/19 15:33	1

Client Sample ID: C-1226 DIV STACK CB OUTLET M0010 R2

Lab Sample ID: 140-14464-7

IMP 1,2&3 COND 230 KG/HR

Date Collected: 02/26/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.0952	J	0.208	0.0106	ug/Sample		03/06/19 06:51	03/08/19 14:11	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	96		50 - 200				03/06/19 06:51	03/08/19 14:11	1

Client Sample ID: C-1228 DIV STACK CB OUTLET M0010 R2

Lab Sample ID: 140-14464-8

BREAKTHROUGH XAD-2 RESIN TUBE 230 KG/HR

Date Collected: 02/26/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.200	0.0400	ug/Sample		03/04/19 05:54	03/08/19 15:39	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	38	X	50 - 200				03/04/19 05:54	03/08/19 15:39	1

Client Sample Results

Client: Chemours Company FC, LLC The
 Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: E-1684,1685 DIV STACK CB INLET M0010

Lab Sample ID: 140-14464-17

R6 FH 150 KG/HR

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	41.4		0.251	0.0271	ug/Sample		03/07/19 09:38	03/11/19 13:23	2
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	122	D	50 - 200				03/07/19 09:38	03/11/19 13:23	2

Client Sample ID: E-1686,1687,1689 DIV STACK CB INLET

Lab Sample ID: 140-14464-18

M0010 R6 BH 150 KG/HR

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1510		10.0	2.00	ug/Sample		03/06/19 08:09	03/18/19 10:54	50
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	94	D	50 - 200				03/06/19 08:09	03/18/19 10:54	50

Client Sample ID: E-1688 DIV STACK CB INLET M0010 R6 IMP

Lab Sample ID: 140-14464-19

1,2&3 COND 150 KG/HR

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	150		1.98	0.101	ug/Sample		03/06/19 06:51	03/08/19 14:21	10
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	114	D	50 - 200				03/06/19 06:51	03/08/19 14:21	10

Client Sample ID: E-1690 DIV STACK CB INLET M0010 R6 IMP

Lab Sample ID: 140-14464-20

BREAKTHROUGH XAD-2 RESIN TUBE 2 150 KG/HR

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.709		0.200	0.0400	ug/Sample		03/06/19 08:09	03/18/19 10:58	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	49	X	50 - 200				03/06/19 08:09	03/18/19 10:58	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: E-1691,1692 DIV STACK CB INLET M0010

Lab Sample ID: 140-14464-21

R8 FH 150 KG/HR

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	38.5		0.503	0.0543	ug/Sample		03/07/19 09:38	03/11/19 13:27	5
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	117	D	50 - 200				03/07/19 09:38	03/11/19 13:27	5

Client Sample ID: E-1693,1694,1696 DIV STACK CB INLET

Lab Sample ID: 140-14464-22

M0010 R8 BH 150 KG/HR

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	957		10.0	2.00	ug/Sample		03/11/19 09:29	03/15/19 11:57	50
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	106	D	50 - 200				03/11/19 09:29	03/15/19 11:57	50

Client Sample ID: E-1695 DIV STACK CB INLET M0010 R8 IMP

Lab Sample ID: 140-14464-23

1,2&3 COND 150 KG/HR

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	62.4		1.01	0.0515	ug/Sample		03/06/19 06:51	03/08/19 14:28	5
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	116	D	50 - 200				03/06/19 06:51	03/08/19 14:28	5

Client Sample ID: E-1697 DIV STACK CB INLET M0010 R8

Lab Sample ID: 140-14464-24

BREAKTHROUGH XAD-2 RESIN TUBE 150 KG/HR

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.09		0.200	0.0400	ug/Sample		03/11/19 09:29	03/15/19 12:00	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	67		50 - 200				03/11/19 09:29	03/15/19 12:00	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: D-2084,2085 DIV STACK CB OUTLET M0010

Lab Sample ID: 140-14464-25

R6 FH 150 KG/HR

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.94		0.126	0.0136	ug/Sample		03/07/19 09:38	03/11/19 13:30	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	117		50 - 200				03/07/19 09:38	03/11/19 13:30	1

Client Sample ID: D-2086,2087,2089 DIV STACK CB OUTLET

Lab Sample ID: 140-14464-26

M0010 R6 BH 150 KG/HR

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.250	0.0500	ug/Sample		03/06/19 08:09	03/18/19 11:01	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	30	X	50 - 200				03/06/19 08:09	03/18/19 11:01	1

Client Sample ID: D-2088 DIV STACK CB OUTLET M0010 R6

Lab Sample ID: 140-14464-27

IMP 1,2&3 COND 150 KG/HR

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.210	0.0107	ug/Sample		03/06/19 06:51	03/08/19 14:31	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	95		50 - 200				03/06/19 06:51	03/08/19 14:31	1

Client Sample ID: D-2090 DIV STACK CB OUTLET M0010 R6

Lab Sample ID: 140-14464-28

BREAKTHROUGH XAD-2 RESIN TUBE 150 KG/HR

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.200	0.0400	ug/Sample		03/06/19 08:09	03/18/19 11:04	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	27	X	50 - 200				03/06/19 08:09	03/18/19 11:04	1

Client Sample Results

Client: Chemours Company FC, LLC The
 Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: D-2091,2092 DIV STACK CB OUTLET M0010

Lab Sample ID: 140-14464-29

R8 FH 150 KG/HR

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.44		0.0760	0.00821	ug/Sample		03/07/19 09:38	03/11/19 13:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	131		50 - 200				03/07/19 09:38	03/11/19 13:33	1

Client Sample ID: D-2093,2094,2096 DIV STACK CB OUTLET

Lab Sample ID: 140-14464-30

M0010 R8 BH 150 KG/HR

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.300	0.0600	ug/Sample		03/11/19 09:29	03/15/19 12:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	33	X	50 - 200				03/11/19 09:29	03/15/19 12:03	1

Client Sample ID: D-2095 DIV STACK CB OUTLET M0010 R8

Lab Sample ID: 140-14464-31

IMP 1,2&3 COND 150 KG/HR

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.210	0.0107	ug/Sample		03/06/19 06:51	03/08/19 14:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	94		50 - 200				03/06/19 06:51	03/08/19 14:34	1

Client Sample ID: D-2097 DIV STACK CB OUTLET M0010 R8

Lab Sample ID: 140-14464-32

BREAKTHROUGH XAD-2 RESIN TUBE 150 KG/HR

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.200	0.0400	ug/Sample		03/11/19 09:29	03/15/19 12:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	27	X	50 - 200				03/11/19 09:29	03/15/19 12:07	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: R-2150,2151 R5 DIV CARBON BED INLET

Lab Sample ID: 140-14468-1

M0010 FH

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	44.4		1.02	0.110	ug/Sample		03/07/19 09:38	03/11/19 14:03	10
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	123	D	50 - 200				03/07/19 09:38	03/11/19 14:03	10

Client Sample ID: R-2152,2153,2155 R5 DIV CARBON BED

Lab Sample ID: 140-14468-2

INLET M0010 BH

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1480		12.5	2.50	ug/Sample		03/11/19 09:29	03/15/19 12:55	50
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	93	D	50 - 200				03/11/19 09:29	03/15/19 12:55	50

Client Sample ID: R-2154 R5 DIV CARBON BED INLET M0010

Lab Sample ID: 140-14468-3

IMP 1,2&3 COND

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	13.3		0.196	0.00999	ug/Sample		03/06/19 11:22	03/11/19 12:22	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	113		50 - 200				03/06/19 11:22	03/11/19 12:22	1

Client Sample ID: R-2156 R5 DIV CARBON BED INLET M0010

Lab Sample ID: 140-14468-4

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2.92		0.200	0.0400	ug/Sample		03/11/19 09:29	03/15/19 13:02	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	33	X	50 - 200				03/11/19 09:29	03/15/19 13:02	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: R-2157,2158 R7 DIV CARBON BED INLET

Lab Sample ID: 140-14468-5

M0010 FH

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	52.3		1.26	0.136	ug/Sample		03/07/19 09:38	03/11/19 14:06	10
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	128	D	50 - 200				03/07/19 09:38	03/11/19 14:06	10

Client Sample ID: R-2159,2160,2162 R7 DIV CARBON BED

Lab Sample ID: 140-14468-6

INLET M0010 BH

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1380		12.5	2.50	ug/Sample		03/11/19 09:29	03/15/19 13:05	50
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	92	D	50 - 200				03/11/19 09:29	03/15/19 13:05	50

Client Sample ID: R-2161 R7 DIV CARBON BED INLET M0010

Lab Sample ID: 140-14468-7

IMP 1,2&3 COND

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	10.2		0.210	0.0107	ug/Sample		03/06/19 11:22	03/11/19 12:25	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	106		50 - 200				03/06/19 11:22	03/11/19 12:25	1

Client Sample ID: R-2163 R7 DIV CARBON BED INLET M0010

Lab Sample ID: 140-14468-8

BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 03/01/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.55		0.200	0.0400	ug/Sample		03/12/19 03:08	03/15/19 09:35	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	23	X	50 - 200				03/12/19 03:08	03/15/19 09:35	1

Client Sample Results

Client: Chemours Company FC, LLC The
 Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: G-2150,2151 R5 DIV CARBON BED OUTLET

Lab Sample ID: 140-14468-9

M0010 FH

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.30		0.101	0.0109	ug/Sample		03/07/19 09:38	03/11/19 14:09	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	124		50 - 200				03/07/19 09:38	03/11/19 14:09	1

Client Sample ID: G-2152,2153,2155 R5 DIV CARBON BED

Lab Sample ID: 140-14468-10

OUTLET M0010 BH

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.275	0.0550	ug/Sample		03/12/19 03:08	03/15/19 09:38	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	36	X	50 - 200				03/12/19 03:08	03/15/19 09:38	1

Client Sample ID: G-2154 R5 DIV CARBON BED OUTLET

Lab Sample ID: 140-14468-11

M0010 IMP 1,2&3 COND

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.210	0.0107	ug/Sample		03/06/19 11:22	03/11/19 12:31	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	112		50 - 200				03/06/19 11:22	03/11/19 12:31	1

Client Sample ID: G-2156 R5 DIV CARBON BED OUTLET

Lab Sample ID: 140-14468-12

M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Date Collected: 02/28/19 00:00

Matrix: Air

Date Received: 03/02/19 09:30

Sample Container: Air Train

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.200	0.0400	ug/Sample		03/12/19 03:08	03/15/19 09:41	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	33	X	50 - 200				03/12/19 03:08	03/15/19 09:41	1

Client Sample Results

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Client Sample ID: G-2157,2158 R7 DIV CARBON BED OUTLET M0010 FH

Lab Sample ID: 140-14468-13

Date Collected: 03/01/19 00:00
Date Received: 03/02/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1.22		0.0765	0.00826	ug/Sample		03/07/19 09:38	03/11/19 14:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	121		50 - 200				03/07/19 09:38	03/11/19 14:12	1

Client Sample ID: G-2159,2160,2162 R7 DIV CARBON BED OUTLET M0010 BH

Lab Sample ID: 140-14468-14

Date Collected: 03/01/19 00:00
Date Received: 03/02/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.300	0.0600	ug/Sample		03/12/19 03:08	03/15/19 09:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	33	X	50 - 200				03/12/19 03:08	03/15/19 09:45	1

Client Sample ID: G-2161 R7 DIV CARBON BED OUTLET M0010 IMP 1,2&3 COND

Lab Sample ID: 140-14468-15

Date Collected: 03/01/19 00:00
Date Received: 03/02/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.210	0.0107	ug/Sample		03/06/19 11:22	03/11/19 12:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	112		50 - 200				03/06/19 11:22	03/11/19 12:35	1

Client Sample ID: G-2163 R7 DIV CARBON BED OUTLET M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-14468-16

Date Collected: 03/01/19 00:00
Date Received: 03/02/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.200	0.0400	ug/Sample		03/12/19 03:08	03/15/19 09:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	27	X	50 - 200				03/12/19 03:08	03/15/19 09:48	1

Default Detection Limits

Client: Chemours Company FC, LLC The
Project/Site: Carbon Bed Inlet and Carbon Bed Outlet

Job ID: 140-14453-1

Method: 8321A - HFPO-DA

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.00250	0.00128	ug/Sample

Method: 8321A - PFOA and PFOS

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	0.0250	0.00270	ug/Sample
HFPO-DA	0.100	0.0200	ug/Sample

APPENDIX D
SAMPLE CALCULATIONS

**SAMPLE CALCULATIONS FOR
HFPO DIMER ACID (METHOD 0010)**

Client: Chemours
Test Number: Run 1
Test Location: CBed Inlet

Plant: Fayetteville, NC
Test Date: 2/26/2019
Test Period: 0927-1143

1. HFPO Dimer Acid concentration, lbs/dscf.

$$\text{Conc1} = \frac{W \times 2.2046 \times 10^{-9}}{V_m(\text{std})}$$

$$\text{Conc1} = \frac{2713.1 \times 2.2046 \times 10^{-9}}{54.721}$$

$$\text{Conc1} = 1.09\text{E-}07$$

Where:

W = Weight of HFPO Dimer Acid collected in sample in ug

Conc1 = HFPO Dimer Acid concentration, lbs/dscf.

2.2046×10^{-9} = Conversion factor from ug to lbs.

2. HFPO Dimer Acid concentration, ug/dscm.

$$\text{Conc2} = W / (V_m(\text{std}) \times 0.02832)$$

$$\text{Conc2} = 2713.1 / (54.721 \times 0.02832)$$

$$\text{Conc2} = 1750.6$$

Where:

Conc2 = HFPO Dimer Acid concentration, ug/dscm.

0.02832 = Conversion factor from cubic feet to cubic meters.

3. HFPO Dimer Acid mass emission rate, lbs/hr.

$$MR1_{(Inlet)} = Conc1 \times Qs(std) \times 60 \text{ min/hr}$$

$$MR1_{(Inlet)} = 1.09E-07 \times 15187 \times 60$$

$$MR1_{(Inlet)} = 9.96E-02$$

Where:

$$MR1_{(Inlet)} = \text{HFPO Dimer Acid mass emission rate, lbs/hr.}$$

4. HFPO Dimer Acid mass emission rate, g/sec.

$$MR2_{(Inlet)} = MR1_{(Inlet)} \times 453.59 / 3600$$

$$MR2_{(Inlet)} = 9.96E-02 \times 453.59 / 3600$$

$$MR2_{(Inlet)} = 1.25E-02$$

Where:

$$MR2_{(Inlet)} = \text{HFPO Dimer Acid mass emission rate, g/sec.}$$

$$453.59 = \text{Conversion factor from pounds to grams.}$$

$$3600 = \text{Conversion factor from hours to seconds.}$$

5. HFPO Dimer Acid Removal Efficiency, %

$$RE = \frac{MR1_{(Inlet)} - MR1_{(Outlet)}}{MR1_{(Inlet)}}$$

$$RE = \frac{(9.96E-02) - (5.530E-04)}{9.96E-02}$$

$$RE = 99.4$$

Where:

$$RE = \text{Carbon Bed Removal Efficiency.}$$

$$MR1_{(Inlet)} = \text{Carbon Bed Inlet HFPO Dimer Acid mass rate, lbs/hr.}$$

$$MR1_{(Outlet)} = \text{Carbon Bed Outlet HFPO Dimer Acid mass rate, lbs/hr.}$$

**EXAMPLE CALCULATIONS FOR
VOLUMETRIC FLOW AND MOISTURE AND ISOKINETICS**

Client: Chemours

Test Number: Run 1

Test Location: VEN-Carbon Bed Inlet

Facility: Fayetteville, NC

Test Date: 2/26/19

Test Period: 0927-1143

1. Volume of dry gas sampled at standard conditions (68 deg F, 29.92 in. Hg), dscf.

$$Vm(std) = \frac{17.64 \times Y \times Vm \times \left(Pb + \frac{\Delta H}{13.6} \right)}{(Tm + 460)}$$

$$Vm(std) = \frac{17.64 \times 1.0027 \times 52.809 \times \left(30.29 + \frac{1.329}{13.6} \right)}{58.71 + 460} = 54.721$$

Where:

- $Vm(std)$ = Volume of gas sample measured by the dry gas meter, corrected to standard conditions, dscf.
- Vm = Volume of gas sample measured by the dry gas meter at meter conditions, def.
- Pb = Barometric Pressure, in Hg.
- ΔH = Average pressure drop across the orifice meter, in H₂O
- Tm = Average dry gas meter temperature, deg F.
- Y = Dry gas meter calibration factor.
- 17.64 = Factor that includes ratio of standard temperature (528 deg R) to standard pressure (29.92 in. Hg), deg R/in. Hg.
- 13.6 = Specific gravity of mercury.

2. Volume of water vapor in the gas sample corrected to standard conditions, scf.

$$Vw(std) = (0.04707 \times Vwc) + (0.04715 \times Wwsg)$$

$$Vw(std) = (0.04707 \times 13.5) + (0.04715 \times 11.2) = 1.16$$

Where:

- $Vw(std)$ = Volume of water vapor in the gas sample corrected to standard conditions, scf.
- Vwc = Volume of liquid condensed in impingers, ml.
- $Wwsg$ = Weight of water vapor collected in silica gel, g.
- 0.04707 = Factor which includes the density of water (0.002201 lb/ml), the molecular weight of water (18.0 lb/lb-mole), the ideal gas constant 21.85 (in. Hg) (ft³/lb-mole)(deg R); absolute temperature at standard conditions (528 deg R), absolute pressure at standard conditions (29.92 in. Hg), ft³/ml.
- 0.04715 = Factor which includes the molecular weight of water (18.0 lb/lb-mole), the ideal gas constant 21.85 (in. Hg) (ft³/lb-mole)(deg R); absolute temperature at standard conditions (528 deg R), absolute pressure at standard conditions (29.92 in. Hg), and 453.6 g/lb, ft³/g.

3. Moisture content

$$bws = \frac{Vw(std)}{Vw(std) + Vm(std)}$$
$$bws = \frac{1.16}{1.16 + 54.721} = 0.021$$

Where:

bws = Proportion of water vapor, by volume, in the gas stream, dimensionless.

4. Mole fraction of dry gas.

$$Md = 1 - bws$$
$$Md = 1 - 0.021 = 0.979$$

Where:

Md = Mole fraction of dry gas, dimensionless.

5. Dry molecular weight of gas stream, lb/lb-mole.

$$MWd = (0.440 \times \% CO_2) + (0.320 \times \% O_2) + (0.280 \times (\% N_2 + \% CO))$$
$$MWd = (0.440 \times 0.0) + (0.320 \times 20.9) + (0.280 \times (79.1 + 0.0))$$
$$MWd = 28.84$$

Where:

MWd = Dry molecular weight, lb/lb-mole.
 $\% CO_2$ = Percent carbon dioxide by volume, dry basis.
 $\% O_2$ = Percent oxygen by volume, dry basis.
 $\% N_2$ = Percent nitrogen by volume, dry basis.
 $\% CO$ = Percent carbon monoxide by volume, dry basis.
0.440 = Molecular weight of carbon dioxide, divided by 100.
0.320 = Molecular weight of oxygen, divided by 100.
0.280 = Molecular weight of nitrogen or carbon monoxide, divided by 100.

6. Actual molecular weight of gas stream (wet basis), lb/lb-mole.

$$MWs = (MWd \times Md) + (18 \times (1 - Md))$$
$$MWs = (28.84 \times 0.979) + (18 \times (1 - 0.979)) = 28.61$$

Where:

MWs = Molecular weight of wet gas, lb/lb-mole.
18 = Molecular weight of water, lb/lb-mole.

7. Average velocity of gas stream at actual conditions, ft/sec.

$$V_s = 85.49 \times C_p \times ((\Delta p)^{1/2})_{\text{avg}} \times \left(\frac{T_s (\text{avg})}{P_s \times MW_s} \right)^{1/2}$$

$$V_s = 85.49 \times 0.84 \times 0.72952 \times \left(\frac{529}{29.81 \times 28.61} \right)^{1/2} = 41.3$$

Where:

- V_s = Average gas stream velocity, ft/sec.
- 85.49 = Pitot tube constant, ft/sec x $\frac{(\text{lb/lb-mole})(\text{in. Hg})^{1/2}}{(\text{deg R})(\text{in H}_2\text{O})}$
- C_p = Pitot tube coefficient, dimensionless.
- T_s = Absolute gas stream temperature, deg R = $T_s, \text{ deg F} + 460.$
- P_s = Absolute gas stack pressure, in. Hg. = $P_b + \frac{P(\text{static})}{13.6}$
- Δp = Velocity head of stack, in. $\text{H}_2\text{O}.$

8. Average gas stream volumetric flow rate at actual conditions, wacf/min.

$$Q_s(\text{act}) = 60 \times V_s \times A_s$$

$$Q_s(\text{act}) = 60 \times 41.3 \times 6.31 = 15613$$

Where:

- $Q_s(\text{act})$ = Volumetric flow rate of wet stack gas at actual conditions, wacf/min.
- A_s = Cross-sectional area of stack, $\text{ft}^2.$
- 60 = Conversion factor from seconds to minutes.

9. Average gas stream dry volumetric flow rate at standard conditions, dscf/min.

$$Q_s(\text{std}) = 17.64 \times M_d \times \frac{P_s}{T_s} \times Q_s(\text{act})$$

$$Q_s(\text{std}) = 17.64 \times 0.979 \times \frac{29.81}{529.4} \times 15613$$

$$Q_s(\text{std}) = 15187$$

Where:

- $Q_s(\text{std})$ = Volumetric flow rate of dry stack gas at standard conditions, dscf/min.

10. Isokinetic variation calculated from intermediate values, percent.

$$I = \frac{17.327 \times T_s \times V_m(\text{std})}{V_s \times O \times P_s \times M_d \times (D_n)^2}$$

$$I = \frac{17.327 \times 529 \times 54.721}{41.3 \times 96 \times 29.81 \times 0.979 \times (0.215)^2} = 93.9$$

Where:

- I = Percent of isokinetic sampling.
- O = Total sampling time, minutes.
- Dn = Diameter of nozzle, inches.
- 17.327 = Factor which includes standard temperature (528 deg R), standard pressure (29.92 in. Hg), the formula for calculating area of circle $D^{2/4}$, conversion of square feet to square inches (144), conversion of seconds to minutes (60), and conversion to percent (100), $\frac{(\text{in. Hg})(\text{in}^2)(\text{min})}{(\text{deg R})(\text{ft}^2)(\text{sec})}$

APPENDIX E
EQUIPMENT CALIBRATION RECORDS

INTERFERENCE CHECK

Date: 12/4/14-12/5/14

Analyzer Type: Servomex - O₂

Model No: 4900


Serial No: 49000-652921

Calibration Span: 21.09 %

Pollutant: 21.09% O₂ - CC418692

INTERFERENT GAS	ANALYZER RESPONSE		% OF CALIBRATION SPAN ^(a)
	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	
CO ₂ (30.17% CC199689)	0.00	-0.01	0.00
NO (445 ppm CC346681)	0.00	0.02	0.11
NO ₂ (23.78 ppm CC500749)	NA	NA	NA
N ₂ O (90.4 ppm CC352661)	0.00	0.05	0.24
CO (461.5 ppm XC006064B)	0.00	0.02	0.00
SO ₂ (451.2 ppm CC409079)	0.00	0.05	0.23
CH ₄ (453.1 ppm SG901795)	NA	NA	NA
H ₂ (552 ppm ALM048043)	0.00	0.09	0.44
HCl (45.1 ppm CC17830)	0.00	0.03	0.14
NH ₃ (9.69 ppm CC58181)	0.00	0.01	0.03
TOTAL INTERFERENCE RESPONSE			1.20
METHOD SPECIFICATION			< 2.5%

^(a) The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.



 Chad Walker

INTERFERENCE CHECK

Date: 12/4/14-12/5/14
Analyzer Type: Servomex - CO₂
Model No: 4900
Serial No: 49000-652921
Calibration Span: 16.65%
Pollutant: 16.65% CO₂ - CC418692

INTERFERENT GAS	ANALYZER RESPONSE		% OF CALIBRATION SPAN ^(a)
	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	
CO ₂ (30.17% CC199689)	NA	NA	NA
NO (445 ppm CC346681)	0.00	0.02	0.10
NO ₂ (23.78 ppm CC500749)	0.00	0.00	0.02
N ₂ O (90.4 ppm CC352661)	0.00	0.01	0.04
CO (461.5 ppm XC006064B)	0.00	0.01	0.00
SO ₂ (451.2 ppm CC409079)	0.00	0.11	0.64
CH ₄ (453.1 ppm SG901795)	0.00	0.07	0.44
H ₂ (552 ppm ALM048043)	0.00	0.04	0.22
HCl (45.1 ppm CC17830)	0.10	0.06	0.60
NH ₃ (9.69 ppm CC58181)	0.00	0.02	0.14
TOTAL INTERFERENCE RESPONSE			2.19
METHOD SPECIFICATION			< 2.5%

^(a) The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.


 Chad Walker

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E03NI79E15A00E4	Reference Number: 82-401288926-1
Cylinder Number: CC18055	Cylinder Volume: 150.5 CF
Laboratory: 124 - Riverton (SAP) - NJ	Cylinder Pressure: 2015 PSIG
PGVP Number: B52018	Valve Outlet: 590
Gas Code: CO2,O2,BALN	Certification Date: Sep 04, 2018

Expiration Date: Sep 04, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	9.000 %	8.864 %	G1	+/- 0.7% NIST Traceable	09/04/2018
OXYGEN	12.00 %	12.00 %	G1	+/- 0.4% NIST Traceable	09/04/2018
NITROGEN	Balance			-	

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060629	CC413730	13.359 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 09, 2019

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA 510-CO2-19GYCXEG	NDIR	Aug 09, 2018
Horiba MPA 510-O2-7TWMJ041	Paramagnetic	Aug 09, 2018

Triad Data Available Upon Request



Signature on file
Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E03NI62E15A0224	Reference Number: 82-401044874-1
Cylinder Number: SG9169108	Cylinder Volume: 157.2 CF
Laboratory: 124 - Riverton (SAP) - NJ	Cylinder Pressure: 2015 PSIG
PGVP Number: B52017	Valve Outlet: 590
Gas Code: CO2,O2,BALN	Certification Date: Nov 18, 2017

Expiration Date: Nov 18, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	17.00 %	16.58 %	G1	+/- 0.7% NIST Traceable	11/18/2017
OXYGEN	21.00 %	21.00 %	G1	+/- 0.5% NIST Traceable	11/18/2017
NITROGEN	Balance			-	

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061336	CC360792	11.002 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2018
NTRM	09061415	CC273526	22.53 % OXYGEN/NITROGEN	+/- 0.4%	Mar 08, 2019

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA 510-CO2-19GYCXEG	NDIR	Oct 30, 2017
Horiba MPA 510-O2-7TWMJ041	Paramagnetic	Oct 27, 2017

Triad Data Available Upon Request



Signature on file
Approved for Release

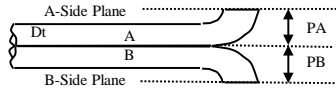
Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: P-694

If all Criteria PASS
Cp is equal to 0.84

Inspection Date 2/19/19 Individual Conducting Inspection ks

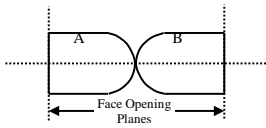
PASS/FAIL



Distance to A Plane (PA) - inches 0.46 **PASS**
 Distance to B Plane (PB) - inches 0.46 **PASS**
 Pitot OD (D_t) - inches 0.375

$1.05 D_t < P < 1.5 D_t$

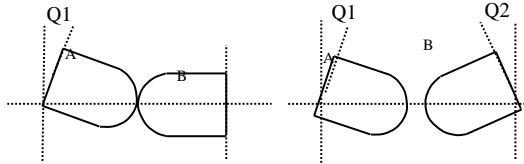
PA must Equal PB



Are Open Faces Aligned Perpendicular to the Tube Axis

YES NO

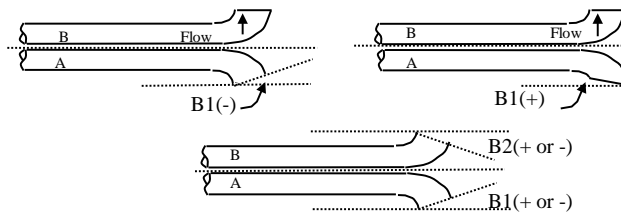
PASS



Angle of Q1 from vertical A Tube - degrees (absolute) 0 **PASS**

Angle of Q2 from vertical B Tube - degrees (absolute) 0 **PASS**

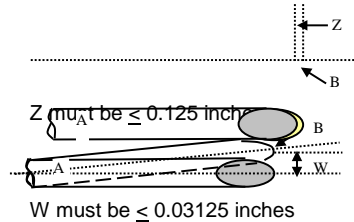
Q1 and Q2 must be $\leq 10^\circ$



Angle of B1 from vertical A Tube - degrees (absolute) 0 **PASS**

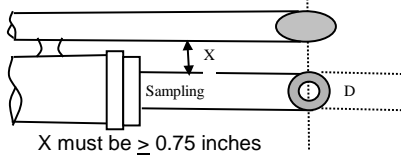
Angle of B1 from vertical B Tube - degrees (absolute) 0 **PASS**

B1 or B2 must be $\leq 5^\circ$

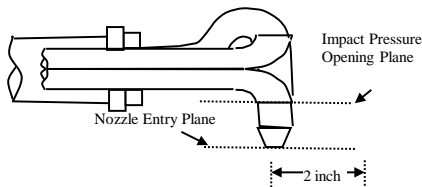


Horizontal offset between A and B Tubes (Z) - inches 0.004 **PASS**

Vertical offset between A and B Tubes (W) - inches 0.015 **PASS**

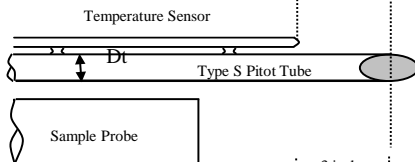


Distance between Sample Nozzle and Pitot (X) - inches 0.8 **PASS**



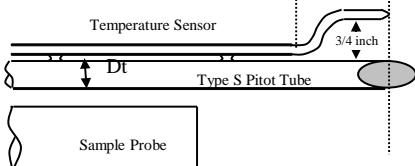
Impact Pressure Opening Plane is above the Nozzle Entry Plane

YES NO
 NA



Thermocouple meets the Distance Criteria in the adjacent figure

YES NO
 NA



Thermocouple meets the Distance Criteria in the adjacent figure

YES NO
 NA

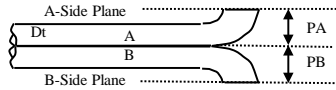
Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: P-710

If all Criteria PASS
Cp is equal to 0.84

Inspection Date 2/19/19 Individual Conducting Inspection ks

PASS/FAIL

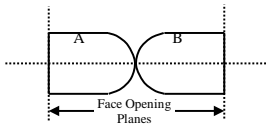


Distance to A Plane (PA) - inches 0.453
 Distance to B Plane (PB) - inches 0.453
 Pitot OD (D_t) - inches 0.375

PASS
PASS

$1.05 D_t < P < 1.5 D_t$

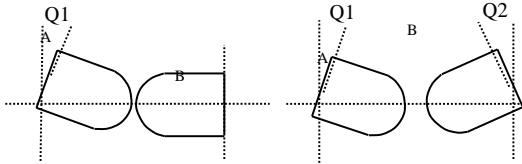
PA must Equal PB



Are Open Faces Aligned Perpendicular to the Tube Axis

YES NO

PASS



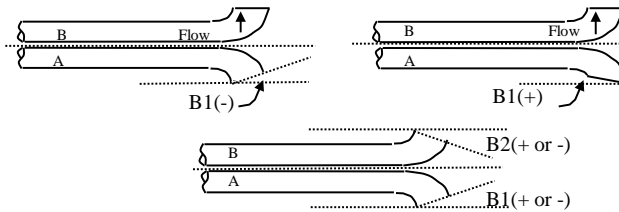
Angle of Q1 from vertical A Tube - degrees (absolute) 0

PASS

Angle of Q2 from vertical B Tube - degrees (absolute) 0

PASS

Q1 and Q2 must be $\leq 10^\circ$



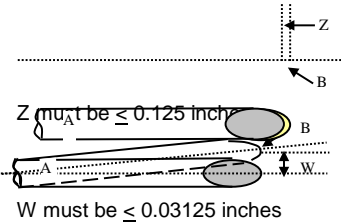
Angle of B1 from vertical A Tube - degrees (absolute) 0

PASS

Angle of B1 from vertical B Tube - degrees (absolute) 0

PASS

B1 or B2 must be $\leq 5^\circ$

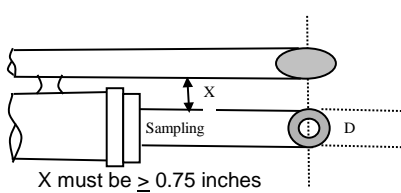


Horizontal offset between A and B Tubes (Z) - inches 0.012

PASS

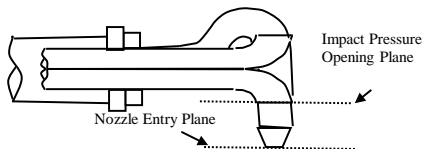
Vertical offset between A and B Tubes (W) - inches 0.022

PASS



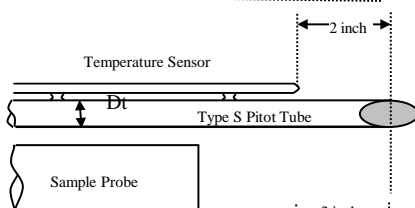
Distance between Sample Nozzle and Pitot (X) - inches 0.87

PASS



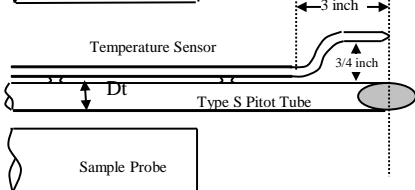
Impact Pressure Opening Plane is above the Nozzle Entry Plane

YES NO
 NA



Thermocouple meets the Distance Criteria in the adjacent figure

YES NO
 NA



Thermocouple meets the Distance Criteria in the adjacent figure

YES NO
 NA

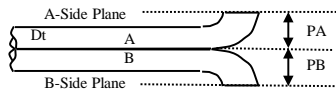
Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: P-706

If all Criteria PASS
Cp is equal to 0.84

Inspection Date 2/19/19 Individual Conducting Inspection KS

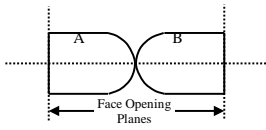
PASS/FAIL



Distance to A Plane (PA) - inches 0.45 **PASS**
 Distance to B Plane (PB) - inches 0.45 **PASS**
 Pitot OD (Dt) - inches 0.375

$1.05 D_t < P < 1.5 D_t$

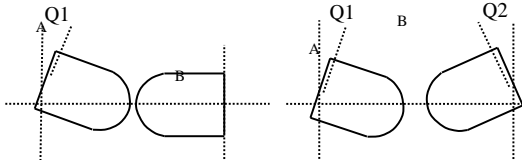
PA must Equal PB



Are Open Faces Aligned Perpendicular to the Tube Axis

YES NO

PASS



Angle of Q1 from vertical A Tube - degrees (absolute)

0

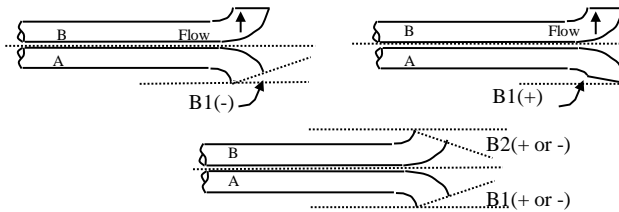
PASS

Angle of Q2 from vertical B Tube - degrees (absolute)

0

PASS

Q1 and Q2 must be $\leq 10^\circ$



Angle of B1 from vertical A Tube - degrees (absolute)

0

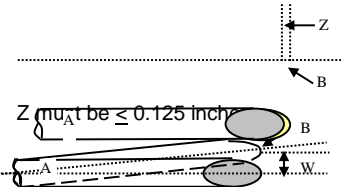
PASS

Angle of B1 from vertical B Tube - degrees (absolute)

0

PASS

B1 or B2 must be $\leq 5^\circ$



Horizontal offset between A and B Tubes (Z) - inches

0.006

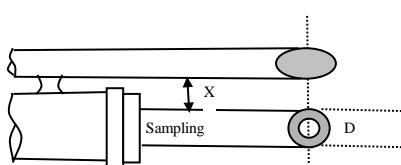
PASS

Vertical offset between A and B Tubes (W) - inches

0.012

PASS

W must be ≤ 0.03125 inches

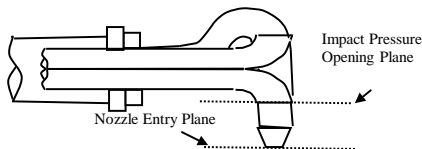


Distance between Sample Nozzle and Pitot (X) - inches

0.79

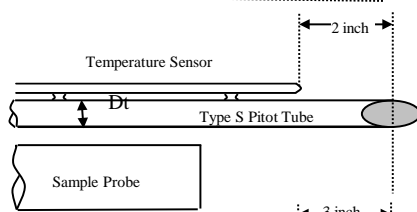
PASS

X must be ≥ 0.75 inches



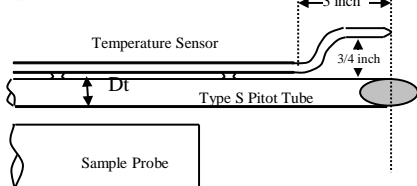
Impact Pressure Opening Plane is above the Nozzle Entry Plane

YES NO
 NA



Thermocouple meets the Distance Criteria in the adjacent figure

YES NO
 NA



Thermocouple meets the Distance Criteria in the adjacent figure

YES NO
 NA

Y Factor Calibration Check Calculation

MODIFIED METHOD 0010 TEST TRAIN

CARBON BED INLET

METER BOX NO. 28

2/26/2019 - 2/28/2019 & 3/1/2019

	Run 1	Run 2	Run 3
MWd = Dry molecular weight source gas, lb/lb-mole.			
0.32 = Molecular weight of oxygen, divided by 100.			
0.44 = Molecular weight of carbon dioxide, divided by 100.			
0.28 = Molecular weight of nitrogen or carbon monoxide, divided by 100.			
% CO ₂ = Percent carbon dioxide by volume, dry basis.	0.0	0.0	0.0
% O ₂ = Percent oxygen by volume, dry basis.	20.9	20.9	20.9

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

$$MWd = (0.32 * 20.9) + (0.44 * 0) + (0.28 * (100 - (0 + 20.9)))$$

$$MWd = (6.69) + (0.00) + (22.15)$$

MWd = 28.84 28.84 28.84

Tma = Source Temperature, absolute(°R)			
Tm = Average dry gas meter temperature, deg F.	58.7	74.0	60.2

$$Tma = Ts + 460$$

$$Tma = 58.71 + 460$$

Tma = 518.71 533.96 520.17

Ps = Absolute meter pressure, inches Hg.			
13.60 = Specific gravity of mercury.			
delta H = Avg pressure drop across the orifice meter during sampling, in H ₂ O	1.33	1.31	1.27
Pb = Barometric Pressure, in Hg.	30.29	30.20	30.22

$$Pm = Pb + (\text{delta H} / 13.6)$$

$$Pm = 30.29 + (1.32916666666667 / 13.6)$$

Pm = 30.39 30.30 30.31

Yqa = dry gas meter calibration check value, dimensionless.			
0.03 = (29.92/528)(0.75) ² (in. Hg ^{0.5} /R) cfm ² .			
29.00 = dry molecular weight of air, lb/lb-mole.			
Vm = Volume of gas sample measured by the dry gas meter at meter conditions, dcf.	52.809	56.260	55.079
Y = Dry gas meter calibration factor (based on full calibration)	1.0027	1.0027	1.0027
Delta H@ = Dry Gas meter orifice calibration coefficient, in. H ₂ O.	2.0895	2.0895	2.0895
avg SQRT Delta H = Avg SQRT press. drop across the orifice meter during sampling, in. H ₂ O	1.1497	1.1436	1.1235
O = Total sampling time, minutes.	96	96	96

$$Yqa = (O / Vm) * \text{SQRT} (0.0319 * Tma * 29) / (\text{Delta H}@ * Pm * MWd) * \text{avg SQRT Delta H}$$

$$Yqa = (96.00 / 52.81) * \text{SQRT} (0.0319 * 518.71 * 29) / (2.09 * 30.39 * 28.84) * 1.15$$

$$Yqa = 1.818 * \text{SQRT} 479.857 / 1,831.083 * 1.15$$

Yqa = 1.070 1.015 1.005

Diff = Absolute difference between Yqa and Y	6.71	1.23	0.23
--	------	------	------

$$\text{Diff} = ((Y - Yqa) / Y) * 100$$

$$\text{Diff} = ((1.0027 - 1.070) / 1.0027) * 100$$

Average Diff = 2.72

Allowable = 5.0

Y Factor Calibration Check Calculation

MODIFIED METHOD 0010 TEST TRAIN

CARBON BED OUTLET

METER BOX NO. WC22

2/26/2019 - 2/28/2019 & 3/1/2019

	Run 1	Run 2	Run 3
MWd = Dry molecular weight source gas, lb/lb-mole.			
0.32 = Molecular weight of oxygen, divided by 100.			
0.44 = Molecular weight of carbon dioxide, divided by 100.			
0.28 = Molecular weight of nitrogen or carbon monoxide, divided by 100.			
% CO ₂ = Percent carbon dioxide by volume, dry basis.	0.0	0.0	0.0
% O ₂ = Percent oxygen by volume, dry basis.	20.9	20.9	20.9

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

$$MWd = (0.32 * 20.9) + (0.44 * 0) + (0.28 * (100 - (0 + 20.9)))$$

$$MWd = (6.69) + (0.00) + (22.15)$$

MWd =	28.84	28.84	28.84
--------------	-------	-------	-------

Tma = Source Temperature, absolute(°R)			
Tm = Average dry gas meter temperature, deg F.	60.2	79.4	63.3

$$Tma = Ts + 460$$

$$Tma = 60.21 + 460$$

Tma =	520.21	539.38	523.25
--------------	--------	--------	--------

Ps = Absolute meter pressure, inches Hg.			
13.60 = Specific gravity of mercury.			
delta H = Avg pressure drop across the orifice meter during sampling, in H ₂ O	1.61	1.65	1.64
Pb = Barometric Pressure, in Hg.	30.29	30.20	30.22

$$Pm = Pb + (\text{delta H} / 13.6)$$

$$Pm = 30.29 + (1.60791666666667 / 13.6)$$

Pm =	30.41	30.32	30.34
-------------	-------	-------	-------

Yqa = dry gas meter calibration check value, dimensionless.			
0.03 = (29.92/528)(0.75) ² (in. Hg ^{0.5} /R) cfm ² .			
29.00 = dry molecular weight of air, lb/lb-mole.			
Vm = Volume of gas sample measured by the dry gas meter at meter conditions, dcf.	54.493	55.964	55.596
Y = Dry gas meter calibration factor (based on full calibration)	1.0010	1.0010	1.0010
Delta H@ = Dry Gas meter orifice calibration coefficient, in. H ₂ O.	2.4674	2.4674	2.4674
avg SQRT Delta H = Avg SQRT press. drop across the orifice meter during sampling, in. H ₂ O	1.2420	1.2604	1.2575
O = Total sampling time, minutes.	96	96	96

$$Yqa = (O / Vm) * \text{SQRT} (0.0319 * Tma * 29) / (\text{Delta H}@ * Pm * MWd) * \text{avg SQRT Delta H}$$

$$Yqa = (96.00 / 54.49) * \text{SQRT} (0.0319 * 520.21 * 29) / (2.47 * 30.41 * 28.84) * 1.24$$

$$Yqa = 1.762 * \text{SQRT} 481.245 / 2,163.670 * 1.24$$

Yqa =	1.0319	1.0398	1.0283
--------------	--------	--------	--------

Diff = Absolute difference between Yqa and Y	3.09	3.88	2.73
--	------	------	------

$$\text{Diff} = ((Y - Yqa) / Y) * 100$$

$$\text{Diff} = ((1.001 - 1.032) / 1.001) * 100$$

Average Diff = 3.23

Allowable = 5.0

APPENDIX F
LIST OF PROJECT PARTICIPANTS

The following WESTON employees participated in this project.

Paul Meeter	Senior Project Manager
Jeff O'Neill	Team Member
Robert Scroggins	Team Member
Jacob Little	Team Member
Kris Ansley	Team Member
Austin Squires	Team Member