THERMAL OXIDIZER CONTROL EFFICIENCY COMPLIANCE TEST REPORT TEST DATES: 4-5 FEBRUARY 2020

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THE CHEMOURS COMPANY

THERMAL OXIDIZER CONTROL EFFICIENCY TEST REPORT

TEST DATES: 4-5 February 2020

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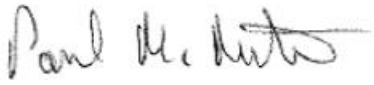

Paul M. Meeter
Weston Solutions, Inc.

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1. INTRODUCTION

1.1 FACILITY AND BACKGROUND INFORMATION

The Chemours Fayetteville Works (Chemours) is located in Bladen County, North Carolina, approximately 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.

This report presents the results of per- and poly-fluoroalkyl substance (PFAS) control efficiency (CE) testing of the newly installed thermal oxidizer system.

Chemours contracted Weston Solutions, Inc. (Weston) to perform testing for HFPO Dimer Acid Fluoride (as HFPO Dimer Acid) and other target PFAS compounds on the Thermal Oxidizer inlets and stack at the facility. Testing was performed on 4-5 February 2020 and generally followed the "Thermal Oxidizer Test Plan" reviewed and approved by the North Carolina Department of Environmental Quality (NCDEQ).

1.2 TEST OBJECTIVES

The specific objectives for this test program were as follows:

- Measure the Thermal Oxidizer inlet mass feed rates and stack emissions rates of the following target PFAS compounds: Hexafluoropropylene oxide (HFPO Monomer), Hexafluoropropylene Dimer Acid (HFPO-DA), Hexafluoropropylene Dimer Acid Fluoride (HFPO-DAF), Carbonyl Difluoride (COF2) and Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether (Fluoroether E-1).
- Using these data, calculate the Thermal Oxidizer control efficiency (CE) for the target PFAS compounds.
- Monitor and record process data in conjunction with the test program.
- Provide representative emissions data.

Note: The target compound Fluoroether E-1 was added to the testing scope subsequent to preparation of the test plan.

1.3 TEST PROGRAM OVERVIEW

During the emissions test program, the concentrations and mass emissions rates of HFPO Dimer Acid and other target PFAS compounds were measured at the Thermal Oxidizer inlets (monomer waste gas feed and polymer waste gas feed) and Thermal Oxidizer/Scrubber stack.

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

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

Appendix A includes process operation data. Raw and reduced test data is included in Appendix B. Appendix C includes the summary reports for the laboratory analytical results including both the emissions test samples and the process samples. Appendix D includes sample calculations. Equipment calibration records are included in Appendix E. A list of Weston project participants is included in Appendix F.

Table 1-1
Sampling Plan for Thermal Oxidizer Stack

Sampling Point & Location	**Thermal Oxidizer Stack**					
Number of Tests:	6 (3 MM18 and 3 M0010)					
Parameters To Be Tested:	HFPO Dimer Acid (HFPO-DA)	HFPO-DAF; HFPO Monomer; Fluoroether E-1; COF2	Volumetric Flow Rate and Gas Velocity	Carbon Dioxide	Oxygen	Water Content
Sampling or Monitoring Method	EPA M-0010	Modified EPA M-18	EPA M1 and M2 in conjunction with M-0010 tests	EPA M3A		EPA M4 in conjunction with M-0010 tests
Sample Extraction/ Analysis Method(s):	LC/MS/MS	GC/MS	NA	NA		NA
Sample Size	≥ 3m[3]	≥ 9ft[3]	NA	NA	NA	NA
Total Number of Samples Collected[1]	3	3	3	3	3	3
Reagent Blanks (Solvents, Resins)[1]	1 set	1 set	0	0	0	0
Field Blank Trains[1]	1 per source	1 per source	0	0	0	0
Proof Blanks[1]	1 per train	1 per train	0	0	0	0
Trip Blanks[1,2]	0 sets	0 sets	0	0	0	0
Lab Blanks	1 per fraction[3]	1 per fraction[3]	0	0	0	0
Laboratory or Batch Control Spike Samples (LCS)	1 per fraction[3]	1 per fraction[3]	0	0	0	0
Laboratory or Batch Control Spike Sample Duplicate (LCSD)	1 per fraction[3]	1 per fraction[3]	0	0	0	0
Media Blanks	1 set[4]	1 set[4]	0	0	0	0
Isotope Dilution Internal Standard Spikes	Each sample	Each sample	0	0	0	0
Total No. of Samples	6[5]	6[5]	3	3	3	3

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.

Table 1-2
Sampling Plan for Thermal Oxidizer Inlets

Sampling Point & Location	**Thermal Oxidizer Inlets**
Number of Tests:	6 (3 monomer and 3 polymer)
Parameters To Be Tested:	HFPO Dimer Acid Fluoride; HFPO Monomer; Fluoroether E-1; HFPO Dimer Acid; Carbonyl Difluoride
Sampling or Monitoring Method	Modified EPA M-18
Sample Extraction/ Analysis Method(s):	GC/MS and LC/MS/MS
Sample Size	$\geq 2ft^3$
Total Number of Samples Collected[1]	6
Reagent Blanks (Solvents, Resins)[1]	1 set
Field Blank Trains[1]	1 set
Proof Blanks[1]	1 set
Trip Blanks[1,2]	0
Lab Blanks	1 per fraction[3]
Laboratory or Batch Control Spike Samples (LCS)	1 per fraction[3]
Laboratory or Batch Control Spike Sample Duplicate (LCSD)	1 per fraction[3]
Media Blanks	1 set[4]
Isotope Dilution Internal Standard Spikes	Each sample
Total No. of Samples	6[5]

Key:

[1] Sample collected in field.

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

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

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

[5] Actual number of samples collected in field.

2. SUMMARY OF TEST RESULTS

A total of three MM18 runs were performed on each of the Thermal Oxidizer inlets (monomer waste gas feed and polymer waste gas feed). A total of three MM18 and three M0010 test runs were performed on the Thermal Oxidizer/Scrubber stack. Table 2-1 provides a summary of the emissions test results and Thermal Oxidizer control efficiency. Tables 2-2, 2-3, 2-4 and 2-5 provide summaries of the target PFAS compound emissions test results associated with MM18 at the Thermal Oxidizer/Scrubber stack and the Thermal Oxidizer inlets, respectively. Detailed test results summaries are provided in Section 6.

Table 2-1
Summary of Thermal Oxidizer Control Efficiency Test Results

	Inlet*	Stack	Control Efficiency
	lb/hr	lb/hr	%
R1	1.04E+02	≤8.46E-04	≥99.99918
R2	1.03E+02	≤1.42E-03	≥99.99862
R3	1.25E+02	≤2.33E-04	≥99.99981
Average	1.10E+02	≤8.31E-04	≥99.99921

Note: The control efficiency is calculated using the sum of the mass emission rates in lb/hr of HFPO, HFPO-DA, HFPO-DAF, COF2, and Fluoroether E-1.
*The inlet lb/hr value used to calculate the control efficiency for each run is the sum of the monomer and the polymer lb/hr values for that run excluding any non-detect values.

Samples taken using MM18 were analyzed for the following volatile organic compounds ("target PFAS compounds"): HFPO Monomer, HFPO-DA, HFPO-DAF, COF2, and Fluoroether E-1. Results of MM18 target PFAS compound analysis for the Thermal Oxidizer/Scrubber stack and Thermal Oxidizer inlets are provided in Tables 2-2, 2-3, 2-4 and 2-5.

Table 2-2
Summary of MM18 Target Compound Thermal Oxidizer Stack Test Results

Target Compound*	Thermal Oxidizer Stack MM18 Run 1		Thermal Oxidizer Stack MM18 Run 2		Thermal Oxidizer Stack MM18 Run 3	
	g/sec	lb/hr	g/sec	lb/hr	g/sec	lb/hr
HFPO-DAF	<3.69E-06	<2.93E-05	<3.17E-16	<2.52E-05	<3.17E-06	<2.52E-05
HFPO Monomer	9.09E-05	7.22E-04	1.63E-04	1.30E-03	1.58E-05	1.25E-04
Fluoroether E-1	<1.91E-07	<1.51E-06	<1.65E-07	<1.31E-06	<1.64E-07	<1.30E-06
Carbonyl Difluoride	<1.12E-05	<8.87E-05	<9.60E-06	<7.63E-05	<9.59E-06	<7.62E-05

Note: Any < values were below the laboratory analysis detection limits. Emission rates were calculated using the method detection limit (MDL) for the first analytical fraction of the target compound.
*The Thermal Oxidizer/Scrubber stack MM18 samples were not analyzed for HFPO-DA.

Table 2-3
Summary of M0010 HFPO-DA Thermal Oxidizer Stack Test Results

Target Compound	Thermal Oxidizer Stack M0010 Run 1		Thermal Oxidizer Stack M0010 Run 2		Thermal Oxidizer Stack M0010 Run 3	
	g/sec	lb/hr	g/sec	lb/hr	g/sec	lb/hr
HFPO-DA	5.07E-07	4.03E-06	2.02E-06	1.61E-05	6.29E-07	5.00E-06

Table 2-4
Summary of MM18 Target Compound Thermal Oxidizer Monomer Inlet Test Results

Target Compound	Thermal Oxidizer Inlet MM18 Run 1		Thermal Oxidizer Inlet MM18 Run 2		Thermal Oxidizer Inlet MM18 Run 3	
	g/sec	lb/hr	g/sec	lb/hr	g/sec	lb/hr
HFPO-DAF	1.24E-02	9.85E-02	1.22E-02	9.69E-02	1.75E-02	1.39E-01
HFPO Monomer	3.31E-01	2.63E+00	3.72E-01	2.96E+00	3.03E-01	2.40E+00
HFPO-DA	1.39E-03	1.10E-02	6.53E-04	5.19E-03	1.10E-03	8.75E-03
Fluoroether E-1	<7.84E-03	<6.23E-02	<8.50E-03	<6.75E-02	<1.04E-02	<8.25E-02
Carbonyl Difluoride	1.27E+01	1.01E+02	1.25E+01	9.95E+01	1.54E+01	1.23E+02

Note: Any < values were below the laboratory analysis detection limits. Emission rates were calculated using the method detection limit (MDL) for the first analytical fraction of the target compound.

Table 2-5
Summary of MM18 Target Compound Thermal Oxidizer Polymers Inlet Test Results

Target Compound	Thermal Oxidizer Inlet MM18 Run 1		Thermal Oxidizer Inlet MM18 Run 2		Thermal Oxidizer Inlet MM18 Run 3	
	g/sec	lb/hr	g/sec	lb/hr	g/sec	lb/hr
HFPO-DAF	1.12E-04	8.89E-04	9.00E-05	7.15E-04	1.03E-04	8.14E-04
HFPO Monomer	1.06E-04	8.42E-04	1.45E-05	1.15E-04	<3.28E-05	<2.61E-04
HFPO-DA	3.39E-05	2.69E-04	2.75E-05	2.18E-04	3.06E-05	2.43E-04
Fluoroether E-1	1.65E-04	1.31E-03	6.05E-05	4.81E-04	5.35E-05	4.25E-04
Carbonyl Difluoride	9.42E-05	7.48E-04	<8.99E-05	<7.14E04	<1.10E-04	<8.77E-04

Note: Any < values were below the laboratory analysis detection limits. Emission rates were calculated using the method detection limit (MDL) for the first analytical fraction of the target compound.

3. PROCESS DESCRIPTIONS

The thermal oxidizer and associated four-stage scrubber are identified in the Air Quality Permit respectively as control devices NCD-Q1 and NCD-Q2. The thermal oxidizer is a 10 million BTU per hour (MMBtu/hr), natural gas-fired device. Waste gases from the manufacturing operations collected via header systems are compressed and delivered by pipeline to the thermal oxidizer for destruction of the entrained PFAS compounds. The thermal oxidizer emissions are treated in the scrubber system to control hydrogen fluoride (HF) generated from PFAS compound combustion. The scrubber consists of a four-stage packed bed column with three water scrubbing stages and one caustic scrubbing stage.

3.1 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
VEN	PSEPVE	Condensation is continuous. Agitated Bed Reactor and Refining are batch.
VES	PMVE/PEVE	Semi-continuous – Condensation is continuous. Two Agitated Bed Reactors are batch for 30-40 mins at end of each run. Refining (ether column) is batch
HFPO	HFPO	Continuous
Polymers	SR	Continuous polymerization

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

- Thermal Oxidizer
  - Waste Gas Feed Rate
  - Thermal Oxidizer Combustion Temperature
  - Scrubber Stage 4 Recycle Rate
  - Scrubber Stage 4 Recycle pH

4. DESCRIPTION OF TEST LOCATIONS

4.1 THERMAL OXIDIZER STACK

Two 4-inch ID test ports are installed on a straight, vertical section of the 18-inch ID stack, 90º apart, as shown below and in Figure 4-1.

Per EPA Method 1, a total of 12 traverse points (six per axis) were used for M-0010 isokinetic sampling. Figure 4-1 provides a schematic of the test ports and traverse point locations.

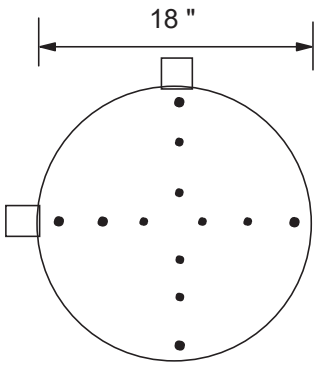
The EPA Method 18 sample was collected at a constant rate at a single point at the approximate center of the stack.

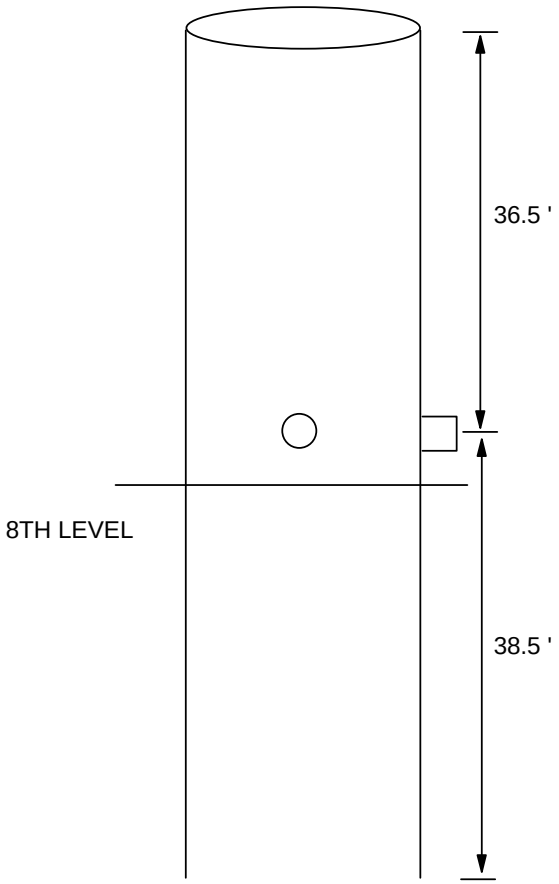
Location	Distance from Flow Disturbance	
	Downstream (B)	Upstream (A)
Thermal Oxidizer Stack	38.5 feet 25.67 duct diameters	36.5 feet 23 duct diameters

4.2 THERMAL OXIDIZER INLET

Two 3-inch waste gas feed lines (monomer and polymers) are installed from the accumulator tanks to the thermal oxidizer. The lines are sampled separately. Sampling is conducted at permanently installed sampling probes, which include a nozzle centered in the line and oriented into the stream flow. The configuration includes Swagelok® connectors that allow for connection of a sampling train. The ball valves allow for starting and stopping the flow of pressurized gas. The "bleed" connection allows for a connection to a compressed nitrogen line to purge and clear the sampling point of any buildup of liquid or debris prior to sampling.

Figure 4-2 provides a schematic of the sampling location.





TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE NEAR WALL (INCHES)
1	0.79
2	2.63
3	5.33
4	12.67
5	15.37
6	17.21

DRAWING NOT TO SCALE

FIGURE 4-1
THERMAL OXIDIZER STACK TEST PORT AND TRAVERSE POINT LOCATION

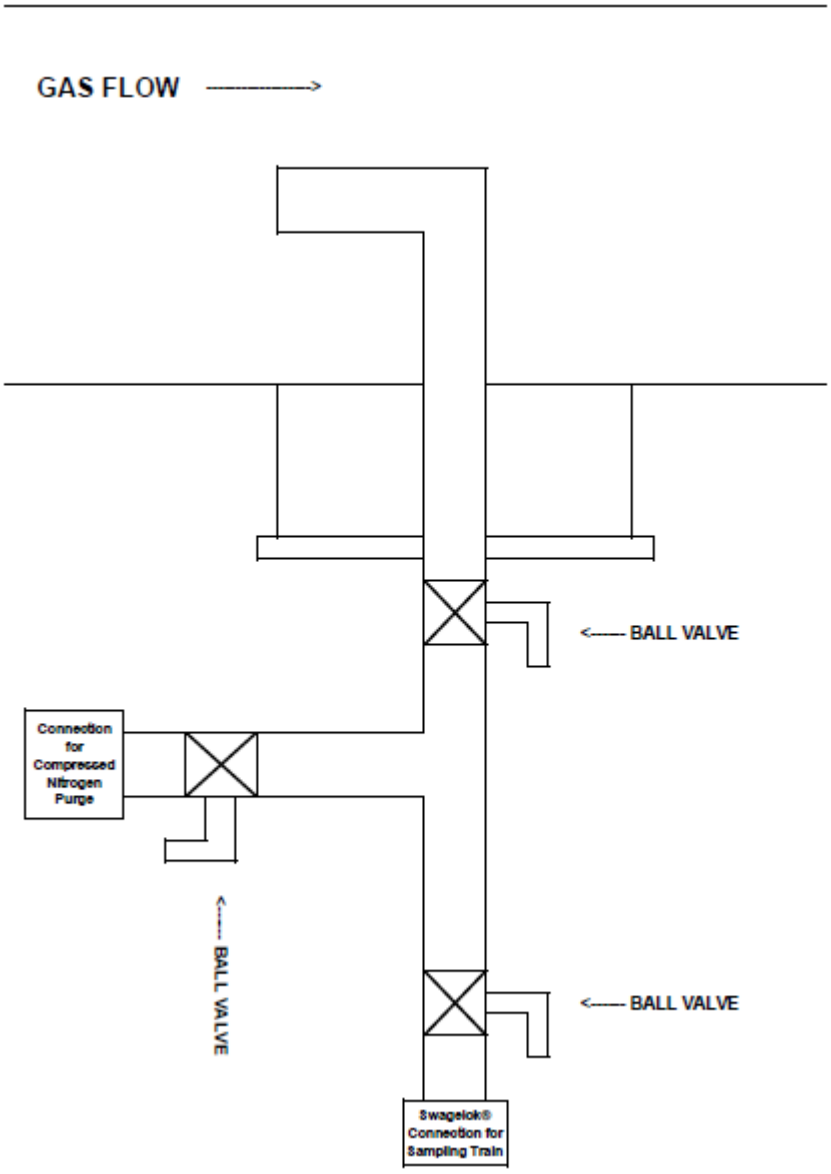


Figure 4-2

Thermal Oxidizer Inlet Sampling Locations

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

A check for the presence or absence of cyclonic flow was conducted at the test location. The cyclonic flow check was negative (< 20°) verifying that the test location was 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 stack location was a modified 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 ~10-20º 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.

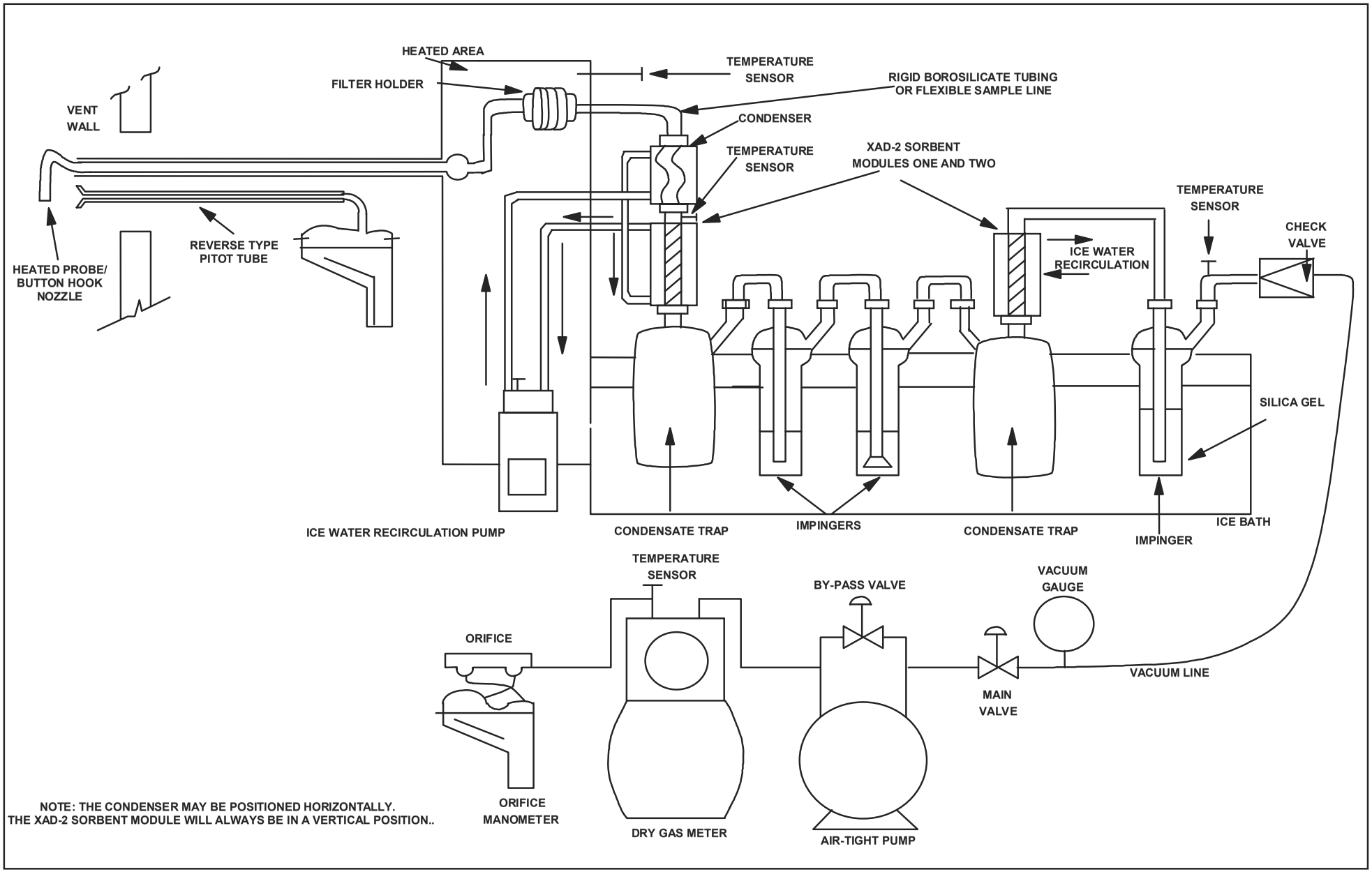


FIGURE 5-1
EPA METHOD 0010 SAMPLING TRAIN

IASDATA\CHEMOURS\15418.002.021/FIGURE 5-1 METHOD 0010

A section of borosilicate glass or flexible polyethylene tubing connected the filter holder exit to a Grahm (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 grams 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 the XAD-2 module 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.

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% ± 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 sorbent modules (1 and 2) were covered to minimize light degradation, 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 remained. 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, and distilled water were retained for analysis.

Each container was labeled to clearly identify its contents. All samples were maintained cool.

Following sample recovery, all samples were transported to Eurofins TestAmerica (TestAmerica) for sample extraction and analysis.

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

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% NH_4OH for 18 hours. Portions of the extracts were processed analytically for the HFPO dimer acid by liquid chromatography and tandem mass spectrometry (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.

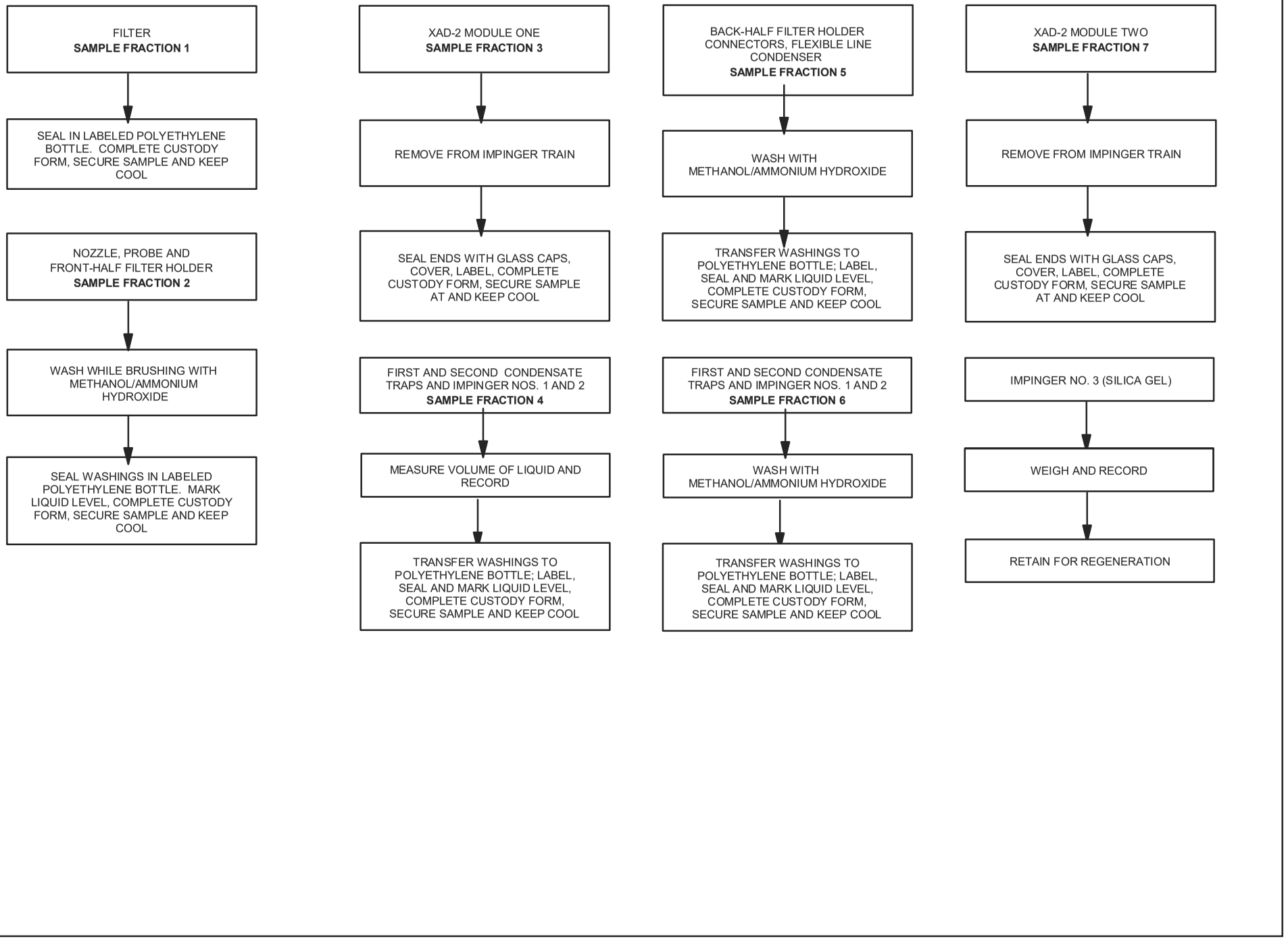


FIGURE 5-2
SAMPLE RECOVERY PROCEDURES FOR METHOD 0010

IASDATA\CHEMOURS\15418.002.021\FIGURE 5-2 EPA 0010

5.3 STACK GAS MM18

A second sampling train utilized to perform the target PFAS compound sampling at the Thermal Oxidizer stack location was a modified EPA Method 18 train using full size Teflon® impingers. All impingers contained 100 mL of methanol and approximately five boiling chips. See Figure 5-3 for the modified EPA Method 18 sampling train.

The version of the modified Method 18 utilized to sample stack gas included an extra impinger not depicted in Figure 5-3. Impinger 1 was placed in an ice water bath. The purpose of impinger 1 was to remove moisture from the sampled gas before the subsequent impingers. Impingers 2-7 were maintained in a dry ice/methanol bath. Sampling time during each test run was 180 minutes (sampled concurrently with the stack gas Method 0010) at a rate of approximately ≥1.5 liters per minute. Each impinger was recovered separately and included a methanol rinse of each impinger and connector.

The impinger contents and rinses were analyzed separately. Each sample was analyzed by EPA SW-846 Method 8260B for COF2, HFPO-DAF, HFPO Monomer, and Fluoroether E-1 by Gas Chromatography/Mass Spectrometry (GC/MS).

During the Thermal Oxidizer test campaign, a blank train was set up near the stack location, leak-checked and recovered along with the respective sample train. Following sample recovery, all samples were transported to TestAmerica for sample extraction and analysis.

5.4 INLET GAS MM18

A modified EPA Method 18 train was utilized at the waste gas accumulation tanks to measure the target PFAS compound feed composition to the Thermal Oxidizer inlet. The sampling train used full size Teflon® impingers. Impingers 1-6 each contained 100 mL of methanol and approximately five boiling chips. See Figure 5-3 for the modified EPA Method 18 sampling train.

The impingers were maintained in a dry ice/methanol bath. Sampling time during each test run was >180 minutes (sampled concurrently with the stack gas Method 0010) at a rate of

approximately 0.5 liters per minute. Each impinger was recovered separately and included a methanol rinse of each impinger and connector.

The impinger contents and rinses were analyzed separately. Each sample was analyzed by EPA SW-846 Method 8260B for COF2, HFPO-DAF, HFPO Monomer, and Fluoroether E-1 by Gas Chromatography/Mass Spectrometry (GC/MS). Each sample was also analyzed by EPA SW-846 Method 8321A for HFPO-DA by Liquid Chromatography, Tandem Mass Spectrometry (LC/MS/MS).

During the Thermal Oxidizer test campaign, a blank train was set up near the inlet location, leak-checked and recovered along with the respective sample train. Following sample recovery, all samples were transported to TestAmerica for sample extraction and analysis.

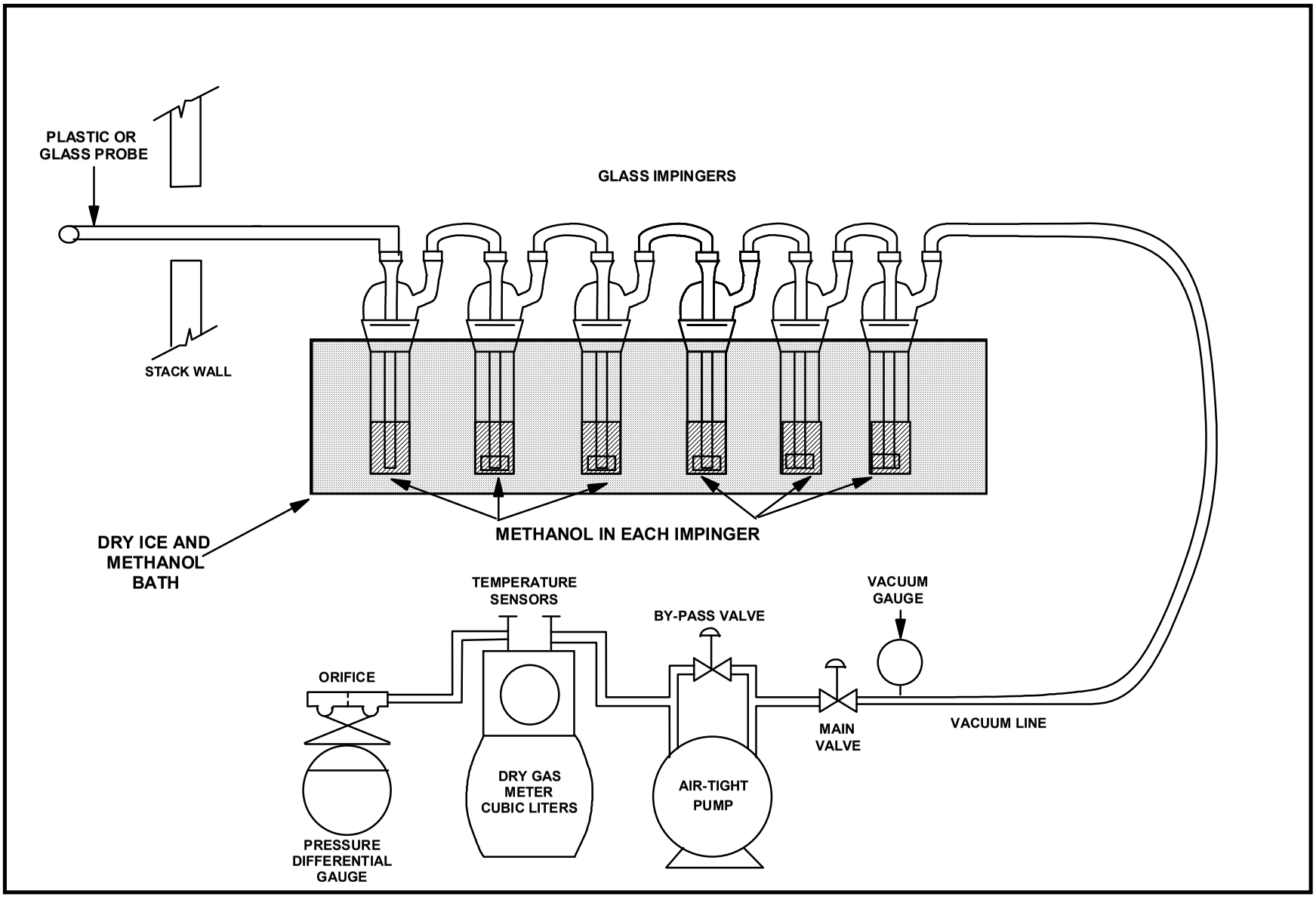


FIGURE 5-3
MODIFIED EPA METHOD 18 SAMPLING TRAIN FOR PFAS COMPOUNDS

5.5 STACK GAS COMPOSITION

The Weston mobile laboratory equipped with instrumental analyzers was used to measure carbon dioxide (CO_2) and oxygen (O_2) concentrations. A diagram of the Weston sampling system is presented in Figure 5-4.

For the Thermal Oxidizer stack test campaign, the sample was collected at the exhaust of the Method 0010 sampling system. At the end of the line, a tee permitted the introduction of calibration gas. The sample was drawn through a Teflon® sample line to the sample conditioner. The output from the sampling system was recorded electronically, and one minute averages were recorded and displayed on a data logger.

Each analyzer was set up and calibrated internally by introduction of calibration gas standards directly to the analyzer from a calibration manifold. The calibration manifold is designed with an atmospheric vent to release excess calibration gas and 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 ensure 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 the 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.

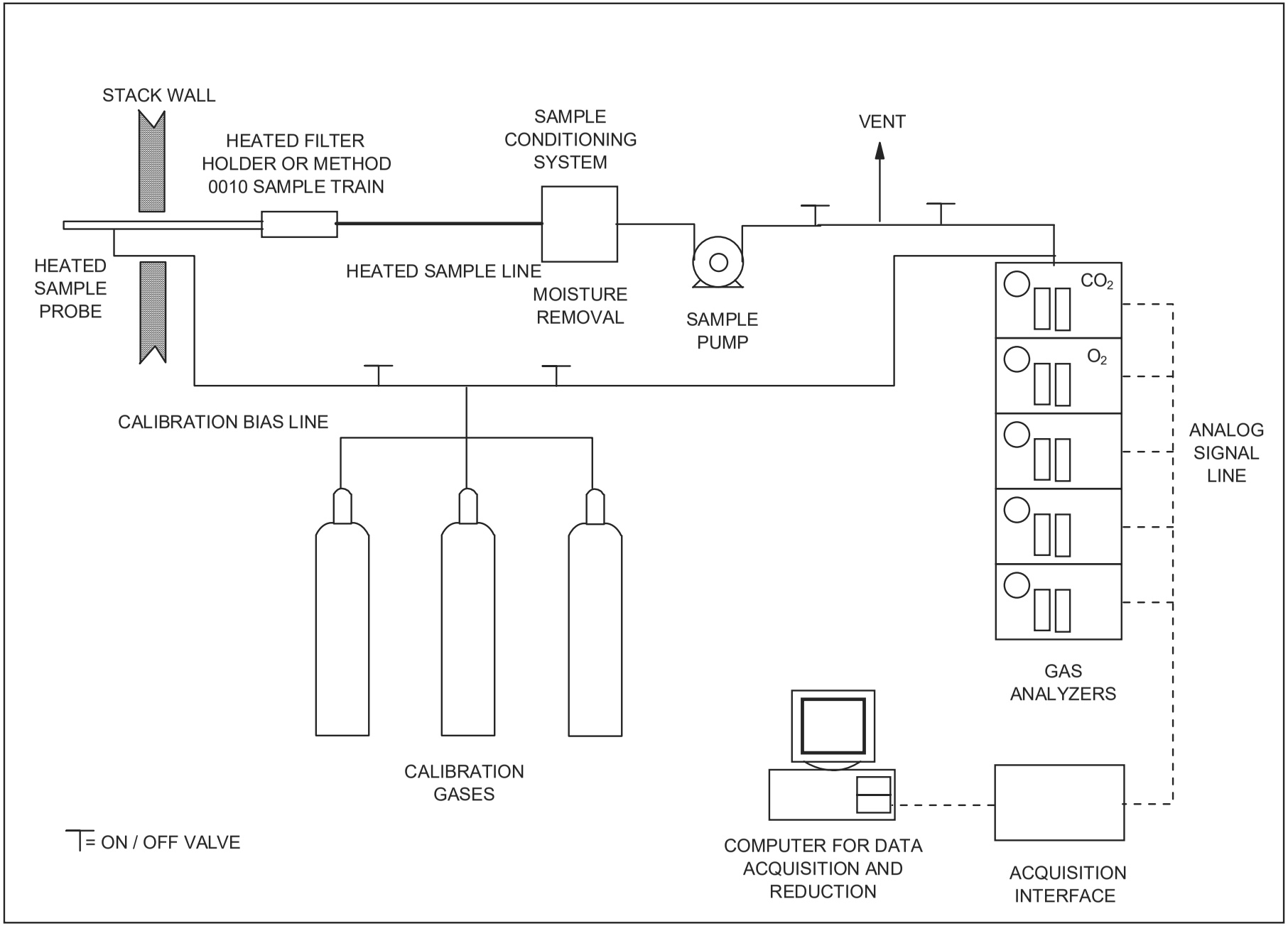


FIGURE 5-4
WESTON SAMPLING SYSTEM

I:\ASDATA\CHEMOURS\15418.002.021\FIGURE 5-4 WESTON SAMPLING SYSTEM

5.6 INLET GAS COMPOSITION

The inlet gas (waste gas) was comprised of nitrogen and organic vapors. This stream was anhydrous. The flow rate of waste gas to the Thermal Oxidizer was continuously measured via mass flow meters. The modified EPA Method 18 train was used to determine the time-integrated composition of the waste gas feed stream during each sampling run.

The Method 18 train utilized to sample the waste gas stream condenses the entrained organic vapors. Therefore, the gas volume measured by the dry gas meter connected to the Method 18 sampling train was the nitrogen less the organic vapors.

The pre-and post-test differential impinger masses were used to determine the mass of condensed vapors in the sampled gas. The total mass of the sampled gas was determined by summing the mass of the condensed organic vapors fraction and the calculated mass of the dry gas fraction measured via the dry gas meter assuming all dry gas flow was 100% nitrogen.

Impinger analysis was used to determine the mass of the target PFAS compounds captured by the Method 18 sampling train. The analysis results are used to calculate the mass of each target PFAS compound per total mass of gas sampled. The mass feed rate of each PFAS compound to the Thermal Oxidizer was then determined by multiplying this mass concentration measured via Method 18 by the waste gas flow rate measured via the system's mass flow meters. For purposes of control efficiency (CE) determinations, zero was used for any non-detect values of the target PFAS compounds; no credit was taken for non-detect values.

6. DETAILED TEST RESULTS AND DISCUSSION

Each test was a minimum of 180 minutes in duration. A total of three M0010 and three MM18 test runs were performed at the Thermal Oxidizer stack. A total of three MM18 test runs were performed at each of the Thermal Oxidizer inlets.

Table 6-1 provides detailed M0010 test data and test results for Thermal Oxidizer stack. Table 6-2 provides detailed MM18 test data and test results for the Thermal Oxidizer stack. Tables 6-3 and 6-4 provide detailed MM18 test data and test results for the Thermal Oxidizer monomer inlet and polymer inlet, respectively.

The initial attempt at the formal control efficiency test was conducted 4-5 February, 2020. Analysis of the stack gas samples indicated the presence of contamination of the target PFAS compound HFPO in the stack gas MM18 train samples. Several observation regarding the HFPO contamination imply that the source is not derived from the stack gas sampling:

- The concentration profiles are erratic and progressively increase in the successive sampling train impingers,
- The blank train had similar background contamination features as are observed for the Run 1-3 trains,
- The proof blank for the sampling trains were contaminated at levels comparable to the sampling trains,
- The reagent blanks were non-detect.

The Thermal Oxidizer control efficiency was calculated based upon the five target PFAS compound mass emission rates in lb/hr as measured at the inlet and stack.

TABLE 6-1
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS
THERMAL OXIDIZER STACK

Test Data			
Run number	1	2	3
Location	Thermal Oxidizer Stack	Thermal Oxidizer Stack	Thermal Oxidizer Stack
Date	2/4/2020	2/4/2020	2/5/2020
Time period	1020-1337	1455-1810	0950-1306
SAMPLING DATA:			
Sampling duration, min.	180	180	180
Nozzle diameter, in.	0.235	0.250	0.250
Cross sectional nozzle area, sq.ft.	0.000301	0.000341	0.000341
Barometric pressure, in. Hg	29.96	29.96	29.92
Avg. orifice press. diff., in H_2O	1.11	1.40	1.42
Avg. dry gas meter temp., deg F	66.8	69.8	63.3
Avg. abs. dry gas meter temp., deg. R	527	530	523
Total liquid collected by train, ml	56.6	56.5	68.3
Std. vol. of H_2O vapor coll., cu.ft.	2.7	2.7	3.2
Dry gas meter calibration factor	0.9834	0.9834	0.9834
Sample vol. at meter cond., dcf	109.072	124.940	124.830
Sample vol. at std. cond., dscf [(1)]	107.897	122.984	124.235
Percent of isokinetic sampling	100.0	100.9	101.4
GAS STREAM COMPOSITION DATA:			
CO_2, % by volume, dry basis	3.8	4.0	4.0
O_2, % by volume, dry basis	14.9	14.6	14.6
N_2, % by volume, dry basis	81.3	81.4	81.4
Molecular wt. of dry gas, lb/lb mole	29.20	29.22	29.22
H_20 vapor in gas stream, prop. by vol.	0.024	0.021	0.025
Mole fraction of dry gas	0.976	0.979	0.975
Molecular wt. of wet gas, lb/lb mole	28.93	28.99	28.94
GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:			
Static pressure, in. H_2O	-0.30	-0.30	-0.30
Absolute pressure, in. Hg	29.94	29.94	29.90
Avg. temperature, deg. F	79	81	76
Avg. absolute temperature, deg.R	539	541	536
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	12	12	12
Avg. gas stream velocity, ft./sec.	34.7	34.7	34.7
Stack/duct cross sectional area, sq.ft.	1.77	1.77	1.77
Avg. gas stream volumetric flow, wacf/min.	3678	3675	3681
Avg. gas stream volumetric flow, dscf/min.	3516	3509	3531

[(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
THERMAL OXIDIZER STACK

TEST DATA			
Run number	1	2	3
Location	Thermal Oxidizer Stack	Thermal Oxidizer Stack	Thermal Oxidizer Stack
Date	2/4/2020	2/4/2020	2/5/2020
Time period	1020-1337	1455-1810	0950-1306
LABORATORY REPORT DATA, ug.			
HFPO Dimer Acid	0.93	4.26	1.33
EMISSION RESULTS, ug/dscm.			
HFPO Dimer Acid	0.31	1.22	0.38
EMISSION RESULTS, lb/dscf.			
HFPO Dimer Acid	1.91E-11	7.63E-11	2.36E-11
EMISSION RESULTS, lb/hr.			
HFPO Dimer Acid	4.03E-06	1.61E-05	5.00E-06
EMISSION RESULTS, g/sec.			
HFPO Dimer Acid	5.07E-07	2.02E-06	6.29E-07

TABLE 6-2
CHEMOURS-FAYETTEVILLE, NC
INPUTS FOR TARGET COMPOUND CALCULATIONS
THERMAL OXIDIZER STACK

TEST DATA			
Test run number	1	2	3
Location	Thermal Oxidizer Stack	Thermal Oxidizer Stack	Thermal Oxidizer Stack
Test date	2/4/2020	2/4/2020	2/5/2020
Test time period	1020-1337	1455-1810	0950-1306
Operator	CW	CW	CW
SAMPLING DATA			
Duration, minutes	180	180	180
Average dry gas meter press. in. H2O	2.21	2.19	2.20
Average dry gas meter temp. deg. F	69.56	71.03	63.83
Average absolute meter temp. deg. R	529.6	531.0	523.8
Sample vol. at meter cond., dcl	272.553	270.925	269.582
Meter box calibration, Y	1.0046	1.0046	1.0046
Barometric pressure, in. Hg	29.96	29.96	29.92
Sample volume, dscl (1)	274.741	272.328	274.342
Sample volume, dscf (1)	9.701	9.616	9.687
VOLUMETRIC FLOW RATE			
Avg. gas stream volumetric flow, dscf/min.	3,516	3,509	3,531

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

TABLE 6-2 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS

TEST DATA						
Run number		1		2		3
Location		Thermal Oxidizer Stack		Thermal Oxidizer Stack		Thermal Oxidizer Stack
Date		2/4/2020		2/4/2020		2/5/2020
Time period		1020-1337		1455-1810		0950-1306
LABORATORY REPORT DATA, ug.						
HFPO-DAF	<	0.611	<	0.522	<	0.522
HFPO Monomer		15.06		26.869		2.6018
Fluoroether E-1	<	0.0316	<	0.027	<	0.027
Carbonyl Difluoride	<	1.85	<	1.58	<	1.58
EMISSION RESULTS, ug/dscm.						
HFPO-DAF	<	2.22E+00	<	1.92E+00	<	1.90E+00
HFPO Monomer		5.48E+01		9.87E+01		9.48E+00
Fluoroether E-1	<	1.15E-01	<	9.95E-02	<	9.84E-02
Carbonyl Difluoride	<	6.73E+00	<	5.80E+00	<	5.76E+00
EMISSION RESULTS, lb/dscf.						
HFPO-DAF	<	1.39E-10	<	1.20E-10	<	1.19E-10
HFPO Monomer		3.42E-09		6.16E-09		5.92E-10
Fluoroether E-1	<	7.18E-12	<	6.21E-12	<	6.14E-12
Carbonyl Difluoride	<	4.20E-10	<	3.62E-10	<	3.60E-10
EMISSION RESULTS, lb/hr.						
HFPO-DAF	<	2.93E-05	<	2.52E-05	<	2.52E-05
HFPO Monomer		7.22E-04		1.30E-03		1.25E-04
Fluoroether E-1	<	1.51E-06	<	1.31E-06	<	1.30E-06
Carbonyl Difluoride	<	8.87E-05	<	7.63E-05	<	7.62E-05
EMISSION RESULTS, g/sec.						
HFPO-DAF	<	3.69E-06	<	3.17E-06	<	3.17E-06
HFPO Monomer		9.09E-05		1.63E-04		1.58E-05
Fluoroether E-1	<	1.91E-07	<	1.65E-07	<	1.64E-07
Carbonyl Difluoride	<	1.12E-05	<	9.60E-06	<	9.59E-06

TABLE 6-3
CHEMOURS-FAYETTEVILLE, NC
INPUTS FOR TARGET COMPOUND CALCULATIONS
THERMAL OXIDIZER MONOMER INLET

TEST DATA			
Test run number	1	2	3
Location	TO Monomer Inlet	TO Monomer Inlet	TO Monomer Inlet
Test date	2/4/2020	2/4/2020	2/5/2020
Test time period	1020-1337	1455-1810	0950-1306
Operator	JM	JM	JM
SAMPLING DATA			
Duration, minutes	197	195	196
Average dry gas meter press. in. H2O	0.80	0.80	0.80
Average dry gas meter temp. deg. F	78.88	76.51	68.48
Average absolute meter temp. deg. R	538.9	536.5	528.5
Sample vol. at meter cond., dcl	98.331	96.991	97.717
Meter box calibration, Y	1.0000	1.0000	1.0000
Barometric pressure, in. hg	30.02	30.06	30.02
Sample volume, dscl (1)	96.819	96.048	98.108
Mass of sample gas, kg	0.11270	0.11180	0.11420
VOLUMETRIC FLOW RATE			
Avg. gas stream volumetric flow, kg/hr (from Chemours)	158.98	181.89	176.90
Total weight gain in impingers, kg	0.1553	0.1841	0.1296
Total Mass collected, kg	0.2680	0.2959	0.2438

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

TABLE 6-3 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS

TEST DATA						
Run number		1		2		3
Location		TO Monomer Inlet		TO Monomer Inlet		TO Monomer Inlet
Date		2/4/2020		2/4/2020		2/5/2020
Time period		1020-1337		1455-1810		0950-1306
LABORATORY REPORT DATA, ug.						
HFPO-DAF		75280		71510		87050
HFPO Monomer		2013000		2183000		1502000
Fluoroether E-1	<	47600	<	49800	<	51600
HFPO Dimer Acid		8425		3827		5471
Carbonyl Difluoride		77125120		73402470		76587950
Total Target Compounds, kg		0.07922		0.07566		0.07818
Total Impinger and Gas Sample Mass, kg		0.2680		0.2959		0.2438
Total Mass Sampled per Total Mass		0.2956		0.2557		0.3207
EMISSION RESULTS, lb/hr.						
HFPO-DAF		9.85E-02		9.69E-02		1.39E-01
HFPO Monomer		2.63E+00		2.96E+00		2.40E+00
Fluoroether E-1	<	6.23E-02	<	6.75E-02	<	8.25E-02
HFPO Dimer Acid		1.10E-02		5.19E-03		8.75E-03
Carbonyl Difluoride		1.01E+02		9.95E+01		1.23E+02
Total Target Compounds		1.04E+02		1.03E+02		1.25E+02
EMISSION RESULTS, g/sec.						
HFPO-DAF		1.24E-02		1.22E-02		1.75E-02
HFPO Monomer		3.31E-01		3.72E-01		3.03E-01
Fluoroether E-1	<	7.84E-03	<	8.50E-03	<	1.04E-02
HFPO Dimer Acid		1.39E-03		6.53E-04		1.10E-03
Carbonyl Difluoride		1.27E+01		1.25E+01		1.54E+01
Total Target Compounds		1.30E+01		1.29E+01		1.57E+01

TABLE 6-4
CHEMOURS-FAYETTEVILLE, NC
INPUTS FOR TARGET COMPOUND CALCULATIONS
THERMAL OXIDIZER POLYMERS INLET

TEST DATA			
Test run number	1	2	3
Location	TO Polymers Inlet	TO Polymers Inlet	TO Polymers Inlet
Test date	2/4/2020	2/4/2020	2/5/2020
Test time period	1020-1337	1455-1810	0950-1306
Operator	KS	KS	KS
SAMPLING DATA			
Duration, minutes	197	195	196
Average dry gas meter press. in. H2O	0.80	0.80	0.80
Average dry gas meter temp. deg. F	77.98	77.10	68.90
Average absolute meter temp. deg. R	538.0	537.1	528.9
Sample vol. at meter cond., dcl	98.611	97.481	98.092
Meter box calibration, Y	0.9996	0.9996	0.9996
Barometric pressure, in. hg	30.02	30.06	30.02
Sample volume, dscl (1)	97.218	96.389	98.366
Mass of sample gas, kg	0.11316	0.11220	0.11450
VOLUMETRIC FLOW RATE			
Avg. gas stream volumetric flow, kg/hr (from Chemours)	75.16	76.66	79.15
Total weight gain in impingers, kg	0.0025	0.0031	0.0053
Total Mass collected, kg	0.1157	0.1153	0.1198

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

TABLE 6-4 (cont.)
CHEMOURS - FAYETTEVILLE, NC
SUMMARY OF TARGET COMPOUND TEST DATA AND TEST RESULTS

TEST DATA					
Run number	1		2		3
Location	TO Polymers Inlet		TO Polymers Inlet		TO Polymers Inlet
Date	2/4/2020		2/4/2020		2/5/2020
Time period	1020-1337		1455-1810		0950-1306
LABORATORY REPORT DATA, ug.					
HFPO-DAF	621		488		559
HFPO Monomer	588		78	<	179
Fluoroether E-1	913		328		292
HFPO Dimer Acid	188		149		167
Carbonyl Difluoride	522	<	487	<	602
Total Target Compounds, kg	0.0000028		0.0000010		0.0000010
Total Impinger and Gas Sample Mass, kg	0.1157		0.1153		0.1198
Total Mass Sampled per Total Mass	0.000024		0.000009		0.000008
EMISSION RESULTS, lb/hr.					
HFPO-DAF	8.89E-04		7.15E-04		8.14E-04
HFPO Monomer	8.42E-04		1.15E-04	<	2.61E-04
Fluoroether E-1	1.31E-03		4.81E-04		4.25E-04
HFPO Dimer Acid	2.69E-04		2.18E-04		2.43E-04
Carbonyl Difluoride	7.48E-04	<	7.14E-04	<	8.77E-04
Total Target Compounds	4.06E-03		1.53E-03		1.48E-03
EMISSION RESULTS, g/sec.					
HFPO-DAF	1.12E-04		9.00E-05		1.03E-04
HFPO Monomer	1.06E-04		1.45E-05	<	3.28E-05
Fluoroether E-1	1.65E-04		6.05E-05		5.35E-05
HFPO Dimer Acid	3.39E-05		2.75E-05		3.06E-05
Carbonyl Difluoride	9.42E-05	<	8.99E-05	<	1.10E-04
Total Target Compounds	5.11E-04		1.93E-04		1.87E-04

APPENDIX A
PROCESS OPERATIONS DATA

Date	**2/4/2020**								
Time	1000	1100	1200	1300	1400	1500	1600	1700	1800
Stack Testing		RUN 1 - 1020 -1337					RUN 2 - 1455-1810		
HFPO									
VEN Product					PSEPVE				
VEN Precursor									
VEN Condensation (HFPO)									
VEN ABR									
VEN Refining									
Stripper Column Vent									
VES Product					PM/PE				
VES Precursor									
VES Condensation (HFPO)									
VES ABR (East)				Burnout					
VES ABR (West)									
VES Refining									
Dimer ISO Venting									
E2 Production					Down				
Polymers - Recycle Still					Down				
Polymers Polymerization					920SR				
Polymers Line 4 Extrusion					Down				
Polymers Line 3 Extrusion					Down				

Date	**2/5/2020**				
Time	900	1000	1100	1200	1300
Stack Testing			RUN 3 - 950 -1306		
HFPO					
VEN Product			PSEPVE		
VEN Precursor					
VEN Condensation (HFPO)					
VEN ABR					
VEN Refining					
Stripper Column Vent					
VES Product			PM/PE		
VES Precursor					
VES Condensation (HFPO)					
VES ABR (East)		Burnout			
VES ABR (West)					
VES Refining					
Dimer ISO Venting					
E2 Production			Down		
Polymers - Recycle Still			Down		
Polymers Polymerization			920SR		
Polymers Line 4 Extrusion			Down		
Polymers Line 3 Extrusion			Down		

Thermal Oxidizer Destruction Efficiency Test Operating Data Summary

February 4-5, 2020

Parameter	Tag No.	Units	Permit	Statistic	Run 1	Run 2	Run 3	Average
Monomer Waste Gas	A41756FC	lb/hr	NA	Average	350.5	401.0	390.0	380.5
				Maximum	377.2	433.9	454.7	421.9
				Minimum	320.1	368.7	321.6	336.8
				Std Dev	11.7	20.6	36.2	22.8
Polymer Waste Gas	A41103FC	lb/hr	NA	Average	165.7	169.0	174.5	169.7
				Maximum	194.6	173.1	186.4	184.7
				Minimum	131.3	161.7	165.1	152.7
				Std Dev	17.9	2.6	3.7	8.1
Total Waste Gas	calculated	lb/hr	<2,200	Average	516.2	570.0	564.6	550.2
				Maximum	541.5	604.0	626.3	590.6
				Minimum	481.9	534.2	494.7	503.6
				Std Dev	15.2	20.6	37.8	24.5
Combustion Temperature	A40937TC	deg F	>1,800	Average	1,922	1,921	1,922	1,922
				Maximum	1,924	1,923	1,925	1,924
				Minimum	1,919	1,920	1,920	1,919
				Std Dev	1	1	1	1
Scrubber Flow Rate	Calculated	gpm	>40	Average	71.0	71.0	70.9	71.0
				Maximum	71.3	71.2	71.4	71.3
				Minimum	70.7	70.8	70.7	70.8
				Std Dev	0.1	0.1	0.1	0.1
Scrubber pH	A41261XC	SU	>7.1	Average	7.95	7.94	8.00	7.96
				Maximum	7.99	8.02	8.01	8.01
				Minimum	7.90	7.85	7.95	7.90
				Std Dev	0.02	0.05	0.02	0.03
Date:					4-Feb-20	4-Feb-20	5-Feb-20	
Start:					10:20	14:55	9:50	
Finish:					13:37	18:10	13:06	
Duration:					3:17	3:15	3:16	

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
Average	1921.8	350.5	165.7	516.2	35531.2	71.0	7.95
Maximum	1924.0	377.2	194.6	541.5	35702.3	71.3	7.99
Minimum	1918.6	320.1	131.3	481.9	35422.1	70.7	7.90
Std. Dev.	1.1	11.7	17.9	15.2	53.2	0.1	0.02
2/4/2020 10:20:00	1923.13	374.61	133.59	508.2	35461.932	70.82	7.91
2/4/2020 10:21:00	1923.89	373.25	131.91	505.16	35543.786	70.98	7.91
2/4/2020 10:22:00	1923.33	373.69	131.32	505.01	35485.596	70.86	7.91
2/4/2020 10:23:00	1922.46	371.55	132.3	503.85	35504.755	70.90	7.91
2/4/2020 10:24:00	1922.45	374.22	133.04	507.26	35525.081	70.94	7.9
2/4/2020 10:25:00	1922.45	377.18	136.72	513.9	35518.159	70.93	7.91
2/4/2020 10:26:00	1922.19	372.22	140.14	512.36	35594.717	71.08	7.91
2/4/2020 10:27:00	1922.19	366.77	140.34	507.11	35611.996	71.12	7.91
2/4/2020 10:28:00	1922.19	366.48	139.88	506.36	35622.61	71.14	7.91
2/4/2020 10:29:00	1922.19	368.87	139.59	508.46	35465.423	70.82	7.91
2/4/2020 10:30:00	1922.19	370.66	138.97	509.63	35422.056	70.74	7.91
2/4/2020 10:31:00	1922.47	366.35	138.99	505.34	35451.997	70.80	7.91
2/4/2020 10:32:00	1923.24	362.25	141.16	503.41	35526.406	70.94	7.92
2/4/2020 10:33:00	1922.25	358.74	143.64	502.38	35579.137	71.05	7.91
2/4/2020 10:34:00	1921.91	359.9	142.44	502.34	35439.62	70.77	7.92
2/4/2020 10:35:00	1921.78	359.62	140.21	499.83	35524.433	70.94	7.92
2/4/2020 10:36:00	1921.14	361.18	139.07	500.25	35530.312	70.95	7.92
2/4/2020 10:37:00	1921.77	363.36	138.8	502.16	35523.555	70.94	7.92
2/4/2020 10:38:00	1921.39	365.35	140.09	505.44	35460.956	70.81	7.92
2/4/2020 10:39:00	1921.42	364.39	140.84	505.23	35451.007	70.79	7.92
2/4/2020 10:40:00	1921.13	370.28	141.97	512.25	35541.676	70.98	7.92
2/4/2020 10:41:00	1921.11	369.91	143.07	512.98	35490.583	70.87	7.92

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 10:42:00	1921.71	367.82	142.14	509.96	35502.163	70.90	7.92
2/4/2020 10:43:00	1921.57	373.25	141.66	514.91	35493.902	70.88	7.92
2/4/2020 10:44:00	1920.6	373.32	143.51	516.83	35491.076	70.87	7.92
2/4/2020 10:45:00	1920.89	374.51	144.22	518.73	35425.277	70.74	7.92
2/4/2020 10:46:00	1921.37	374.77	142.22	516.99	35451.628	70.80	7.92
2/4/2020 10:47:00	1922.01	373.49	143.3	516.79	35517.229	70.93	7.92
2/4/2020 10:48:00	1921.52	369.8	143.71	513.51	35507.161	70.91	7.93
2/4/2020 10:49:00	1921.28	370.33	144.03	514.36	35499.178	70.89	7.93
2/4/2020 10:50:00	1921.06	365.64	144.64	510.28	35556.382	71.00	7.93
2/4/2020 10:51:00	1920.58	365.72	145.42	511.14	35485.557	70.86	7.93
2/4/2020 10:52:00	1920.61	367.65	146.01	513.66	35564.439	71.02	7.93
2/4/2020 10:53:00	1920.57	365.68	144.9	510.58	35508.403	70.91	7.93
2/4/2020 10:54:00	1920.53	364.35	143.77	508.12	35525.843	70.94	7.93
2/4/2020 10:55:00	1920.33	363.66	145.04	508.7	35492.334	70.88	7.93
2/4/2020 10:56:00	1920.96	364.38	146.68	511.06	35560.222	71.01	7.94
2/4/2020 10:57:00	1920.72	361.34	144.77	506.11	35445.236	70.78	7.94
2/4/2020 10:58:00	1921.52	357.54	146.58	504.12	35473.157	70.84	7.94
2/4/2020 10:59:00	1922.05	358.05	145.53	503.58	35574.487	71.04	7.94
2/4/2020 11:00:00	1922.73	352.82	145.28	498.1	35577.179	71.05	7.94
2/4/2020 11:01:00	1922.18	349.13	143.89	493.02	35504.874	70.90	7.94
2/4/2020 11:02:00	1922.71	348.81	145.13	493.94	35528.965	70.95	7.94
2/4/2020 11:03:00	1923.42	347.44	146.34	493.78	35507.188	70.91	7.94
2/4/2020 11:04:00	1923.53	346.33	144.91	491.24	35491.75	70.88	7.94
2/4/2020 11:05:00	1923.13	344	144.95	488.95	35547.735	70.99	7.94
2/4/2020 11:06:00	1922.78	342.97	144.25	487.22	35525.084	70.94	7.94
2/4/2020 11:07:00	1923.07	343.91	143.88	487.79	35595.352	71.08	7.94
2/4/2020 11:08:00	1922.39	344.04	145.78	489.82	35494.96	70.88	7.94

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 11:09:00	1922.43	347.04	145.72	492.76	35479.58	70.85	7.94
2/4/2020 11:10:00	1922.48	345.65	144.72	490.37	35516.811	70.93	7.94
2/4/2020 11:11:00	1922.36	345.59	144.03	489.62	35495.872	70.88	7.94
2/4/2020 11:12:00	1922.7	350.81	143.69	494.5	35540.32	70.97	7.94
2/4/2020 11:13:00	1922.19	352.6	145.26	497.86	35544.001	70.98	7.94
2/4/2020 11:14:00	1921.99	349.93	145.96	495.89	35539.828	70.97	7.94
2/4/2020 11:15:00	1922.09	350.31	145.99	496.3	35435.757	70.76	7.94
2/4/2020 11:16:00	1921.73	352.3	144.57	496.87	35545.276	70.98	7.94
2/4/2020 11:17:00	1922.13	354.14	146.14	500.28	35467.491	70.83	7.94
2/4/2020 11:18:00	1922.69	355	145.66	500.66	35533.709	70.96	7.94
2/4/2020 11:19:00	1922.57	351.73	144.35	496.08	35612.223	71.12	7.94
2/4/2020 11:20:00	1922.1	349.07	144.89	493.96	35594.868	71.08	7.94
2/4/2020 11:21:00	1922.34	347.75	144.7	492.45	35581.835	71.06	7.94
2/4/2020 11:22:00	1922.47	345.07	145.07	490.14	35516.399	70.92	7.94
2/4/2020 11:23:00	1922.19	342.92	146.23	489.15	35477.497	70.85	7.95
2/4/2020 11:24:00	1922.68	342.48	147.58	490.06	35447.253	70.79	7.95
2/4/2020 11:25:00	1922.36	341.57	148.35	489.92	35559.32	71.01	7.95
2/4/2020 11:26:00	1922.36	339.19	147.54	486.73	35599.326	71.09	7.95
2/4/2020 11:27:00	1922.89	336.39	146.61	483	35544.876	70.98	7.95
2/4/2020 11:28:00	1923.13	334.2	147.7	481.9	35552.19	71.00	7.95
2/4/2020 11:29:00	1922.33	333.89	148.49	482.38	35447.971	70.79	7.95
2/4/2020 11:30:00	1922.46	334.4	169.41	503.81	35529.51	70.95	7.95
2/4/2020 11:31:00	1919.83	334.24	181.36	515.6	35518.448	70.93	7.95
2/4/2020 11:32:00	1918.79	335.54	194.56	530.1	35470.467	70.83	7.95
2/4/2020 11:33:00	1918.55	336.18	193.63	529.81	35612.766	71.12	7.95
2/4/2020 11:34:00	1918.82	337.11	191.52	528.63	35478.742	70.85	7.95
2/4/2020 11:35:00	1919.04	335.42	190	525.42	35558.151	71.01	7.96

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 11:36:00	1919.68	335.02	189.45	524.47	35486.414	70.87	7.96
2/4/2020 11:37:00	1919.53	337.98	191.23	529.21	35560.009	71.01	7.96
2/4/2020 11:38:00	1919.81	338.89	190.36	529.25	35550.534	70.99	7.96
2/4/2020 11:39:00	1919.1	342.56	189.29	531.85	35473.212	70.84	7.96
2/4/2020 11:40:00	1919.47	343.98	188.25	532.23	35544.296	70.98	7.96
2/4/2020 11:41:00	1919.33	345.91	187.65	533.56	35521.472	70.94	7.96
2/4/2020 11:42:00	1919.77	347.97	187.99	535.96	35527.877	70.95	7.97
2/4/2020 11:43:00	1919.75	346.84	188.8	535.64	35582.387	71.06	7.97
2/4/2020 11:44:00	1919.79	348.34	189.49	537.83	35549.601	70.99	7.97
2/4/2020 11:45:00	1919.26	345.74	188.13	533.87	35472.957	70.84	7.96
2/4/2020 11:46:00	1919.75	346.93	181.82	528.75	35589.33	71.07	7.96
2/4/2020 11:47:00	1920.06	346.59	180.47	527.06	35512.693	70.92	7.96
2/4/2020 11:48:00	1920.59	347.2	182	529.2	35558.812	71.01	7.96
2/4/2020 11:49:00	1920.21	348.49	184.99	533.48	35543.561	70.98	7.96
2/4/2020 11:50:00	1920.3	350.74	183.74	534.48	35539.05	70.97	7.96
2/4/2020 11:51:00	1920.7	349.12	183.86	532.98	35554.937	71.00	7.96
2/4/2020 11:52:00	1920.66	347.18	186.42	533.6	35525.171	70.94	7.97
2/4/2020 11:53:00	1920.36	344.7	187.82	532.52	35507.08	70.91	7.97
2/4/2020 11:54:00	1920.54	342.96	188.7	531.66	35460.645	70.81	7.97
2/4/2020 11:55:00	1920.46	343.73	186.87	530.6	35524.819	70.94	7.97
2/4/2020 11:56:00	1920.6	341.84	186.22	528.06	35570.511	71.03	7.97
2/4/2020 11:57:00	1920.44	340.93	187.11	528.04	35567.46	71.03	7.97
2/4/2020 11:58:00	1920.93	338.86	186.45	525.31	35525.348	70.94	7.97
2/4/2020 11:59:00	1920.9	336.23	189.5	525.73	35540.144	70.97	7.97
2/4/2020 12:00:00	1921.32	334.73	189.94	524.67	35539.859	70.97	7.97
2/4/2020 12:01:00	1921.64	337.05	187.56	524.61	35577.668	71.05	7.97
2/4/2020 12:02:00	1921.67	340.05	188.02	528.07	35542.651	70.98	7.96

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 12:03:00	1921.38	344.29	186.93	531.22	35480.336	70.85	7.96
2/4/2020 12:04:00	1921.5	347.84	187.5	535.34	35485.966	70.86	7.96
2/4/2020 12:05:00	1920.92	345.88	187.54	533.42	35443.299	70.78	7.96
2/4/2020 12:06:00	1920.33	344.93	185.07	530	35538.083	70.97	7.96
2/4/2020 12:07:00	1920.82	350.36	185.2	535.56	35529.855	70.95	7.96
2/4/2020 12:08:00	1920.66	353.96	187.55	541.51	35536.917	70.97	7.96
2/4/2020 12:09:00	1921.13	352.59	185.94	538.53	35557.245	71.01	7.96
2/4/2020 12:10:00	1922.07	351.33	185.25	536.58	35567.336	71.03	7.97
2/4/2020 12:11:00	1921.73	352.74	179.48	532.22	35571.7	71.04	7.97
2/4/2020 12:12:00	1921.21	355.06	176.4	531.46	35444.707	70.78	7.97
2/4/2020 12:13:00	1921.82	349.55	177.12	526.67	35497.147	70.89	7.97
2/4/2020 12:14:00	1922.47	348.18	176.29	524.47	35526.575	70.95	7.97
2/4/2020 12:15:00	1922.85	352.9	176.56	529.46	35565.793	71.02	7.97
2/4/2020 12:16:00	1923.12	350.69	177.72	528.41	35504.717	70.90	7.97
2/4/2020 12:17:00	1922.71	354.26	177.73	531.99	35584.206	71.06	7.97
2/4/2020 12:18:00	1921.88	349.42	177.47	526.89	35634.245	71.16	7.97
2/4/2020 12:19:00	1921.36	352.93	176.83	529.76	35581.465	71.05	7.97
2/4/2020 12:20:00	1921.65	350.27	176.35	526.62	35519.331	70.93	7.97
2/4/2020 12:21:00	1921.69	345.01	177.07	522.08	35548.617	70.99	7.97
2/4/2020 12:22:00	1921.8	345.81	177.91	523.72	35533.779	70.96	7.97
2/4/2020 12:23:00	1922.19	346.47	178.61	525.08	35486.466	70.87	7.97
2/4/2020 12:24:00	1921.86	345.49	178.29	523.78	35549.033	70.99	7.97
2/4/2020 12:25:00	1921.62	347.27	178.68	525.95	35564.153	71.02	7.97
2/4/2020 12:26:00	1921.77	349.07	178.3	527.37	35552.616	71.00	7.97
2/4/2020 12:27:00	1922.96	345.78	177.75	523.53	35621.507	71.13	7.97
2/4/2020 12:28:00	1922.56	346.04	179.82	525.86	35532.18	70.96	7.97
2/4/2020 12:29:00	1922.45	347.47	179.7	527.17	35570.012	71.03	7.97

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 12:30:00	1922.48	347.28	178.61	525.89	35499.796	70.89	7.97
2/4/2020 12:31:00	1922.59	346.25	178.44	524.69	35464.815	70.82	7.97
2/4/2020 12:32:00	1922.81	352.33	177.6	529.93	35477.567	70.85	7.97
2/4/2020 12:33:00	1922.09	354.85	177.37	532.22	35530.648	70.95	7.97
2/4/2020 12:34:00	1921.7	351.82	177.23	529.05	35528.459	70.95	7.97
2/4/2020 12:35:00	1920.99	351.6	177.09	528.69	35614.33	71.12	7.97
2/4/2020 12:36:00	1921.75	350.97	179.3	530.27	35596.179	71.08	7.97
2/4/2020 12:37:00	1922.11	353.89	179.67	533.56	35548.039	70.99	7.97
2/4/2020 12:38:00	1922.53	354.26	179.24	533.5	35468.329	70.83	7.97
2/4/2020 12:39:00	1922.7	351.53	176.22	527.75	35464.972	70.82	7.97
2/4/2020 12:40:00	1922.63	349.9	167.75	517.65	35508.622	70.91	7.96
2/4/2020 12:41:00	1922.48	349.2	167.16	516.36	35600.807	71.09	7.96
2/4/2020 12:42:00	1922.43	352.44	167.95	520.39	35566.515	71.03	7.96
2/4/2020 12:43:00	1922.26	355.79	168.02	523.81	35608.416	71.11	7.96
2/4/2020 12:44:00	1922.41	353.44	167.36	520.8	35577.789	71.05	7.96
2/4/2020 12:45:00	1922.56	347.22	169.16	516.38	35486.101	70.86	7.96
2/4/2020 12:46:00	1922.35	349.03	168.39	517.42	35468.903	70.83	7.96
2/4/2020 12:47:00	1921.98	349.13	170.67	519.8	35492.722	70.88	7.97
2/4/2020 12:48:00	1921.98	346.19	173.63	519.82	35668.837	71.23	7.97
2/4/2020 12:49:00	1921.38	346.83	173.51	520.34	35588.301	71.07	7.97
2/4/2020 12:50:00	1921.63	346.69	175.28	521.97	35579.095	71.05	7.97
2/4/2020 12:51:00	1921.87	345.35	175.1	520.45	35452.809	70.80	7.97
2/4/2020 12:52:00	1921.47	345.79	174.73	520.52	35574.461	71.04	7.97
2/4/2020 12:53:00	1921.13	347.91	174.26	522.17	35485.816	70.86	7.97
2/4/2020 12:54:00	1921.25	350.34	173.96	524.3	35523.681	70.94	7.97
2/4/2020 12:55:00	1921.92	354.23	173.91	528.14	35598.669	71.09	7.97
2/4/2020 12:56:00	1921.85	356.14	174.42	530.56	35643.855	71.18	7.97

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 12:57:00	1921.61	356.15	174.68	530.83	35432.487	70.76	7.97
2/4/2020 12:58:00	1921.13	356.11	173.92	530.03	35527.517	70.95	7.97
2/4/2020 12:59:00	1921.13	356.28	173.45	529.73	35525.86	70.94	7.97
2/4/2020 13:00:00	1921.71	353.91	174	527.91	35640.096	71.17	7.97
2/4/2020 13:01:00	1922.19	351.88	173.51	525.39	35571.026	71.03	7.97
2/4/2020 13:02:00	1922.1	363.31	174.13	537.44	35499.636	70.89	7.97
2/4/2020 13:03:00	1922.37	364.5	173.89	538.39	35535.766	70.96	7.97
2/4/2020 13:04:00	1922.8	362.7	174.09	536.79	35457.603	70.81	7.97
2/4/2020 13:05:00	1921.92	361.23	173.38	534.61	35514.046	70.92	7.97
2/4/2020 13:06:00	1921.66	359.34	173.85	533.19	35454.102	70.80	7.97
2/4/2020 13:07:00	1921.59	358.91	174.69	533.6	35513.905	70.92	7.97
2/4/2020 13:08:00	1921.35	360.05	175.6	535.65	35591.553	71.08	7.97
2/4/2020 13:09:00	1922.35	358.56	175.71	534.27	35610.508	71.11	7.97
2/4/2020 13:10:00	1922.41	355.94	172.85	528.79	35531.927	70.96	7.97
2/4/2020 13:11:00	1922.35	354.83	172.27	527.1	35538.612	70.97	7.97
2/4/2020 13:12:00	1922.89	353.28	172.28	525.56	35449.938	70.79	7.97
2/4/2020 13:13:00	1923.15	353.31	173.36	526.67	35590.591	71.07	7.97
2/4/2020 13:14:00	1922.13	352	174.35	526.35	35561.74	71.02	7.97
2/4/2020 13:15:00	1922.19	349.83	173	522.83	35544.071	70.98	7.97
2/4/2020 13:16:00	1922.19	350.59	173.56	524.15	35522.163	70.94	7.97
2/4/2020 13:17:00	1922.31	347.98	173.15	521.13	35533.347	70.96	7.98
2/4/2020 13:18:00	1922.49	345.08	172.62	517.7	35518.971	70.93	7.97
2/4/2020 13:19:00	1922.19	348.02	172.07	520.09	35688.157	71.27	7.97
2/4/2020 13:20:00	1922.95	347.9	171.24	519.14	35702.319	71.30	7.97
2/4/2020 13:21:00	1922.41	345.26	169.64	514.9	35599.355	71.09	7.97
2/4/2020 13:22:00	1922.94	343.48	168.14	511.62	35585.527	71.06	7.97
2/4/2020 13:23:00	1923.25	340.46	167.45	507.91	35541.6	70.98	7.97

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 13:24:00	1923.84	339.5	167.02	506.52	35436.524	70.77	7.97
2/4/2020 13:25:00	1923.52	335.41	167.52	502.93	35509.806	70.91	7.97
2/4/2020 13:26:00	1923.79	330.56	168.27	498.83	35464.248	70.82	7.98
2/4/2020 13:27:00	1923.78	331.37	167.24	498.61	35580.605	71.05	7.97
2/4/2020 13:28:00	1923.37	330.11	167.77	497.88	35683.356	71.26	7.97
2/4/2020 13:29:00	1923.25	326.75	171.13	497.88	35574.13	71.04	7.98
2/4/2020 13:30:00	1923.68	324.69	170.55	495.24	35547.551	70.99	7.98
2/4/2020 13:31:00	1923.25	323.12	169.56	492.68	35515.095	70.92	7.98
2/4/2020 13:32:00	1923.56	322	168.96	490.96	35589.474	71.07	7.98
2/4/2020 13:33:00	1923.72	320.12	171.02	491.14	35529.844	70.95	7.98
2/4/2020 13:34:00	1924.03	323.32	172.17	495.49	35471.189	70.83	7.98
2/4/2020 13:35:00	1923.4	324.21	174.16	498.37	35470.445	70.83	7.99
2/4/2020 13:36:00	1923.09	325.85	175.96	501.81	35520.669	70.93	7.99
2/4/2020 13:37:00	1922.49	336.3	174.14	510.44	35577.689	71.05	7.99

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
Average	1921.5	401.0	169.0	570.0	35541.5	71.0	7.94
Maximum	1922.9	433.9	173.1	604.0	35668.6	71.2	8.02
Minimum	1919.6	368.7	161.7	534.2	35454.0	70.8	7.85
Std. Dev.	0.6	20.6	2.6	20.6	43.1	0.1	0.05
2/4/2020 14:55:00	1920.18	370.48	165.72	536.2	35497.431	70.89	8.02
2/4/2020 14:56:00	1920.04	374.23	164.51	538.74	35541.745	70.98	8.02
2/4/2020 14:57:00	1920.06	375.31	165.86	541.17	35474.755	70.84	8.02
2/4/2020 14:58:00	1920.06	371.91	166.98	538.89	35520.086	70.93	8.02
2/4/2020 14:59:00	1919.78	371.55	167.57	539.12	35635.757	71.16	8.02
2/4/2020 15:00:00	1919.64	374.31	167.56	541.87	35652.068	71.20	8.02
2/4/2020 15:01:00	1920.06	377.78	167.2	544.98	35609.415	71.11	8.02
2/4/2020 15:02:00	1920.06	379.48	169.43	548.91	35582.205	71.06	8.02
2/4/2020 15:03:00	1919.83	379.23	167.31	546.54	35600.779	71.09	8.02
2/4/2020 15:04:00	1919.58	381.43	167.8	549.23	35480.38	70.85	8.02
2/4/2020 15:05:00	1919.91	380.35	170.11	550.46	35506.238	70.90	8.02
2/4/2020 15:06:00	1920.75	379.99	169.72	549.71	35566.018	71.02	8.02
2/4/2020 15:07:00	1920.55	385.55	172.34	557.89	35512.739	70.92	8.02
2/4/2020 15:08:00	1919.97	381.91	170.71	552.62	35493.187	70.88	8.02
2/4/2020 15:09:00	1920.36	381.95	171.23	553.18	35559.426	71.01	8.02
2/4/2020 15:10:00	1920.26	385.25	171.42	556.67	35653.614	71.20	8.02
2/4/2020 15:11:00	1920.42	384.53	169.09	553.62	35652.036	71.20	8.02
2/4/2020 15:12:00	1921.12	381.84	169.31	551.15	35577.893	71.05	8.01
2/4/2020 15:13:00	1921.13	378.2	170.63	548.83	35489.054	70.87	8.01
2/4/2020 15:14:00	1921.13	374.45	170.25	544.7	35457.634	70.81	8.01
2/4/2020 15:15:00	1921.13	374.57	169.88	544.45	35548.134	70.99	8.01
2/4/2020 15:16:00	1921.52	384.79	170.39	555.18	35598.426	71.09	8.01

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 15:17:00	1921.58	388.45	171.22	559.67	35534.522	70.96	8.01
2/4/2020 15:18:00	1921.47	386.44	170.79	557.23	35561.529	71.02	8
2/4/2020 15:19:00	1921.29	381.68	170.01	551.69	35487.559	70.87	8
2/4/2020 15:20:00	1921.32	382.51	170.91	553.42	35504.15	70.90	8
2/4/2020 15:21:00	1921.63	387.1	172.01	559.11	35579.734	71.05	8
2/4/2020 15:22:00	1921.33	384.87	169.49	554.36	35552.237	71.00	8
2/4/2020 15:23:00	1921.92	383.61	168.1	551.71	35555.455	71.00	7.99
2/4/2020 15:24:00	1921.86	383.9	170.9	554.8	35502.608	70.90	7.99
2/4/2020 15:25:00	1921.51	385.31	171.08	556.39	35533.123	70.96	7.99
2/4/2020 15:26:00	1921.14	383.37	171.75	555.12	35503.366	70.90	8
2/4/2020 15:27:00	1921.26	378.16	171.28	549.44	35514.75	70.92	8
2/4/2020 15:28:00	1921.22	377.53	172.49	550.02	35550.827	70.99	8
2/4/2020 15:29:00	1921.4	372.41	170.41	542.82	35601.812	71.10	8
2/4/2020 15:30:00	1921.89	370.64	168.7	539.34	35547.944	70.99	8
2/4/2020 15:31:00	1921.42	370.73	166.98	537.71	35590.449	71.07	8
2/4/2020 15:32:00	1921.82	370.93	165.53	536.46	35486.304	70.86	8
2/4/2020 15:33:00	1921.8	371.57	166.3	537.87	35528.381	70.95	8
2/4/2020 15:34:00	1922.19	372.46	167.17	539.63	35528.865	70.95	8
2/4/2020 15:35:00	1922.19	373.85	166.32	540.17	35520.437	70.93	8
2/4/2020 15:36:00	1921.7	374.08	165.03	539.11	35542.726	70.98	8
2/4/2020 15:37:00	1921.98	375.16	165.63	540.79	35572.056	71.04	8
2/4/2020 15:38:00	1922.38	373.85	166.53	540.38	35587.764	71.07	7.99
2/4/2020 15:39:00	1922.4	369.61	165.23	534.84	35546.957	70.99	8
2/4/2020 15:40:00	1922.19	368.74	165.45	534.19	35483.37	70.86	8
2/4/2020 15:41:00	1922.88	370.02	166.11	536.13	35521.122	70.93	7.99
2/4/2020 15:42:00	1921.69	371.42	165.53	536.95	35545.929	70.98	7.99
2/4/2020 15:43:00	1921.5	375.16	166.85	542.01	35527.526	70.95	7.99

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 15:44:00	1920.96	373.11	166.48	539.59	35520.328	70.93	7.99
2/4/2020 15:45:00	1921.59	375.48	165.91	541.39	35562.413	71.02	7.99
2/4/2020 15:46:00	1921.71	377.81	166.55	544.36	35568.865	71.03	7.99
2/4/2020 15:47:00	1921.87	374.48	166.16	540.64	35509.433	70.91	7.99
2/4/2020 15:48:00	1921.98	379.48	169.4	548.88	35567.306	71.03	7.99
2/4/2020 15:49:00	1921.33	385.3	172.47	557.77	35545.886	70.98	7.99
2/4/2020 15:50:00	1921.3	391.47	172.16	563.63	35523.479	70.94	7.98
2/4/2020 15:51:00	1920.63	387.92	170.38	558.3	35520.371	70.93	7.98
2/4/2020 15:52:00	1920.67	387.17	170.15	557.32	35514.424	70.92	7.98
2/4/2020 15:53:00	1920.72	385.04	170.68	555.72	35498.178	70.89	7.98
2/4/2020 15:54:00	1920.94	388.5	170.1	558.6	35495.431	70.88	7.98
2/4/2020 15:55:00	1921.55	390.65	171	561.65	35619.85	71.13	7.98
2/4/2020 15:56:00	1921.17	392.58	172.2	564.78	35636.814	71.17	7.98
2/4/2020 15:57:00	1921.08	388.32	170.98	559.3	35529.706	70.95	7.98
2/4/2020 15:58:00	1921.25	388.03	168.91	556.94	35545.5	70.98	7.98
2/4/2020 15:59:00	1920.62	387.89	171.56	559.45	35497.454	70.89	7.97
2/4/2020 16:00:00	1920.92	382.49	172.11	554.6	35543.065	70.98	7.97
2/4/2020 16:01:00	1921.13	379.1	170.72	549.82	35598.353	71.09	7.97
2/4/2020 16:02:00	1921.03	378.74	171.76	550.5	35614.177	71.12	7.97
2/4/2020 16:03:00	1921.48	375.42	172.24	547.66	35488.212	70.87	7.98
2/4/2020 16:04:00	1921.11	378.98	171.71	550.69	35516.197	70.92	7.97
2/4/2020 16:05:00	1921.9	383.05	171.14	554.19	35564.601	71.02	7.98
2/4/2020 16:06:00	1921.83	381.33	172.05	553.38	35527.759	70.95	7.97
2/4/2020 16:07:00	1921.02	377.83	172.15	549.98	35496.395	70.89	7.98
2/4/2020 16:08:00	1921.54	375.61	171.66	547.27	35545.179	70.98	7.98
2/4/2020 16:09:00	1921.79	382.13	173.14	555.27	35497.857	70.89	7.97
2/4/2020 16:10:00	1921.66	379.76	172.53	552.29	35544.38	70.98	7.97

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 16:11:00	1921.08	378.21	170.12	548.33	35582.458	71.06	7.97
2/4/2020 16:12:00	1921.57	380.98	170.75	551.73	35564.466	71.02	7.97
2/4/2020 16:13:00	1921.72	380.66	171.73	552.39	35556.502	71.01	7.97
2/4/2020 16:14:00	1921.07	389.26	169.87	559.13	35495.625	70.88	7.97
2/4/2020 16:15:00	1921.02	394.97	166.24	561.21	35539.564	70.97	7.97
2/4/2020 16:16:00	1921.72	393.99	163.72	557.71	35571.582	71.04	7.96
2/4/2020 16:17:00	1921.34	391.55	165.27	556.82	35499.209	70.89	7.96
2/4/2020 16:18:00	1921.38	398.08	165.42	563.5	35589.31	71.07	7.96
2/4/2020 16:19:00	1921.41	401.44	164.52	565.96	35579.1	71.05	7.96
2/4/2020 16:20:00	1921.62	398.98	166.15	565.13	35489.049	70.87	7.96
2/4/2020 16:21:00	1921	394.97	167.01	561.98	35566.515	71.03	7.96
2/4/2020 16:22:00	1921.94	397.37	166.86	564.23	35503.814	70.90	7.95
2/4/2020 16:23:00	1921.82	401.72	166.87	568.59	35479.597	70.85	7.95
2/4/2020 16:24:00	1922	399.17	166.57	565.74	35534.378	70.96	7.95
2/4/2020 16:25:00	1922	401.46	165.03	566.49	35564.913	71.02	7.95
2/4/2020 16:26:00	1922.43	399.99	165.46	565.45	35517.242	70.93	7.95
2/4/2020 16:27:00	1922.04	397.5	167.07	564.57	35484.858	70.86	7.95
2/4/2020 16:28:00	1922.34	402.46	168.52	570.98	35624.231	71.14	7.95
2/4/2020 16:29:00	1922.73	405.61	169.85	575.46	35528.417	70.95	7.94
2/4/2020 16:30:00	1922.81	400.18	169.37	569.55	35580.247	71.05	7.94
2/4/2020 16:31:00	1921.93	402.27	170.52	572.79	35504.444	70.90	7.94
2/4/2020 16:32:00	1922.03	397.94	172.42	570.36	35491.467	70.88	7.94
2/4/2020 16:33:00	1921.71	394.24	172.79	567.03	35521.768	70.94	7.94
2/4/2020 16:34:00	1921.97	392.74	172.39	565.13	35488.295	70.87	7.94
2/4/2020 16:35:00	1922.01	390.11	172.34	562.45	35516.976	70.93	7.94
2/4/2020 16:36:00	1921.45	393.09	170.58	563.67	35566.328	71.02	7.94
2/4/2020 16:37:00	1921.62	390.58	171.46	562.04	35539.559	70.97	7.94

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 16:38:00	1922.03	390.45	171.97	562.42	35508.241	70.91	7.94
2/4/2020 16:39:00	1921.75	393.51	170.57	564.08	35516.434	70.93	7.94
2/4/2020 16:40:00	1921.33	397.53	170.66	568.19	35537.765	70.97	7.94
2/4/2020 16:41:00	1921.51	399.68	170.12	569.8	35603.549	71.10	7.94
2/4/2020 16:42:00	1921.62	401.48	170.05	571.53	35577.374	71.05	7.94
2/4/2020 16:43:00	1921.94	403.91	170.98	574.89	35492.932	70.88	7.93
2/4/2020 16:44:00	1921.25	404.23	170.55	574.78	35493.378	70.88	7.94
2/4/2020 16:45:00	1921.8	407.9	169.12	577.02	35526.265	70.94	7.94
2/4/2020 16:46:00	1921.91	409.77	170.57	580.34	35506.587	70.91	7.94
2/4/2020 16:47:00	1921.11	413.27	171.69	584.96	35532.194	70.96	7.94
2/4/2020 16:48:00	1921.13	415.11	170.46	585.57	35550.46	70.99	7.93
2/4/2020 16:49:00	1921.13	412.19	168.48	580.67	35517.01	70.93	7.93
2/4/2020 16:50:00	1921.88	415.34	169.56	584.9	35481.446	70.86	7.93
2/4/2020 16:51:00	1922.19	417.36	171.16	588.52	35526.36	70.94	7.93
2/4/2020 16:52:00	1922.19	416.69	171.31	588	35529.486	70.95	7.92
2/4/2020 16:53:00	1922.19	415.78	169.43	585.21	35549.404	70.99	7.92
2/4/2020 16:54:00	1922.13	420.4	169.31	589.71	35565.519	71.02	7.92
2/4/2020 16:55:00	1922.19	418.97	167.45	586.42	35648.479	71.19	7.92
2/4/2020 16:56:00	1922.19	421.87	166.79	588.66	35580.195	71.05	7.92
2/4/2020 16:57:00	1922.17	419.93	166.24	586.17	35647.871	71.19	7.92
2/4/2020 16:58:00	1921.38	416.24	165.98	582.22	35605.52	71.10	7.91
2/4/2020 16:59:00	1921.47	418.76	166.44	585.2	35560.816	71.01	7.91
2/4/2020 17:00:00	1920.9	421.38	165.5	586.88	35523.128	70.94	7.91
2/4/2020 17:01:00	1921.14	416.25	166.42	582.67	35508.848	70.91	7.91
2/4/2020 17:02:00	1922.16	417.08	166.94	584.02	35508.542	70.91	7.91
2/4/2020 17:03:00	1922.19	410.15	164.87	575.02	35514.32	70.92	7.91
2/4/2020 17:04:00	1921.61	411.99	164.64	576.63	35589.166	71.07	7.91

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 17:05:00	1922.02	412.77	166.57	579.34	35518.397	70.93	7.91
2/4/2020 17:06:00	1921.18	415.29	164.43	579.72	35506.057	70.90	7.91
2/4/2020 17:07:00	1921.44	416.17	166.09	582.26	35478.362	70.85	7.91
2/4/2020 17:08:00	1921.34	416.25	164.92	581.17	35532.516	70.96	7.9
2/4/2020 17:09:00	1921.29	419.96	167.88	587.84	35513.091	70.92	7.9
2/4/2020 17:10:00	1921.41	419.95	169.68	589.63	35554.345	71.00	7.9
2/4/2020 17:11:00	1921.38	418.62	171.29	589.91	35519.016	70.93	7.9
2/4/2020 17:12:00	1921.66	421.87	171.88	593.75	35534.777	70.96	7.9
2/4/2020 17:13:00	1921.93	423.77	171.37	595.14	35597.208	71.09	7.9
2/4/2020 17:14:00	1921.66	421.44	170.35	591.79	35545.117	70.98	7.9
2/4/2020 17:15:00	1921.13	419.7	169.58	589.28	35522.511	70.94	7.9
2/4/2020 17:16:00	1920.68	423.21	168.17	591.38	35560.326	71.01	7.9
2/4/2020 17:17:00	1920.77	426.27	171.06	597.33	35508.028	70.91	7.89
2/4/2020 17:18:00	1921.48	428.62	171.51	600.13	35543.658	70.98	7.89
2/4/2020 17:19:00	1921.39	429.11	170.25	599.36	35536.598	70.97	7.89
2/4/2020 17:20:00	1920.97	428.24	171.58	599.82	35482.372	70.86	7.89
2/4/2020 17:21:00	1920.62	430.13	172.84	602.97	35544.66	70.98	7.9
2/4/2020 17:22:00	1921.54	425.69	172.3	597.99	35532.277	70.96	7.89
2/4/2020 17:23:00	1921.87	420.84	171.79	592.63	35526.678	70.95	7.89
2/4/2020 17:24:00	1921.64	419.59	171.59	591.18	35569.472	71.03	7.89
2/4/2020 17:25:00	1921.68	419.24	172.28	591.52	35453.972	70.80	7.89
2/4/2020 17:26:00	1922.06	417.85	171.63	589.48	35459.093	70.81	7.89
2/4/2020 17:27:00	1921.82	414.38	170.41	584.79	35500.136	70.89	7.89
2/4/2020 17:28:00	1921.67	414.15	168.68	582.83	35556.098	71.00	7.89
2/4/2020 17:29:00	1921.62	416.23	169.98	586.21	35526.898	70.95	7.89
2/4/2020 17:30:00	1921.51	417.33	169.3	586.63	35521.297	70.93	7.89
2/4/2020 17:31:00	1921.11	419.11	169.38	588.49	35518.527	70.93	7.89

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 17:32:00	1920.85	421.14	163.59	584.73	35534.479	70.96	7.89
2/4/2020 17:33:00	1921.91	420.45	163.09	583.54	35510.032	70.91	7.89
2/4/2020 17:34:00	1921.9	420.33	165.08	585.41	35544.957	70.98	7.88
2/4/2020 17:35:00	1921.95	420.55	163.8	584.35	35586.939	71.07	7.88
2/4/2020 17:36:00	1922.03	421.97	164.94	586.91	35581.392	71.05	7.88
2/4/2020 17:37:00	1921.96	424.22	164.39	588.61	35561.407	71.01	7.88
2/4/2020 17:38:00	1922.3	427.36	162.96	590.32	35527.421	70.95	7.88
2/4/2020 17:39:00	1922.22	432.14	161.66	593.8	35524.341	70.94	7.88
2/4/2020 17:40:00	1921.63	431.24	162.55	593.79	35528.944	70.95	7.88
2/4/2020 17:41:00	1921.46	428.96	167.77	596.73	35568.615	71.03	7.88
2/4/2020 17:42:00	1921.49	430.83	171.81	602.64	35528.76	70.95	7.87
2/4/2020 17:43:00	1921.78	431.99	171.82	603.81	35523.632	70.94	7.87
2/4/2020 17:44:00	1921.35	433.1	170.69	603.79	35481.926	70.86	7.87
2/4/2020 17:45:00	1921.13	432.45	169.99	602.44	35500.404	70.89	7.87
2/4/2020 17:46:00	1921.39	426.39	170.07	596.46	35510.043	70.91	7.87
2/4/2020 17:47:00	1921.13	423.93	170.64	594.57	35527.832	70.95	7.87
2/4/2020 17:48:00	1921.13	425.3	171.51	596.81	35494.963	70.88	7.87
2/4/2020 17:49:00	1921.21	425.5	170.25	595.75	35539.768	70.97	7.87
2/4/2020 17:50:00	1921.66	425.15	168.16	593.31	35579.792	71.05	7.87
2/4/2020 17:51:00	1921.33	424.19	170.16	594.35	35503.958	70.90	7.87
2/4/2020 17:52:00	1921.44	421.13	169.63	590.76	35518.947	70.93	7.87
2/4/2020 17:53:00	1921.6	423.66	169.46	593.12	35591.931	71.08	7.87
2/4/2020 17:54:00	1922.19	421.34	170.62	591.96	35574.584	71.04	7.87
2/4/2020 17:55:00	1922.35	424.82	170.85	595.67	35613.765	71.12	7.87
2/4/2020 17:56:00	1922.78	423.38	170.04	593.42	35620.439	71.13	7.87
2/4/2020 17:57:00	1922.28	420.18	168.33	588.51	35668.601	71.23	7.87
2/4/2020 17:58:00	1922.19	426.51	168.89	595.4	35597.068	71.09	7.87

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/4/2020 17:59:00	1921.77	427.23	169.53	596.76	35472.62	70.84	7.87
2/4/2020 18:00:00	1922.07	428.97	170.34	599.31	35513.695	70.92	7.86
2/4/2020 18:01:00	1921.68	427.95	170.67	598.62	35565.298	71.02	7.86
2/4/2020 18:02:00	1922.19	428.15	169.84	597.99	35560.593	71.01	7.86
2/4/2020 18:03:00	1922.03	429.08	168.66	597.74	35564.75	71.02	7.86
2/4/2020 18:04:00	1922.19	431.52	168.91	600.43	35584.686	71.06	7.86
2/4/2020 18:05:00	1921.92	433.94	170.07	604.01	35635.991	71.16	7.85
2/4/2020 18:06:00	1921.65	432.66	168.62	601.28	35598.039	71.09	7.85
2/4/2020 18:07:00	1921.13	428.63	166.42	595.05	35496.292	70.88	7.85
2/4/2020 18:08:00	1921.59	429.48	166.21	595.69	35545.654	70.98	7.85
2/4/2020 18:09:00	1921.84	433.64	165.24	598.88	35560.813	71.01	7.85

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
Average	1922.0	390.0	174.5	564.6	35514.8	70.9	8.00
Maximum	1924.6	454.7	186.4	626.3	35729.4	71.4	8.01
Minimum	1920.3	321.6	165.1	494.7	35422.8	70.7	7.95
Std. Dev.	0.8	36.2	3.7	37.8	47.9	0.1	0.02
2/5/2020 9:50:00	1921.65	452.87	171.7	624.57	35542.026	70.98	7.95
2/5/2020 9:51:00	1920.99	450.61	171.1	621.71	35510.43	70.91	7.95
2/5/2020 9:52:00	1921.11	453.49	172.05	625.54	35460.466	70.81	7.95
2/5/2020 9:53:00	1920.88	454.65	170.19	624.84	35471.727	70.84	7.95
2/5/2020 9:54:00	1921.85	453.72	171.16	624.88	35515.303	70.92	7.96
2/5/2020 9:55:00	1922.08	452.92	171.7	624.62	35527.367	70.95	7.96
2/5/2020 9:56:00	1921.18	452.84	173.42	626.26	35576.611	71.05	7.96
2/5/2020 9:57:00	1921.79	449.39	173.13	622.52	35514.664	70.92	7.96
2/5/2020 9:58:00	1921.81	447.79	170.79	618.58	35483.911	70.86	7.96
2/5/2020 9:59:00	1921.62	448.07	170.19	618.26	35496.743	70.89	7.96
2/5/2020 10:00:00	1921.4	447.35	176.73	624.08	35609.128	71.11	7.96
2/5/2020 10:01:00	1921.56	446.21	178.09	624.3	35483.779	70.86	7.96
2/5/2020 10:02:00	1921.13	447.33	176.04	623.37	35526.445	70.95	7.96
2/5/2020 10:03:00	1921.57	445.73	175.25	620.98	35493.483	70.88	7.96
2/5/2020 10:04:00	1921.46	444.67	177.52	622.19	35492.366	70.88	7.96
2/5/2020 10:05:00	1921.78	446.4	177.48	623.88	35464.188	70.82	7.96
2/5/2020 10:06:00	1922.01	446.28	175.93	622.21	35517.219	70.93	7.97
2/5/2020 10:07:00	1921.54	439.23	176.14	615.37	35470.169	70.83	7.97
2/5/2020 10:08:00	1922.11	431.7	177.56	609.26	35534.863	70.96	7.97
2/5/2020 10:09:00	1922.94	429.96	177.65	607.61	35519.828	70.93	7.97
2/5/2020 10:10:00	1922.03	427.52	176.83	604.35	35527.33	70.95	7.98
2/5/2020 10:11:00	1921.91	426.19	177.64	603.83	35544.759	70.98	7.98
2/5/2020 10:12:00	1921.77	425.78	176.08	601.86	35453.911	70.80	7.98

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/5/2020 10:13:00	1922.19	419.47	176.61	596.08	35578.932	71.05	7.98
2/5/2020 10:14:00	1921.72	414.05	176.68	590.73	35481.99	70.86	7.98
2/5/2020 10:15:00	1921.8	414.09	174.73	588.82	35440.553	70.77	7.98
2/5/2020 10:16:00	1921.74	411.64	174.46	586.1	35463.301	70.82	7.99
2/5/2020 10:17:00	1921.62	407.16	173.05	580.21	35531.837	70.96	7.99
2/5/2020 10:18:00	1921.54	402.12	171.23	573.35	35510.502	70.91	7.99
2/5/2020 10:19:00	1920.89	401.54	170.44	571.98	35493.644	70.88	7.99
2/5/2020 10:20:00	1921.66	403.83	170.41	574.24	35548.084	70.99	8
2/5/2020 10:21:00	1922.04	404.62	170.57	575.19	35442.455	70.78	8
2/5/2020 10:22:00	1922.03	405.66	170.78	576.44	35465.474	70.82	8
2/5/2020 10:23:00	1922.03	404.98	172.46	577.44	35537.13	70.97	8
2/5/2020 10:24:00	1921.84	408.93	171.4	580.33	35497.569	70.89	8
2/5/2020 10:25:00	1921.57	412.78	175.14	587.92	35493.631	70.88	8
2/5/2020 10:26:00	1921.97	410.29	178.42	588.71	35553.402	71.00	8
2/5/2020 10:27:00	1921.82	412.35	176.55	588.9	35529.558	70.95	8
2/5/2020 10:28:00	1921.7	411.26	177.85	589.11	35530.214	70.95	8
2/5/2020 10:29:00	1921.65	414.56	178.18	592.74	35489.892	70.87	8
2/5/2020 10:30:00	1921.3	412.33	177.08	589.41	35429.187	70.75	8
2/5/2020 10:31:00	1921.13	414.41	177.24	591.65	35619.641	71.13	8
2/5/2020 10:32:00	1921.41	410.13	177.05	587.18	35616.64	71.13	8
2/5/2020 10:33:00	1921.86	412.87	177.35	590.22	35514.256	70.92	8
2/5/2020 10:34:00	1921.98	418.8	176.27	595.07	35499.587	70.89	8
2/5/2020 10:35:00	1921.13	418.27	175.58	593.85	35468.226	70.83	8
2/5/2020 10:36:00	1921.39	415.03	175.84	590.87	35530.238	70.95	8.01
2/5/2020 10:37:00	1921.57	420.39	177.03	597.42	35560.761	71.01	8.01
2/5/2020 10:38:00	1921.83	421.5	178.27	599.77	35492.994	70.88	8.01
2/5/2020 10:39:00	1921.68	416.66	177.56	594.22	35529.807	70.95	8.01
2/5/2020 10:40:00	1921.74	416.6	178.69	595.29	35501.831	70.90	8

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/5/2020 10:41:00	1921.28	414.46	179.35	593.81	35532.216	70.96	8.01
2/5/2020 10:42:00	1921.13	408.5	176.83	585.33	35584.847	71.06	8.01
2/5/2020 10:43:00	1921.46	406.36	175.28	581.64	35518.306	70.93	8.01
2/5/2020 10:44:00	1921.68	405.52	176.31	581.83	35482.536	70.86	8.01
2/5/2020 10:45:00	1922.19	402.93	177.64	580.57	35562.343	71.02	8.01
2/5/2020 10:46:00	1922	400.18	178.69	578.87	35554.864	71.00	8.01
2/5/2020 10:47:00	1921.13	402.08	178.41	580.49	35620.732	71.13	8.01
2/5/2020 10:48:00	1920.86	404.23	178.65	582.88	35505.179	70.90	8.01
2/5/2020 10:49:00	1921.24	397.73	177.8	575.53	35487.513	70.87	8.01
2/5/2020 10:50:00	1921.69	397.17	175.06	572.23	35476.904	70.85	8.01
2/5/2020 10:51:00	1921.83	399.21	175.82	575.03	35484.118	70.86	8.01
2/5/2020 10:52:00	1921.4	399.35	173.1	572.45	35490.695	70.87	8.01
2/5/2020 10:53:00	1921.51	396.29	170.28	566.57	35597.428	71.09	8.01
2/5/2020 10:54:00	1922.16	399.66	168.94	568.6	35533.136	70.96	8.01
2/5/2020 10:55:00	1921.88	398.61	169.73	568.34	35490.129	70.87	8.01
2/5/2020 10:56:00	1921.68	396.27	169.94	566.21	35525.666	70.94	8.01
2/5/2020 10:57:00	1922.06	397.82	169.86	567.68	35475.317	70.84	8.01
2/5/2020 10:58:00	1922.21	404.05	177.7	581.75	35555.107	71.00	8.01
2/5/2020 10:59:00	1922.9	404.99	178.28	583.27	35555.105	71.00	8.01
2/5/2020 11:00:00	1922.08	408.41	177.47	585.88	35539.339	70.97	8.01
2/5/2020 11:01:00	1921.51	411.38	178.02	589.4	35485.765	70.86	8.01
2/5/2020 11:02:00	1921.42	413.74	177.47	591.21	35451.28	70.79	8.01
2/5/2020 11:03:00	1921.42	412.53	177.78	590.31	35643.981	71.18	8.01
2/5/2020 11:04:00	1921.67	416.03	176.1	592.13	35481.003	70.85	8.01
2/5/2020 11:05:00	1921.48	415.91	177.61	593.52	35519.259	70.93	8.01
2/5/2020 11:06:00	1921.38	418.11	178.18	596.29	35458.652	70.81	8.01
2/5/2020 11:07:00	1920.98	421.55	177.92	599.47	35570.747	71.03	8.01
2/5/2020 11:08:00	1921.89	420.96	178.64	599.6	35475.077	70.84	8.01

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/5/2020 11:09:00	1921.5	421.88	178.59	600.47	35477.935	70.85	8.01
2/5/2020 11:10:00	1921.13	421.76	175.23	596.99	35474.046	70.84	8.01
2/5/2020 11:11:00	1921.13	425.74	176.09	601.83	35485.611	70.86	8.01
2/5/2020 11:12:00	1921.18	426.02	175.45	601.47	35539.686	70.97	8
2/5/2020 11:13:00	1921.39	422.63	176.46	599.09	35541.593	70.98	8
2/5/2020 11:14:00	1921.68	421.89	171.41	593.3	35505.652	70.90	8
2/5/2020 11:15:00	1922.05	422.32	170.83	593.15	35567.356	71.03	8.01
2/5/2020 11:16:00	1921.83	419.06	171.11	590.17	35484.441	70.86	8.01
2/5/2020 11:17:00	1921.43	417.24	170.65	587.89	35554.208	71.00	8.01
2/5/2020 11:18:00	1921.97	418.86	177.89	596.75	35486.352	70.86	8.01
2/5/2020 11:19:00	1921.6	420.64	181.64	602.28	35489.675	70.87	8.01
2/5/2020 11:20:00	1921.62	416.91	186.4	603.31	35508.79	70.91	8.01
2/5/2020 11:21:00	1921.13	412.6	185.31	597.91	35543.251	70.98	8.01
2/5/2020 11:22:00	1920.86	413.28	185.83	599.11	35593.027	71.08	8.01
2/5/2020 11:23:00	1920.93	413.1	185.68	598.78	35530.057	70.95	8.01
2/5/2020 11:24:00	1921.04	417.61	184.78	602.39	35517.155	70.93	8.01
2/5/2020 11:25:00	1920.99	417.53	182.94	600.47	35492.683	70.88	8.01
2/5/2020 11:26:00	1921	421.93	181.91	603.84	35623.5	71.14	8.01
2/5/2020 11:27:00	1921.13	423.48	182.16	605.64	35520.599	70.93	8.01
2/5/2020 11:28:00	1920.95	425.15	181.41	606.56	35507.287	70.91	8
2/5/2020 11:29:00	1921.13	425.04	175.67	600.71	35603.367	71.10	8.01
2/5/2020 11:30:00	1920.32	425.3	174.07	599.37	35560.982	71.01	8.01
2/5/2020 11:31:00	1920.41	422.88	174.7	597.58	35507.998	70.91	8.01
2/5/2020 11:32:00	1921.57	422.08	174.09	596.17	35465.403	70.82	8.01
2/5/2020 11:33:00	1921.87	410.78	174.17	584.95	35443.317	70.78	8
2/5/2020 11:34:00	1921.43	401.7	177.43	579.13	35476.144	70.84	8
2/5/2020 11:35:00	1921.13	392.81	176.46	569.27	35604.741	71.10	8
2/5/2020 11:36:00	1921.69	389.21	175.63	564.84	35453.863	70.80	8.01

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/5/2020 11:37:00	1922.59	387.98	174.85	562.83	35477.337	70.85	8.01
2/5/2020 11:38:00	1922.27	384.49	174.75	559.24	35494.968	70.88	8.01
2/5/2020 11:39:00	1921.57	378.72	175.29	554.01	35496.066	70.88	8
2/5/2020 11:40:00	1921.81	374.09	175.07	549.16	35512.475	70.92	8.01
2/5/2020 11:41:00	1922.19	362.39	174.55	536.94	35550.791	70.99	8.01
2/5/2020 11:42:00	1922.12	355.26	174.79	530.05	35487.432	70.87	8.01
2/5/2020 11:43:00	1922.5	357.04	176.35	533.39	35515.347	70.92	8.01
2/5/2020 11:44:00	1922.43	353.65	177.46	531.11	35496.19	70.88	8.01
2/5/2020 11:45:00	1923.76	350.85	175.7	526.55	35521.208	70.93	8.01
2/5/2020 11:46:00	1923.57	347.01	175.31	522.32	35528.82	70.95	8
2/5/2020 11:47:00	1923.26	344.79	176.58	521.37	35551.002	70.99	8.01
2/5/2020 11:48:00	1923.87	346.6	176.8	523.4	35450.008	70.79	8.01
2/5/2020 11:49:00	1923.72	346.49	175.62	522.11	35467.537	70.83	8.01
2/5/2020 11:50:00	1923.13	342.27	175.79	518.06	35516.767	70.93	8.01
2/5/2020 11:51:00	1923.52	340.75	176.3	517.05	35636.345	71.16	8.01
2/5/2020 11:52:00	1922.49	337.59	175.55	513.14	35515.737	70.92	8.01
2/5/2020 11:53:00	1922.81	338.69	174.67	513.36	35479.164	70.85	8.01
2/5/2020 11:54:00	1922.6	339.46	174.96	514.42	35507.744	70.91	8.01
2/5/2020 11:55:00	1923.08	337.42	176.08	513.5	35573.425	71.04	8.01
2/5/2020 11:56:00	1923.25	335.55	177.27	512.82	35729.446	71.35	8.01
2/5/2020 11:57:00	1923.58	335.73	176.72	512.45	35624.772	71.14	8.01
2/5/2020 11:58:00	1923.36	336.28	174.35	510.63	35558.963	71.01	8.01
2/5/2020 11:59:00	1923.04	338.84	170.53	509.37	35447.666	70.79	8.01
2/5/2020 12:00:00	1923.25	336.92	167	503.92	35513.458	70.92	8.01
2/5/2020 12:01:00	1923.72	331.57	166.36	497.93	35520.104	70.93	8.01
2/5/2020 12:02:00	1924.34	329.91	167.14	497.05	35436.148	70.76	8.01
2/5/2020 12:03:00	1924.61	328.57	168.52	497.09	35504.28	70.90	8.01
2/5/2020 12:04:00	1923.95	328.39	169.51	497.9	35515.656	70.92	8.01

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/5/2020 12:05:00	1924.01	328.07	169.1	497.17	35534.556	70.96	8.01
2/5/2020 12:06:00	1923.32	323.66	171.07	494.73	35556.171	71.00	8
2/5/2020 12:07:00	1923.25	321.57	173.11	494.68	35486.137	70.86	8
2/5/2020 12:08:00	1923.12	327.27	172.47	499.74	35443.822	70.78	8
2/5/2020 12:09:00	1922.43	331.16	173.38	504.54	35518.019	70.93	8.01
2/5/2020 12:10:00	1922.71	331.41	173.36	504.77	35595.001	71.08	8.01
2/5/2020 12:11:00	1922.65	331.98	173.31	505.29	35499.031	70.89	8
2/5/2020 12:12:00	1922.31	335.15	173.37	508.52	35491.885	70.88	8
2/5/2020 12:13:00	1922.8	333.95	172.73	506.68	35450.737	70.79	8
2/5/2020 12:14:00	1923.44	335.02	173.88	508.9	35501.192	70.89	8
2/5/2020 12:15:00	1923.76	335.66	174.17	509.83	35571.287	71.03	8
2/5/2020 12:16:00	1923.59	335.24	173.64	508.88	35503.228	70.90	8
2/5/2020 12:17:00	1923.25	339.2	173.53	512.73	35422.762	70.74	8
2/5/2020 12:18:00	1923.52	347.49	175.22	522.71	35588.332	71.07	8
2/5/2020 12:19:00	1923.25	347.08	175.1	522.18	35571.709	71.04	8
2/5/2020 12:20:00	1923.52	347.1	174.78	521.88	35459.404	70.81	8
2/5/2020 12:21:00	1923.25	343.79	173.56	517.35	35511.924	70.92	8
2/5/2020 12:22:00	1922.69	344.35	173.03	517.38	35583.112	71.06	8
2/5/2020 12:23:00	1921.93	349.05	173.02	522.07	35515.167	70.92	8
2/5/2020 12:24:00	1922.63	351.87	172.96	524.83	35569.466	71.03	7.99
2/5/2020 12:25:00	1922.45	350.86	171.35	522.21	35518.728	70.93	7.99
2/5/2020 12:26:00	1922.98	349.95	172.24	522.19	35468.329	70.83	8
2/5/2020 12:27:00	1923.25	349.34	174.94	524.28	35467.052	70.83	8
2/5/2020 12:28:00	1922.35	348.45	172.29	520.74	35527.255	70.95	7.99
2/5/2020 12:29:00	1921.96	350.93	171.61	522.54	35503.471	70.90	7.99
2/5/2020 12:30:00	1921.99	357.99	170.5	528.49	35482.352	70.86	7.99
2/5/2020 12:31:00	1921.94	355.72	165.1	520.82	35478.693	70.85	7.99
2/5/2020 12:32:00	1922.17	351.39	166.83	518.22	35551.72	71.00	7.99

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/5/2020 12:33:00	1922.4	351.47	167.56	519.03	35549.059	70.99	7.99
2/5/2020 12:34:00	1922.53	352.87	167.84	520.71	35460.91	70.81	7.99
2/5/2020 12:35:00	1922.45	355.17	167.79	522.96	35422.822	70.74	7.99
2/5/2020 12:36:00	1922.7	356.29	168.84	525.13	35509.416	70.91	7.99
2/5/2020 12:37:00	1922.56	361.14	169.13	530.27	35487.103	70.87	7.99
2/5/2020 12:38:00	1922.12	363.63	168.79	532.42	35488.552	70.87	7.99
2/5/2020 12:39:00	1921.37	365.77	172.69	538.46	35489.228	70.87	7.99
2/5/2020 12:40:00	1921.62	361.26	172.18	533.44	35474.997	70.84	7.99
2/5/2020 12:41:00	1921.94	372.6	171.28	543.88	35464.332	70.82	7.99
2/5/2020 12:42:00	1921.6	368.82	171.04	539.86	35473.066	70.84	7.98
2/5/2020 12:43:00	1921.32	372.17	172.38	544.55	35461.867	70.82	7.98
2/5/2020 12:44:00	1921.5	376.04	171.14	547.18	35471.9	70.84	7.98
2/5/2020 12:45:00	1921.24	379.48	173.2	552.68	35475.545	70.84	7.98
2/5/2020 12:46:00	1921.13	379.93	173.22	553.15	35582.69	71.06	7.98
2/5/2020 12:47:00	1921.6	382.67	172.14	554.81	35482.507	70.86	7.98
2/5/2020 12:48:00	1922.07	384.43	173.37	557.8	35483.637	70.86	7.98
2/5/2020 12:49:00	1922.19	382.16	172.4	554.56	35508.049	70.91	7.98
2/5/2020 12:50:00	1921.41	379.91	171.74	551.65	35478.302	70.85	7.98
2/5/2020 12:51:00	1921.13	378.78	172.41	551.19	35555.223	71.00	7.98
2/5/2020 12:52:00	1921.09	381.58	172.01	553.59	35583.124	71.06	7.98
2/5/2020 12:53:00	1921.01	381.05	171.6	552.65	35530.59	70.95	7.98
2/5/2020 12:54:00	1921.26	377.86	172.24	550.1	35541.131	70.97	7.98
2/5/2020 12:55:00	1922.04	376.65	173.23	549.88	35450.378	70.79	7.98
2/5/2020 12:56:00	1921.88	372.41	172.71	545.12	35460.468	70.81	7.98
2/5/2020 12:57:00	1921.7	378.54	174.85	553.39	35517.105	70.93	7.98
2/5/2020 12:58:00	1921.39	379.6	175.02	554.62	35497.918	70.89	7.98
2/5/2020 12:59:00	1920.58	375.06	172.1	547.16	35504.107	70.90	7.98
2/5/2020 13:00:00	1921.82	375.27	173.08	548.35	35492.49	70.88	7.98

	Combustion Chamber Temp	Monomers Gas Feed Rate	Polymers Gas Feed Rate	Total Gas Feed Rate	Stage 4 Rate	Stage 4 Rate	Stage 4 pH
Units	F	lb/h	lb/h	lb/hr	lb/h	gpm	SU
Tag	A40937TC	A41756FC	A41103FC	calculated	A41255FG	Calculated	A41261XC
2/5/2020 13:01:00	1921.4	375.37	173.59	548.96	35613.969	71.12	7.98
2/5/2020 13:02:00	1921.11	383.76	173.33	557.09	35552.891	71.00	7.98
2/5/2020 13:03:00	1921.4	385.16	173.43	558.59	35505.97	70.90	7.98
2/5/2020 13:04:00	1921.67	388.59	172.31	560.9	35493.271	70.88	7.98
2/5/2020 13:05:00	1922.07	388.64	172.45	561.09	35525.184	70.94	7.97

APPENDIX B
RAW AND REDUCED TEST DATA

Sample and Velocity Traverse Point Data Sheet - Method 1

Client	Chemours	Operator	SR
Loaction/Plant	Fayetteville, NC	Date	3-Jan-20
Source	Thermal Oxidizer Outlet	W.O. Number	15418.002.019.0001

Duct Type	☑	Circular	☐	Rectangular Duct	Indicate appropriate type
Traverse Type	☑	Particulate Traverse	☐	Velocity Traverse	☑ Cem Traverse

Distance from far wall to outside of port (in.) = C	36.0
Port Depth (in.) = D	18.0
Depth of Duct, diameter (in.) = C-D	18
Area of Duct (ft^2)	1.767
Total Traverse Points	12
Total Traverse Points per Port	6

Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Flow Disturbances	
Upstream - A (ft)	34.5
Downstream - B (ft)	38.5
Upstream - A (duct diameters)	23.00
Downstream - B (duct diameters)	25.67

Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)	Distance from Outside of Port (in)
1	4.4	0.79	18.79	18 6/8
2	14.6	2.63	20.63	20 5/8
3	29.6	5.33	23.33	23 3/8
4	70.4	12.67	30.67	30 5/8
5	85.4	15.37	33.37	33 3/8
6	95.6	17.21	35.21	35 2/8
7				
8				
9				
10				
11				
12				

CEM 3 Point (Long Measurement Line) Statification Point Locations

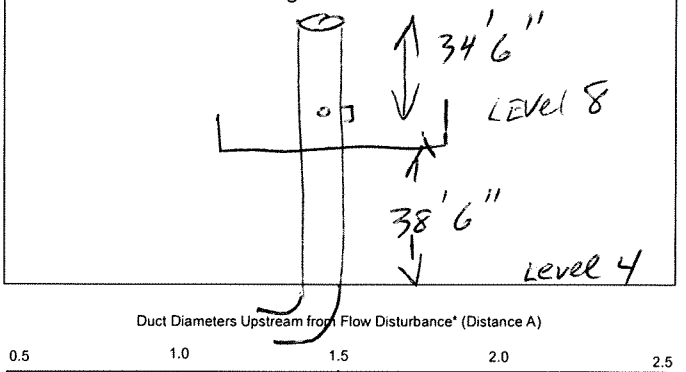
1	16.7	3.01	21.01	21
2	50.0	9.00	27.00	27
3	83.3	14.99	32.99	33

Note:If stack dia<24 inches adjust traverse points to 0.5 inches from wall

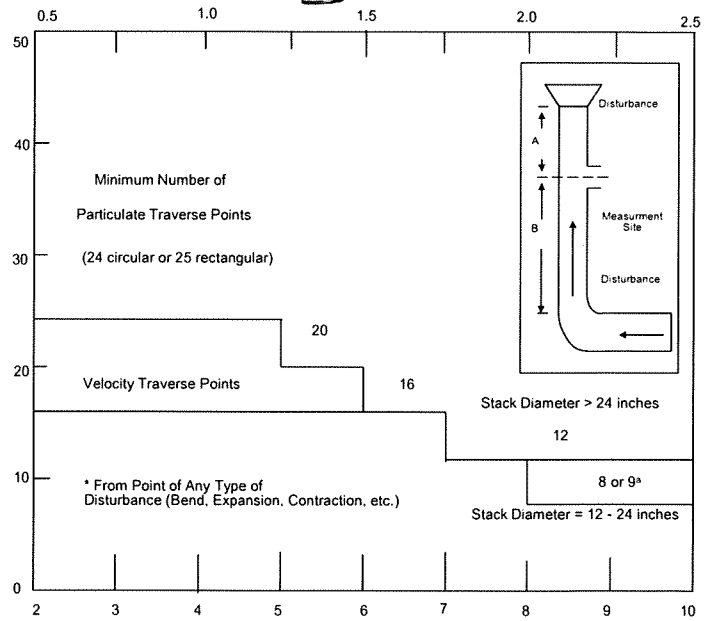
Note:If stack dia>24 inches adjust traverse points to 1.0 inches from wall

Equivalent Diameter = (2*L*W)/(L+W)

Diagram of Stack



Duct Diameters Upstream from Flow Disturbance* (Distance A)



Duct Diameters Downstream from Flow Disturbance* (Distance B)

Traverse Point Location Percent of Stack -Circular

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

Traverse Point Location Percent of Stack -Rectangular

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

Rectangular Stack Points & Matrix

9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

Determination of Stack Gas Velocity - Method 2

Client: CHEMOURS - Fayetteville | Operator: MW | Pitot Coeff (Cp): 0.87
Location/Plant: Fayetteville NC. | Date: 1/07/2014 2020 | Stack Area, ft² (As): 1.767
Source: THERMAL Oxidizer | W.O. Number: | Pitot Tube/Thermo ID: P-74

Run Number	1 PM		
Time	1528		
Barometric Press, in Hg (Pb)	29.78		
Static Press, in H_2O (Pstatic)	-0.30		
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination		Traverse Location		Leak Check good ? (Y) N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
0	<5	A	1	~~0.05~~	81				
0	<5		2	0.59	84				
0			3	0.59	84				
0			4	0.57	87				
0			5	0.56	87				
0			6	0.50	88				
0		B	1	0.50	87				
0	<5		2	0.54	88				
0	<5		3	0.56	88				
0	<5		4	0.56	88				
0			5	0.56	88				
0			6	0.52	87				
					~~86.7~~	MW			
Avg Angle		Avg Delta P & Temp		0.553333	86.7				
		avg $\sqrt{DeltaP}$		0.743862					
Average gas stream velocity, ft/sec.									
Vol. flow rate @ actual conditions, wacf/min									
Vol. flow rate at standard conditions, dscf/min									

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

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

$Tsa = Ts + 460$

$Ps = Pb + (Pstatic/13.6)$

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

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

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

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

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

WESTON SOLUTIONS

CHEMOURS - FAYETTEVILLE, NC
INPUTS FOR HFPO DIMER ACID CALCULATIONS
THERMAL OXIDIZER STACK

Test Data

Run number	1	2	3
Location	Thermal Oxidizer Stack	Thermal Oxidizer Stack	Thermal Oxidizer Stack
Date	2/4/2020	2/4/2020	2/5/2020
Time period	1020-1337	1455-1810	0950-1306
Operator	MW	MW	MW

Inputs For Calcs.

Sq. rt. delta P	0.61236	0.61121	0.61432
Delta H	1.1064	1.4019	1.4208
Stack temp. (deg.F)	79.1	81.4	75.9
Meter temp. (deg.F)	66.8	69.8	63.3
Sample volume (act.)	109.072	124.940	124.830
Barometric press. (in.Hg)	29.96	29.96	29.92
Volume H_2O imp. (ml)	32.0	26.0	38.0
Weight change sil. gel (g)	24.6	30.5	30.3
% CO_2	3.8	4.0	4.0
% O_2	14.9	14.6	14.6
% N_2	81.3	81.4	81.4
Area of stack (sq.ft.)	1.767	1.767	1.767
Sample time (min.)	180	180	180
Static pressure (in.H_2O)	-0.30	-0.30	-0.30
Nozzle dia. (in.)	0.235	0.250	0.250
Meter box cal.	0.9834	0.9834	0.9834
Cp of pitot tube	0.84	0.84	0.84
Traverse points	12	12	12

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

			Stack Conditions							
Client	Chemours		Assumed	Actual	Meter Box ID	32			K Factor	2.85
W.O.#	15418.002.021				Meter Box Y	0.9834 ✓			Initial	Mid-Point / Final
Project ID	Chemours	% Moisture	≈9.0		Meter Box Del H	1.7175				
Mode/Source ID	Thermal Oxidizer	Impinger Vol (ml)		32	Probe ID / Length	562	5'	Sample Train (ft^3)	0.001	0.001 / 0.001
Samp. Loc. ID	STK	Silica gel (g)		34.6	Probe Material	Boro		Leak Check @ (in Hg)	@15"	ei / e6
Run No.ID	1	CO2, % by Vol	3.0	3.8	Pitot / Thermocouple ID	P562		Pitot leak check good	yes / no	yes / no / yes / no
Test Method ID	M0010	O2, % by Vol	19.0	14.9	Pitot Coefficient	0.84 ✓		Pitot Inspection good	yes / no	yes / no / yes / no
Date ID	___FEB2020	Temperature (°F)	≈75		Nozzle ID	G235		Method 3 System good	yes / no	yes / no / yes / no
Source/Location	Thermal Oxidizer Stack	Meter Temp (°F)	≈60		Nozzle Measurements	0.234 / 0.235 / 0.235		**Temp Check**	Pre-Test Set	Post-Test Set
Sample Date	2/04/20 ✓	Static Press (in H_2O)	-0.30	-0.30 ✓	Avg Nozzle Dia (in)	0.235 ✓		Meter Box Temp	60	64
Baro. Press (in Hg)	29.96 ✓				Area of Stack (ft^2)	1.767 ✓		Reference Temp	54	64
Operator	MD WINKELEN ✓	Ambient Temp (°F)	≈65		Sample Time	120 ✓		Pass/Fail (+/- 2°)	Pass / Fail	Pass / Fail
					Total Traverse Pts	12 ✓		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 (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	1020 ✓			671.960									
A 1	5		0.42	1.14	675.02	76	63	101	100	62	3	45		
1	10		0.42	1.14	678.140	78	63	101	100	62	3	45		
1	15		0.42	1.14	681.17	78	63	101	100	62	3	45		
2	20		0.40	1.14	684.25	78	63	100	99	56	3	42		
2	25		0.40	1.14	687.28	78	63	100	99	56	3	43		
2	30		0.40	1.14	690.37	78	64	100	99	56	3	43		
3	35		0.36	1.02	693.28	79	64	100	102	56	3	43		K-factor
3	40		0.36	1.02	696.47	79	64	100	102	59	3	43		
3	45		0.36	1.06	699.46	79	64	100	102	59	3	43	← 2.96	
4	50		0.36	1.06	701.97	79	65	100	101	58	3	46		
4	55		0.36	1.06	704.88	79	65	100	101	58	3	46		
4	60		0.36	1.06	707.65	77	65	100	100	58	3	48		
5	65		0.35	1.03	710.50	77	65	100	100	58	3	47		K-FACTOR
5	70		0.35	1.05	713.40	76	66	100	100	58	3	47	← 3.00	
5	75		0.35	1.05	716.27	76	66	100	100	58	3	47		
6	80		0.32	0.96	719.10	76	66	100	100	59	3	50		
6	85		0.32	0.96	722.09	76	66	100	100	59	3	50		
6	90	1150	0.32	0.96	724.932	76	66	100	100	59	3	50		
													59.972	
													52.972	53.
														52.97
			Avg Delta P	Avg Delta H	Total Volume ✓	Avg Ts	Avg Tm ✓	Min/Max	Min/Max	Max	Max Vac	Min/Max		
			0.3778	1.0494	109.072	79.4	66.4	100/101	99/101	67	4	48/59		
			Avg Sqrt Delta P	Avg Sqrt Del H	Comments:									
			0.6148	1.0446										

EPA Method 0010 from EPA SW-846

DP 0.433750 0.371176 0.402857
TDP 0.658332 0.608693 0.634513

1.105 1.0627

1700
64 3500 dscf

AMD

100.1 In 2.4%
107.9 Vm

ISOKINETIC FIELD DATA SHEET — EPA Method 0010 - HFPO Dimer Acid

Client: Chemours | Operator: MP WINKELER
Source: Thermal Oxidizer | Run No.: 1
Sample Loc.: Stack | Date: 2/04/20 | K Factor: 3.00

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)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (In Hg)	XAD EXIT TEMP (F)	COMMENTS
	0	1209			725.070								
B 1	5		0.42	1.26	728.4	81	67	100	99	67	3	59	
1	10		0.42	1.26	732.2	81	68	101	103	62	4	55	
1	15		0.42	1.26	735.3	82	68	100	102	63	4	49	
2	20		0.42	1.26	739.72	81	68	101	99	62	4	48	
2	25		0.42	1.26	743.02	81	68	101	100	60	4	49	
2	30		0.43	1.29	745.41	82	69	100	100	59	4	48	
3	35		0.43	1.29	748.81	82	69	100	102	59	4	50	
3	40		0.43	1.29	752.25	82	69	100	101	59	4	50	
3	45		0.36	1.02	755.25	82	69	100	101	59	4	50	
4	50		0.36	1.08	758.00	82	69	100	100	60	4	50	
4	55		0.36	1.07	761.45	82	70	100	100	60	4	50	
4	60		0.36	1.07	763.80	82	70	100	100	59	4	48 ~~48~~	MP 2/04/20
5	65		0.35	1.05	766.90	80	70	100	103	59	3	48	
5	70		0.35	1.05	769.93	80	70	100	102	58	3	48	
5	75		0.35	1.05	772.65	78	70	100	104	59	3	49	
6	80		0.35	1.05	775.40	78	70	100	101	59	3	49	
6	85		0.35	1.05	778.34	78	70	100	100	59	3	49	
6	90	1337	0.32	0.96	781.170	78	70	100	100	59	3	49	56.100

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max Temp	Max Vac	Max Temp
.3738	1.101639	109.072	79.06	66.81				4	59
Avg Sqrt Delta P	Avg Sqrt Del H	Comments:							
.61236	1.05078								

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

			Stack Conditions	
Client	Chemours		Assumed	Actual
W.O.#	15418.002.021	% Moisture	≈4	2.0
Project ID	Chemours	Impinger Vol (ml)		26
Mode/Source ID	Thermal Oxidizer	Silica gel (g)		30.5
Samp. Loc. ID	STK	CO2, % by Vol	3	4.0
Run No.ID	2	O2, % by Vol	19	14.6
Test Method ID	M0010	Temperature (°F)	≈72	
Date ID	__FEB2020	Meter Temp (°F)	≈65	
Source/Location	Thermal Oxidizer Stack	Static Press (in H_2O)	-0.30	-0.30 ✓
Sample Date	2/07/20 ✓			
Baro. Press (in Hg)	29.96 ✓			
Operator	MW WINKELER ✓	Ambient Temp (°F)	≈70	

Meter Box ID	32	
Meter Box Y	0.9834 ✓	
Meter Box Del H	1.7175	
Probe ID / Length	561	5'
Probe Material	Boro	
Pitot / Thermocouple ID	P561 ✓	
Pitot Coefficient	0.84 ✓	
Nozzle ID	G250	
Nozzle Measurements	0.250 / G 0.250 / 0.250	
Avg Nozzle Dia (in)	0.25 ✓	
Area of Stack (ft²)	1.767 ✓	
Sample Time	180 ✓	
Total Traverse Pts	12 ✓	

	Initial	Mid-Point	Final
Sample Train (ft³)	0.001	0.001	0.001
Leak Check @ (in Hg)	15	16	16
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	65		66
Reference Temp	64		65
Pass/Fail (+/- 2°)	Pass / Fail		Pass / Fail
Temp Change Response	yes / no		yes / no

K Factor 3.75

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 (oF)	PROBE TEMP (oF)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (oF)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (F)		COMMENTS
	0	1455			781.750									
B 1	5		0.42	1.57	785.51	83	70	100	97	67	4	62		
1	10		0.42	1.57	789.30	83	70	100	97	66	4	62		
1	15		0.42	1.57	793.00	83	70	100	97	66	4	62		
2	20		0.40	1.50	796.30	83	70	100	97	66	4	60		
2	25		0.40	1.50	800.25	83	70	100	99	60	4	54		
2	30		0.40	1.50	804.01	83	70	100	100	60	4	54		
3	35		0.40	1.50	807.72	83	72	100	100	60	4	54		
3	40		0.37	1.38	810.52	83	73	100	100	61	4	50		
3	45		0.37	1.38	814.00	83	72	100	100	61	4	50		
4	50		0.35	1.31	817.400	82	72	100	100	61	4	45		
4	55		0.35	1.31	820.95	82	72	100	100	61	4	45		
4	60		0.35	1.31	824.00	82	72	100	100	61	4	45		
5	65		0.35	1.31	827.33	80	71	100	100	60	4	45		
5	70		0.35	1.31	830.70	78	71	100	100	60	4	45		
5	75		0.35	1.31	836.00	78	71	100	100	60	4	45		
6	80		0.32	1.20	839.09	77	71	100	99	60	4	46		
6	85		0.32	1.20	840.50	77	71	100	100	60	4	46		
6	90	1625	0.32	1.20	843.770	77	71	100	100	60	4	46		
														62,040

Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max
0.37444	1.40194	124.940	81.4	~~69.6~~ 69.8	100/100	97/101	67	4	45/62
Avg Sqrt Delta P	Avg Sqrt Del H	Comments							
~~0.611915~~ 0.611305	~~1.18404~~ 1.18268								

EPA Method 0010 from EPA SW-846

101.1 I20

123.0 Qm 2.11 % m

ISOKINETIC FIELD DATA SHEET — EPA Method 0010 - HFPO Dimer Acid

Client: Chemours | Operator: MR WENKELER
Source: Thermal Oxidizer | Run No.: 2
Sample Loc.: Stack | Date: 2/04/20 | K Factor: 3.75

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)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (F)	COMMENTS
	0	1640			843.890								
1	5		0.42	1.57	847.34	82	69	100	101	67	4	62	
1	10		0.42	1.57	851.10	82	69	100	101	66	4	62	
1	15		0.42	1.57	854.60	82	69	100	101	66	4	62	
2	20		0.42	1.57	858.32	82	69	100	100	66	4	62	
2	25		0.42	1.57	862.12	82	69	100	100	64	4	55	
2	30		0.42	1.57	865.88	82	69	100	100	61	4	55	
3	35		0.40	1.50	869.56	82	69	100	100	61	4	54	
3	40		0.40	1.50	874.26	82	69	100	100	61	4	54	
3	45		0.40	1.50	877.36	82	69	100	100	61	4	54	
4	50		0.36	1.35	879.86	82	69	100	100	61	4	54	
4	55		0.36	1.35	884.50	82	69	100	100	61	4	54	
4	60		0.36	1.35	886.81	82	68	100	100	61	4	54	
5	65		0.36	1.35	890.91	81	68	100	100	61	4	54	
5	70		0.35	1.31	893.15	81	68	100	100	61	4	54	
5	75		0.35	1.31	895.1	81	68	100	100	61	4	54	
6	80		0.32	1.20	896.99	81	68	100	100	61	4	56	
6	85		0.32	1.20	900.35	81	68	100	100	61	4	56	
6	90	1810	0.32	1.20	906.790	81	68	100	100	61	4	54	//
													62.900
			Avg Delta P	Avg Delta H	Total Volume 124.940	Avg Ts	Avg Tm	Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	
			Avg Sqrt Delta P	Avg Sqrt Del H	Comments:								

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

		Stack Conditions	Assumed	Actual
Client	Chemours	% Moisture	≈3.0	
W.O.#	15418.002.021	Impinger Vol (ml)		
Project ID	Chemours	Silica gel (g)		
Mode/Source ID	Thermal Oxidizer	CO2, % by Vol	3	4.0
Samp. Loc. ID	STK	O2, % by Vol	19	14.6
Run No.ID	3	Temperature (°F)	71	
Test Method ID	M0010	Meter Temp (°F)	≈60	
Date ID	FEB2020	Static Press (in H_2O)	≈-0.30	-0.30 ✓
Source/Location	Thermal Oxidizer Stack	Ambient Temp (°F)	≈ 60	
Sample Date ✓	2/05/20 2/04/20			
Baro. Press (in Hg)	29.92 ✓			
Operator	MR WENCHEL			

Meter Box ID	32		
Meter Box Y	0.9834 ✓		
Meter Box Del H	1.7175		
Probe ID / Length	562	5'	Sample Train (ft^3)
Probe Material	Boro		Leak Check @ (in Hg)
Pitot / Thermocouple ID	P562		Pitot leak check good
Pitot Coefficient	0.84 ✓		Pitot Inspection good
Nozzle ID	G250		Method 3 System good
Nozzle Measurements	0.250 | 0.250 | 0.250		**Temp Check**
Avg Nozzle Dia (in)	0.250 ✓		Meter Box Temp
Area of Stack (ft^2)	1.767 ✓		Reference Temp
Sample Time	180 ✓		Pass/Fail (+/- 2°)
Total Traverse Pts	12 ✓		Temp Change Response ?

K Factor 3.77

	Initial	Mid-Point	Final
Sample Train (ft^3)	0.001	0.001	0.001
Leak Check @ (in Hg)	≤15	≤6	≤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
Temp Check	Pre-Test Set		Post-Test Set
Meter Box Temp	60		70
Reference Temp	59		71
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 (ft^3)	STACK TEMP (°F)	DGM OUTLET TEMP (oF)	PROBE TEMP (oF)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (oF)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (F)		COMMENTS
	0	0950			907.600									
A 1	5		0.42	1.58	911.27	72	57	100	102	54	4	56		
1	10		0.42	1.58	914.82	72	57	100	98	54	4	56		
1	15		0.42	1.58	918.82	72	58	100	98	54	4	56		
2	20		0.42	1.58	922.15	73	58	100	99	53	4	53		
2	25		0.42	1.58	925.73	73	58	100	103	53	4	48		
2	30		0.42	1.58	929.36	73	58	100	103	53	4	49		
3	35		0.40	1.50	932.93	73	60	100	103	53	4	48		
3	40		0.40	1.50	936.55	74	60	100	103	53	4	48		
3	45		0.36	1.35	939.84	74	60	100	100	52	4	48		
4	50		0.36	1.35	943.15	74	60	100	100	52	4	48		
4	55		0.36	1.35	946.71	74	60	100	99	53	4	50		
4	60		0.36	1.35	950.10	74	60	100	99	53	4	51		
5	65		0.35	1.31	953.26	74	62	100	102	53	4	52		
5	70		0.35	1.31	956.53	74	62	100	102	53	4	52		
5	75		0.35	1.31	959.75	75	62	100	102	54	4	55		
6	80		0.32	1.20	963.06	76	62	100	100	55	3	55		
6	85		0.32	1.20	967.10	76	63	100	100	56	3	56		
6	90	1120	0.32	1.20	969.470	76	63	100	100	58	3	58		
			Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max	Max Vac	Min/Max		
			0.37833	1.42083	124.830	75.9	63.3	100/100	98/103	60	5	39/58		
			Avg Sqrt Delta P	Avg Sqrt Del H	Comments:									
			0.61432	1.19046	61.870									

WESTON SOLUTIONS

EPA Method 0010 from EPA SW-846

ISOKINETIC FIELD DATA SHEET

EPA Method 0010 - HFPO Dimer Acid

Client: Chemours | Operator: MR WINKELER
Source: Thermal Oxidizer | Run No.: 3
Sample Loc.: Stack | Date: 3/0/20 | K Factor: 3.77

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)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	XAD EXIT TEMP (F)	COMMENTS
	0	1136			969.535								
1	5		0.42	1.58	973.51	76	64	100	101	60	5	44	
1	10		0.42	1.58	977.72	77	64	100	100	60	5	44	
1	15		0.42	1.58	980.72	77	65	100	99	60	5	44	
2	20		0.42	1.58	984.70	77	65	100	100	59	5	43	
2	25		0.42	1.58	988.89	77	65	100	100	60	5	41	
2	30		0.42	1.58	991.50	78	65	100	100	57	5	39	
3	35		0.40	1.50	995.10	78	66	100	100	57	5	39	
3	40		0.40	1.50	999.99	78	66	100	100	57	5	39	
3	45		0.40	1.50	1002.19	78	67	100	99	58	5	41	
4	50		0.40	1.50	1005.75	78	67	100	99	58	4	42	
4	55		0.35	1.32	1009.70	78	67	100	100	59	4	42	
4	60		0.35	1.32	1012.50	79	68	100	100	59	4	42	
3	65		0.35	1.32	1015.42	79	68	101	101	59	4	42	
5	70		0.36	1.35	1019.29	79	68	100	100	58	4	42	
5	75		0.36	1.35	1022.80	79	68	100	100	58	4	42	
6	80		0.32	1.20	1025.90	79	69	100	100	58	4	42	
6	85		0.32	1.20	1029.26	79	69	100	100	58	4	42	
6	90	1306	0.32	1.20	1032.495	79	69	100	100	58	4	42	
													62.96
			Avg Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	
			Avg Sqrt Delta P	Avg Sqrt Del H	Comments:								

SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - HFPO Dimer Acid

Client: Chemours | W.O. #: 15418.002.021
Location/Plant: Fayetteville, NC | Source & Location: Thermal Oxidizer Stack

Run No. 1 | Sample Date 2-4-20 | Recovery Date 2-4-20
Sample I.D. Chemours - Thermal Oxidizer - STK - 1 - M0010 - | Analyst JMD | Filter Number NA

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final	28	100	100	4					324.6	
Initial	0	100	100	0					300	
Gain	28	0	0	4				32 ✓	24.6 ✓	

Impinger Color: all clear | Labeled? ✓
Silica Gel Condition: blue 60% | Sealed? ✓

Run No. 2 | Sample Date 2-4-20 | Recovery Date 2-4-20
Sample I.D. Chemours - Thermal Oxidizer - STK - 2 - M0010 - | Analyst JMD | Filter Number NA

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final	37	85	100	4					330.5	
Initial	0	100	100	0					300	
Gain	37	-15	0	4				26 ✓	30.5 ✓	

Impinger Color: all clear | Labeled? ✓
Silica Gel Condition: blue 75% | Sealed? ✓

Run No. 3 | Sample Date 2/5/20 | Recovery Date 2/5/20
Sample I.D. Chemours - Thermal Oxidizer - STK - 3 - M0010 - | Analyst JMD | Filter Number NA

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents	Empty	HPLC H20	HPLC H20						Silica Gel	
Final	35	100	98	5					330.3	
Initial		100	100	0					300	
Gain	35	0	-2	5				38 ✓	30.3 ✓	

Impinger Color: all clear | Labeled? ✓
Silica Gel Condition: blue 70% | Sealed? ✓

Check COC for Sample IDs of Media Blanks

WESTON SOLUTIONS

Balance Check JMD

	Nat.	measured
2/4/20	500.0	500.1
2/5/20	500.0	500.3

SAMPLE RECOVERY FIELD DATA

Client: Chemours | W.O. #: 15418.002.021
Location/Plant: Fayetteville, NC | Source & Location: Blank Train

Run No. BT | Sample Date 2/5/20 | Recovery Date 2/5/20
Sample I.D. _____ | Analyst DNS | Filter Number N/A

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

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

Check COC for Sample IDs of Media Blanks

FIELD DATA SHEET

MM 18

Client	Chemours	Run No.	1	Meter Box ID	VOST 7
W.O.#	15418.002.021	Test Method	Modified M18	Meter Box Y	1.0046 ✓
Project ID	CHEM-F	Date	4 Feb. 2020 ✓	Probe ID/Length	
Mode/Source ID	Thermal Oxidizer	Baro. Press (in Hg)	29.96 ✓	Probe Material	
Samp. Loc.	Stack	Ambient Temp (°F)	62 ✓		
Source	TO Stack	Operator	CW		
		Sample Time	180 ✓		

Leak Check @ (in Hg)	0.018 @ 05"		0.037 @ 4"
Pitot leak check good	yes / no	yes / no	yes / no

Comments: Initial Probe Leak check:

Final Probe Leak check:

	0	1020 ✓			0.000						
B	5		1.5	2.2	7.3	68	NA	2.0	-104		
	10		1.5	2.2	14.7	67		2.0	-105		
	15		1.5	2.4	23.0	67		2.0	-105		
	20		1.5	2.4	30.4	67		2.0	-104		
	25		1.5	2.2	38.3	67		2.0	-106		
	30		1.5	2.2	45.7	68		2.0	-107		
	35		1.5	2.2	53.4	69		2.0	-107		
	40		1.5	2.2	61.2	69		2.0	-108		
	45		1.5	2.2	68.5	69		2.0	-108		
	50		1.5	2.2	76.5	69		2.0	-107		
	55		1.5	2.2	84.2	69		2.0	-107		
	60		1.5	2.2	92.3	70		2.0	-106		
	65		1.5	2.2	99.7	70		2.0	-108		
	70		1.5	2.2	107.3	70		2.0	-106		
	75		1.5	2.2	114.7	70		2.0	-106		
	80		1.5	2.2	122.8	70		2.0	-106		
	85		1.5	2.2	129.6	70		2.0	-106		
	90	1150	1.5	2.2	137.296	71		2.0	-106		
				Avg Delta H	Total Volume	Avg Tm	Max Temp	Max Vac	Max Temp		

FIELD DATA SHEET

MM 18

Client: Chemours
Samp. Loc.: Stack
Source: TO Stack
Operator: CW
Run No.: 1
Date: 4 Feb. 2020

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING	VELOCITY PRESSURE Delta H (in H2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C)	DGM OUTLET TEMP (°F)	STACK TEMP (°C)	SAMPLE TRAIN VAC (in Hg)	METHANOL BATH TEMP (°C/F)		COMMENTS
	1207	1207										
A	95		1.5	2.2	144.4	NA	70	NA	1.5	-107		
	100		1.5	2.2	152.2		70		1.5	-106		
	105		1.5	2.2	159.7		70		1.5	-106		
	110		1.5	2.2	167.2		70		1.5	-105		
	115		1.5	2.2	174.8		70		1.5	-105		
	120		1.5	2.2	182.3		70		1.5	-105		
	125		1.5	2.2	190.0		70		1.5	-105		
	130		1.5	2.2	197.7		70		1.5	-105		
	135		1.5	2.2	205.1		70		1.5	-105		
	140		1.5	2.2	212.7		70		1.5	-105		
	145		1.5	2.2	220.7		70		1.5	-105		
	150		1.5	2.2	227.8		70		1.5	-104		
	155		1.5	2.2	235.6		70		1.5	-104		
	160		1.5	2.2	243.3		71		1.5	-104		
	165		1.5	2.2	250.8		70		1.5	-104		
	170		1.5	2.2	259.4		71		1.5	-104		
	175		1.5	2.2	265.4		71		1.5	-103		
	180	1337 ✓	1.5	2.2	272.553	↓	71	↓	1.5	-103		

	Avg Delta H	Total Volume ✓	Avg Tm	Max Temp	Max Vac	Min/Max Temp	
1.5	2.2 ✓	272.553	69.56 ✓		2.0	-103 / -108	

WESTON SOLUTIONS

Comments:

FIELD DATA SHEET

MM 18

Client	Chemours	Run No.	2	Meter Box ID	Vost 7
W.O.#	15418.002.021	Test Method	Modified M18	Meter Box Y	1.0046 ✓
Project ID	CHEM-F	Date	4 Feb. 2020 ✓	Probe ID/Length	
Mode/Source ID	Thermal Oxidizer	Baro. Press (in Hg)	29.96 ✓	Probe Material	
Samp. Loc.	Stack	Ambient Temp (°F)	70		
Source	TO Stack	Operator	CW ✓		
		Sample Time	180 ✓		

Leak Check @ (in Hg)	0.035 03"	0.042 03"
Pitot leak check good	yes / no	yes / no

Comments: Initial Probe Leak check:

Final Probe Leak check:

	0	1455 ✓			0.000							
A	5		1.5	2.0	7.1	NA	73	NA	1.5	-102		
	10		1.5	2.0	14.3		73		1.5	-104		
	15		1.5	2.2	21.4		73		1.5	-105		
	20		1.5	2.2	28.7		73		1.5	-105		
	25		1.5	2.2	36.2		73		1.5	-105		
	30		1.5	2.2	43.8		73		1.5	-106		
	35		1.5	2.2	54.3		73		1.5	-106		
	40		1.5	2.2	61.6		73		1.5	-105		
	45		1.5	2.2	68.9		72		1.5	-106		
	50		1.5	2.2	75.9		72		1.5	-105		
	55		1.5	2.2	81.5		72		1.5	-105		
	60		1.5	2.2	88.2		72		1.5	-105		
	65		1.5	2.2	95.6		72		1.5	-105		
	70		1.5	2.2	103.1		72		1.5	-105		
	75		1.5	2.2	111.0		72		1.5	-105		
	80		1.5	2.2	118.0		71		1.5	-105		
	85		1.5	2.2	125.7		71		1.5	-106		
	90	1625	1.5	2.2	132.869		71		1.5	-106		
				Avg Delta H	Total Volume		Avg Tm	Max Temp	Max Vac	Max Temp		

FIELD DATA SHEET

MM 18

Client	Chemours	Operator	CW
Samp. Loc.	Stack	Run No.	2
Source	TO Stack	Date	4 Feb. 2020

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING	VELOCITY PRESSURE Delta H (in H2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C)	DGM OUTLET TEMP (°F)	STACK TEMP (°C)	SAMPLE TRAIN VAC (in Hg)	METHANOL BATH TEMP (°C/F)		COMMENTS
		1640										
B	95		1.5	2.2	140.3	NA	70	NA	1.5	-106		
	100		1.5	2.2	148.9	↓	70	↓	1.5	-106		
	105		1.5	2.2	155.0		70		1.5	-106		
	110		1.5	2.2	161.9		70		1.5	-105		
	115		1.5	2.2	169.7		70		1.5	-106		
	120		1.5	2.2	177.8		70		1.5	-106		
	125		1.5	2.2	186.2		70		1.5	-105		
	130		1.5	2.2	193.4		70		1.5	-106		
	135		1.5	2.2	200.7		70		1.5	-106		
	140		1.5	2.2	208.6		70		1.5	-106		
	145		1.5	2.2	217.8		70		1.5	-106		
	150		1.5	2.2	224.9		70		1.5	-105		
	155		1.5	2.2	232.8		70		1.5	-105		
	160		1.5	2.2	240.8		70		1.5	-105		
	165		1.5	2.2	248.2		69		1.5	-105		
	170		1.5	2.2	255.7		69		1.5	-105		
	175		1.5	2.2	262.0		69		1.5	-105		
	180	1810 ✓	1.5	2.2	270.925	↓	69	↓	1.5	-105		
			1.5	Avg Delta H: ~~2.2~~ 2.19	Total Volume ✓: 270.925	Avg Tm: ~~71.03~~ 70.4		Max Temp:	Max Vac: 1.5	MW / Max ~~Temp~~: -102 / 106		

WESTON SOLUTIONS

Comments:

FIELD DATA SHEET

MM 18

Client	Chemours	Run No.	3	Meter Box ID	105T7
W.O.#	15418.002.021	Test Method	Modified M18	Meter Box Y	1.0046 ✓
Project ID	CHEM-F	Date	5 Feb. 2020 ✓	Probe ID/Length	
Mode/Source ID	Thermal Oxidizer	Baro. Press (in Hg)	29.92 ✓	Probe Material	
Samp. Loc.	Stack	Ambient Temp (°F)	60		
Source	TO Stack	Operator	CW ✓		
		Sample Time	180 ✓		

Leak Check @ (in Hg)	0.045 @ 3"	0.034 @ 2"
Pitot leak check good	yes / no	yes / no

Comments: Initial Probe Leak check:

Final Probe Leak check:

	0	0950 ✓			0000							
15	5		1.5	2.2	7.1	NA	59	NA	1.5	-105		
	10		1.5	2.2	14.3		58		1.5	-105		
	15		1.5	2.2	21.5		59		1.5	-105		
	20		1.5	2.2	29.3		59		1.5	-101		
	25		1.5	2.2	36.1		59		1.5	-105		
	30		1.5	2.2	43.4		60		1.5	-105		
	35		1.5	2.2	50.8		60		1.5	-103		
	40		1.5	2.2	58.4		61		1.5	-103		
	45		1.5	2.2	66.0		61		1.5	-103		
	50		1.5	2.2	73.4		61		1.5	-103		
	55		1.5	2.2	80.9		62		1.5	-102		
	60		1.5	2.2	89.5		63		1.5	-103		
	65		1.5	2.2	96.5		63		1.5	-107		
	70		1.5	2.2	104.1		63		1.5	-101		
	75		1.5	2.2	112.1		63		1.5	-103		
	80		1.5	2.2	119.8		63		1.5	-103		
	85		1.5	2.2	127.6		63		1.5	-103		
	90	1120	1.5	2.2	135.413		64		1.5	-104		
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp		

FIELD DATA SHEET

MM 18

Client: Chemours | Operator: CW
Samp. Loc.: Stack | Run No.: 3
Source: TO Stack | Date: 5 Feb. 2020

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING	VELOCITY PRESSURE Delta H (in H2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C)	DGM OUTLET TEMP (°F)	STACK TEMP (°C)	SAMPLE TRAIN VAC (in Hg)	METHANOL BATH TEMP (°C/F)		COMMENTS
	1	1136										
A	95		1.5	2.2	143.1	NA	64	NA	1.5	-103		
	100		1.5	2.2	151.0		65		1.5	-103		
	105		1.5	2.2	158.8		65		1.5	-102		
	110		1.5	2.2	166.7		65		1.5	-102		
	115		1.5	2.2	174.7		66		1.5	-102		
	120		1.5	2.2	181.1		66		1.5	-102		
	125		1.5	2.2	189.4		66		1.5	-102		
	130		1.5	2.2	196.7		66		1.5	-102		
	135		1.5	2.2	204.3		66		1.5	-102		
	140		1.5	2.2	211.6		67		1.5	-102		
	145		1.5	2.2	218.4		67		1.5	-102		
	150		1.5	2.2	225.7		67		1.5	-102		
	155		1.5	2.2	232.8		67		1.5	-102		
	160		1.5	2.2	240.1		67		1.5	-101		
	165		1.5	2.2	247.4		68		1.5	-101		
	170		1.5	2.2	254.6		67		1.5	-100		
	175		1.5	2.2	261.9		69		1.5	-100		
	180	1306 ✓	1.5	2.2	269.582		69		1.5	-100		
				Avg Delta H	Total Volume ✓	Avg Tm		Max Temp	Max Vac	AW/ Max Temp		
			1.5	2.2 ✓	269.582	63.83 ✓			1.5	-100 / -105		

WESTON SOLUTIONS

Comments:

MM18 TO OUTLET

SAMPLE RECOVERY FIELD DATA

Client: Chemours | W.O. #:
Location/Plant: Fayetteville NC | Source & Location: TO Outlet

Run No. 1 | Sample Date 2-4-20 | Recovery Date 2-4-20
Sample I.D. | Analyst WF/JM | Filter Number NA

	Impinger 1	2	3	4	5	6	7	Imp.Total	8 Silica Gel	Total
Contents										
Final	589.7	623.0	610.8	607.5	606.7	607.4	607.2			
Initial	605.7	610.0	607.0	605.5	605.5	605.8	605.8			
Gain	-16	13	3.8	2.0	1.2	1.6	1.4			7

Impinger Color: all clear | Labeled? ✓
Silica Gel Condition: NA | Sealed? ✓

Run No. 2 | Sample Date 2-4-20 | Recovery Date 2-4-20
Sample I.D. | Analyst WF/JM | Filter Number NA

	Impinger 1	2	3	4	5	6	7	Imp.Total	8 Silica Gel	Total
Contents										
Final	615.4	625.5	612.6	608.9	609.0	609.3	583.1			
Initial	632.7	612.2	607.6	606.3	607.4	608.5	582			
Gain	-17.3	13.3	5	2.6	1.6	1.3	1.1			7.6

Impinger Color: ✓ all clear | Labeled? ✓
Silica Gel Condition: NA | Sealed? ✓

Run No. 3 | Sample Date 2-5-20 | Recovery Date 2-5-20
Sample I.D. | Analyst | Filter Number

	Impinger 1	2	3	4	5	6	7	Imp.Total	8 Silica Gel	Total
Contents		620.9								
Final	620.3	20	612.7	609.9	608.9	609.2	584.3			
Initial	632.7	614.8	608.7	607.1	608	608.1	583.1			
Gain	-12.4	13.7	4	2.7	608.1	1.1	1.2			11.1

Impinger Color: ✓ ✓ ✓ ✓ | Labeled? 8.8 ✓ ✓
Silica Gel Condition: | Sealed? ✓

Check COC for Sample IDs of Media Blanks

WESTON SOLUTIONS

Balance check

	JM Ref.	Measured
2/4/20	500.0	500.1
2/5/20	500.0	500.3

MM 18 TO OUTLET

SAMPLE RECOVERY FIELD DATA

Client: Chemours | W.O. #:
Location/Plant: ~~Fayetteville~~ NC | Source & Location: TO Outlet

Run No. BT | Sample Date 2/5/20 | Recovery Date 2/5/20
Sample I.D. | Analyst JDD/WF | Filter Number NA

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents									Silica Gel	
Final	631.4	615.8	608.7	607.3	607.0	612.4	584.0			
Initial	631.5	615.6	608.5	607.0	607.0	612.0	584.0			
Gain	-.1	.2	.2	.3	0	.4	0	1.0		1.0

Impinger Color: all clear | Labeled? ✓
Silica Gel Condition: NA | Sealed? ✓

Run No. ___ | Sample Date ___ | Recovery Date ___
Sample I.D. | Analyst | Filter Number

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

Impinger Color | Labeled?
Silica Gel Condition | Sealed?

Check COC for Sample IDs of Media Blanks

FIELD DATA SHEET

MM 18

Client	Chemours	Run No.	1	Meter Box ID	1051 9
W.O.#	15418.002.021	Test Method	Modified M18	Meter Box Y	1.000 ✓
Project ID	CHEM-F	Date	4 Feb. 2020 ✓	Probe ID/Length	3
Mode/Source ID	Thermal Oxidizer	Baro. Press (in Hg)	30.02 ✓	Probe Material	TFE
Samp. Loc.	TO Inlet	Ambient Temp (°F)		Leak Check @ (in Hg)	Post Zero 0.008 @ 1
Source	Monomers	Operator	Mills ✓	Pitot leak check good	~~yes / no~~ NA ~~yes / no~~ ~~yes / no~~
		Sample Time			

Comments: Initial Probe Leak check: 0.008 @ 1

Final Probe Leak check: 0.001 @ 1

	0	1020 ✓			0.000				0			
	5		0.6	0.8	2.6	82	NA	<1	-100			
	10		0.6	0.8	5.0	81		<1	-100			
	15		0.6	0.8	7.5	81		<1	-102			
	20		0.6	0.7	10.2	79		<1	-101			
	25		0.6	0.8	12.6	79		<1	-101			
	30		0.6	0.8	15.0	78		<1	-101			
	35		0.6	0.8	17.6	79		<1	-101			
	40		0.6	0.8	20.1	78		<1	-100			
	45		0.6	0.8	22.6	78		<1	-101			
	50		0.6	0.8	25.0	78		<1	-101			
	55		0.6	0.8	27.6	78		<1	-101			
	60		0.6	0.8	30.0	78		<1	-101			
	65		0.6	0.8	32.5	78		<1	-101			
	70		0.6	0.8	35.0	78		<1	-101			
	75		0.6	0.8	37.5	78		<1	-101			
	80		0.6	0.8	40.1	79		<1	-100			
	85		0.6	0.8	42.6	79		<1	-100			
Post Sample	90		0.6	0.8	45.1	79		<1	-101			
1150	95		0.6	0.8	47.6	79		<1	-101			
1201	100		0.6	0.8	50.1	79		<1	-101			
	105		0.6	0.8	52.6	79		<1	-101			
	110		0.6	0.8	55.1	79		<1	-100			
	115		0.6	0.8	57.5	79	✓	<1	-100			
				Avg Delta H	Total Volume	Avg Tm	Max Temp	Max Vac	Max Temp			

FIELD DATA SHEET

MM 18

Client: Chemours | Operator: M. Ills
Samp. Loc.: TO Inlet | Run No.: 1
Source: Monomers | Date: 4 Feb. 2020

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING	VELOCITY PRESSURE Delta H (in H2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C)	DGM OUTLET TEMP (°F)	STACK TEMP (°C)	SAMPLE TRAIN VAC (in Hg)	METHANOL BATH TEMP (°C/F)		COMMENTS
	115				51.5							
	120		0.6	0.8	60.0	NA	79	NA	<1	-101		
	125		0.6	0.8	62.3		79		<1	-100		
	130		0.6	0.8	65		79		<1	-100		
	135		0.6	0.8	67.6		79		<1	-100		
	140		0.6	0.8	70.0		79		<1	-101		
	145		0.6	0.8	72.5		79		<1	-100		
	150		0.6	0.8	74.9		79		<1	-100		
	155		0.6	0.8	77.4		79		<1	-104		
	160		0.6	0.8	80.0		79		<1	-104		
	165		0.6	0.8	82.5		78		<1	-104		
	170		0.6	0.8	85		78		<1	-104		
	175		0.6	0.8	87.5		78		<1	-104		
	180		0.6	0.8	90		79		<1	-104		
	185		0.6	0.8	92.6		79		<1	-104		
	~~200~~ 190		0.6	0.8	95		79		<1	-104		
	195		0.6	0.8	97.4		79		<1	-104		
	197	1337 ✓	0.6	0.8	98.331		>79		<1	-104		
						✓		✓				
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp		
				0.8	98.331	78.88						

Comments:

FIELD DATA SHEET

MM 18

Client	Chemours	Run No.	2	Meter Box ID	VOST 9				
W.O.#	15418.002.021	Test Method	Modified M18	Meter Box Y	1.000 ✓				
Project ID	CHEM-F	Date	4 Feb. 2020 ✓	Probe ID/Length	3	Leak Check @ (in Hg)			
Mode/Source ID	Thermal Oxidizer	Baro. Press (in Hg)	30.06 ✓	Probe Material	Ti	Pitot leak check good	yes / no	yes / no	yes / no
Samp. Loc.	TO Inlet	Ambient Temp (°F)							
Source	Monomers	Operator	Mills ✓						
		Sample Time							

Comments: Initial Probe Leak check: 0.012 @ 1
Final Probe Leak check: 0.010 @ 1

	0	1455 ✓			0.000	NA	0	NA		0		
	5		0.6	0.8	2.5		81		<1	-106		
	10		0.6	0.8	5.0		81		<1	-105		
	15		0.6	0.8	7.4		81		<1	-104		
	20		0.6	0.8	9.9		81		<1	-103		
	25		0.6	0.8	12.2		81		<1	-103		
	30		0.6	0.8	14.9		81		<1	-102		
	35		0.6	0.8	17.7		81		<1	-101		
	40		0.6	0.8	20.1		81		<1	-101		
	45		0.6	0.8	22.5.1		81		<1	-101		
	50		0.6	0.8	25.4		79		<1	-101		
	55		0.6	0.8	27.6		79		<1	-100		
	60		0.6	0.8	30.2		78		<1	-100		
	65		0.6	0.8	32.6		76		<1	-100		
	70		0.6	0.8	35		76		<1	-100		
	75		0.6	0.8	37.5		76		<1	-100		
	80		0.6	0.8	40.1		76		<1	-100		
	85		0.6	0.8	42.6		77		<1	-101		
	90	1605 Port Change 1610	0.6	0.8	45.1		76		<1	-101		
	95		0.6	0.8	47.6		76		<1	-101		
	100		0.6	0.8	50.1		75		<1	-101		
	105		0.6	0.8	52.5		75		<1	-101		
	110		0.6	0.8	55.0		75		<1	-102		
	115		0.6	0.8			75		<1	-102		
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Mak Vac	Max Temp		

FIELD DATA SHEET

MM 18

Client: Chemours
Samp. Loc.: TO Inlet
Source: Monomers
Operator: Mills
Run No.: 2
Date: 4 Feb. 2020

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING	VELOCITY PRESSURE Delta H (in H2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C)	DGM OUTLET TEMP (°F)	STACK TEMP (°C)	SAMPLE TRAIN VAC (in Hg)	METHANOL BATH TEMP (°C/F)		COMMENTS
	115				57.5							
	120		0.6	0.8	60.1	NA	75	NA	<1	-101		
	125		0.6	0.8	62.5		75		<1	-104		
	130		0.6	0.8	~~62.0~~ 65.0		75		<1	-104		
	135		0.6	0.8	67.5		75		<1	-104		
	140		0.6	0.8	70.0		75		<1	-104		
	145		0.6	0.8	72.4		75		<1	-103		
	150		0.6	0.8	74.9		75		<1	-104		
	155		0.6	0.8	77.5		74		<1	-104		
	160		0.6	0.8	80.0		73		<1	-104		
	165		0.6	0.8	82.5		73		<1	-104		
	170		0.6	0.8	85.0		73		<1	-103		
	175		0.6	0.8	87.5		72		<1	-103		
	180		0.6	0.8	90		72		<1	-103		
	185		0.6	0.8	92.5		72		<1	-103		
	190		0.6	0.8	94.9		72		<1	-103		
	195	1810 ✓	0.6	0.8	96.991		72		<1	-103		

	Avg Delta H	Total Volume	Avg Tm	Max Temp	Max Vac	Max Temp	
	0.8	96.991	76.51				

WESTON SOLUTIONS

Comments:

FIELD DATA SHEET

MM 18

Client	Chemours	Run No.	3	Meter Box ID	Vost 9						
W.O.#	15418.002.021	Test Method	Modified M18	Meter Box Y	1.000 ✓						
Project ID	CHEM-F	Date	5 Feb. 2020	Probe ID/Length	3		Leak Check @ (in Hg)				
Mode/Source ID	Thermal Oxidizer	Baro. Press (in Hg)	30.02 ✓	Probe Material	~~SS~~ TFE		Pitot leak check good	yes / no	yes / no	yes / no	
Samp. Loc.	TO Inlet	Ambient Temp (°F)									
Source	Monomers	Operator	Mills ✓								
		Sample Time									

Comments: Initial Probe Leak check: 0.008 @ 1
Final Probe Leak check: 0.010 @ 1

	0	0950 ✓			0.000	NA	63	NA	<1	-101		
	5		0.6	0.8	2.5		63		<1	-101		
	10		0.6	0.8	5.0		63		<1	-101		
	15		0.6	0.8	7.2		63		<1	-101		
	20		0.6	0.8	9.9		63		<1	-101		
	25		0.6	0.8	12.5		63		<1	-101		
	30		0.6	0.8	15.0		64		<1	-100		
	35		0.6	0.8	17.3		65		<1	-100		
	40		0.6	0.8	20.0		66		<1	-101		
	45		0.6	0.8	22.6		67		<1	-101		
	50		0.6	0.8	25.1		68		<1	-101		
	55		0.6	0.8	27.6		68		<1	-100		
	60		0.6	0.8	30.1		69		<1	-100		
	65		0.6	0.8	32.6		69		<1	-101		
	70		0.6	0.8	35.0		70		<1	-101		
	75		0.6	0.8	37.4		70		<1	-101		
	80		0.6	0.8	40.0		70		<1	-101		
	85		0.6	0.8	42.4		69		<1	-101		
Port Change	90	1120	0.6	0.8	45.1		68		<1	-101		
	95	1136	0.6	0.8	47.6		68		<1	-101		
	100		0.6	0.8	50.0		69		<1	-101		
	105		0.6	0.8	52.5		69		<1	-101		
	110		0.6	0.8	54.9		69		<1	-101		
	115		0.6	0.8	57.4		70		<1	-101		
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp		

FIELD DATA SHEET

MM 18

Client: Chemours | Operator: Mills
Samp. Loc.: TO Inlet | Run No.: 3
Source: Monomers | Date: ___ Feb. 2020

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING	VELOCITY PRESSURE Delta H (in H2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C)	DGM OUTLET TEMP (°F)	STACK TEMP (°C)	SAMPLE TRAIN VAC (in Hg)	METHANOL BATH TEMP (°F)		COMMENTS
	115				57.4							
	120		0.6	0.8	60.0	NA	70	NA	<1	-101		
	125		0.6	0.8	62.4		70		<1	-101		
	130		0.6	0.8	65		70		<1	-101		
	135		0.6	0.8	67.6		70		<1	-101		
	140		0.6	0.8	70.1		70		<1	-101		
	145		0.6	0.8	72.6		70		<1	-101		
	150		0.6	0.8	74.9		70		<1	-102		
	155		0.6	0.8	77.4		70		<1	-102		
	160		0.6	0.8	80.0		70		<1	-102		
	165		0.6	0.8	82.4		70		<1	-101		
	170		0.6	0.8	85		70		<1	-101		
	175		0.6	0.8	87.5		71		<1	-101		
	180		0.6	0.8	90.0		71		<1	-101		
	185		0.6	0.8	92.4		71		<1	-101		
	190		0.6	0.8	95.1		71		<1	-101		
	195		0.6	0.8	97.5		71		<1	-101		
	196	1306	0.6	0.8	97.717		71		<1	-101		
				Avg Delta H	Total Volume	Avg Tm		Max Temp	Max Vac	Max Temp		
				0.8	97.717	68.48						

WESTON SOLUTIONS

Comments:

M8 INLET

SAMPLE RECOVERY FIELD DATA

Client: Chemours | W.O. #: 15418.002.021
Location/Plant: Fayetteville, NC | Source & Location: ~~Blank Train~~ MONITOR S W

Run No. 1 | **Sample Date** 02/04/20 | **Recovery Date** 02/04/20
Sample I.D. | **Analyst** SA | **Filter Number** —

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents									Silica Gel	
Final	716.9	617.8	603.0	605.4	605.0	605.0				
Initial	~~599.6~~	602.0	595.4	598.4	598.0	~~626.0~~ 602.2				
Gain	604.8 112.1	15.8	7.6	7.0	7.0	~~602.2~~				155.3

Impinger Color: clear | Labeled? 599.2 5.8 ✓
Silica Gel Condition: ✓ | Sealed? ✓

Run No. 2 | **Sample Date** 02/04/20 | **Recovery Date** 02/04/20
Sample I.D. | **Analyst** SA | **Filter Number** ✓

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents									Silica Gel	
Final	746.3	631.2	620.4	621.1	622.1	629.6				
Initial	621.9	617.2	605.9	607.8	610.2	623.6				
Gain	124.4	14	14.5	13.3	11.9	6.0				184.1

Impinger Color: clear | Labeled? ✓
Silica Gel Condition: ✓ | Sealed?

Run No. 3 | **Sample Date** 02/05/20 | **Recovery Date** 02/05/20
Sample I.D. | **Analyst** SA | **Filter Number** —

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents									Silica Gel	
Final	710.2	607.5	607.5	603.4	609.6		637.2			
Initial	599.9	599.8	603.5	600.7	606.1	~~604.0~~	634.8			
Gain	110.3	7.7	4	2.7	3.5		2.4			129.6

Impinger Color: clear | Labeled? ✓
Silica Gel Condition: SI | Sealed? ✓

Check COC for Sample IDs of Media Blanks

FIELD DATA SHEET

MM 18 - HFPO Dimer Acid

Client	Chemours	Run No.	1	Meter Box ID	5				
W.O.#	15418.002.021	Test Method	Modified M18	Meter Box Y	0.9996 ✓				
Project ID	CHEM-F	Date	4 Feb. 2020 ✓	Probe ID/Length	—	—	Leak Check @ (in Hg)	0.008@1	~	0.008@1
Mode/Source ID	Thermal Oxidizer	Baro. Press (in Hg)	30.02 ✓	Probe Material	TFE		Pitot leak check good	~~yes / no~~	~~yes / no~~	~~yes / no~~
Samp. Loc.	TO Inlet	Ambient Temp (°F)	65							
Source	Polymers	Operator	KS ✓							
		Sample Time	197 Min ✓							

Comments: Initial Probe Leak check: 0.008@1

Final Probe Leak check: 0.008@1

	0	1020 ✓			0.000				0		
	5		0.8	0.8	2.5	73	N/A	<1	-100		
	10		0.8	0.8	4.9	73		<1	-101		
	15		0.8	0.8	7.5	73		<1	-100		
	20		0.8	0.8	10.1	74		<1	-100		
	25		0.8	0.8	12.5	74		<1	-101		
	30		0.8	0.8	14.9	75		<1	-101		
	35		0.8	0.8	17.5	75		<1	-101		
	40		0.8	0.8	20.0	76		<1	-100		
	45		0.8	0.8	22.4	76		<1	-100		
	50		0.8	0.8	24.9	76		<1	-101		
	55		0.8	0.8	27.5	76		<1	-101		
	60		0.8	0.8	30.0	77		<1	-101		
	65		0.8	0.8	32.6	78		<1	-101		
	70		0.8	0.8	35.0	78		<1	-101		
	75		0.8	0.8	37.5	78		<1	-101		
	80		0.8	0.8	40.0	78		<1	-101		
	85		0.8	0.8	42.4	79		<1	-101		
	90		0.8	0.8	45.0	79		<1	-101		
	95		0.8	0.8	47.5	79		<1	-101		
	100		0.8	0.8	49.9	79		<1	-101		
	105		0.8	0.8	52.5	79		<1	-101		
	110		0.8	0.8	55.0	79		<1	-101		
							N/A				
				Avg Delta H	Total Volume	Avg Tm	Max Temp	Max Vac	Max Temp		

FIELD DATA SHEET

MM 18 - HFPO Dimer Acid

Client: Chemours | Operator: KS
Samp. Loc.: TO Inlet | Run No.: 1
Source: Polymers | Date: 4 Feb. 2020

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING	VELOCITY PRESSURE Delta H (in H2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C)	DGM OUTLET TEMP (°F)	STACK TEMP (°C)	SAMPLE TRAIN VAC (in Hg)	METHANOL BATH TEMP (°C/F)		COMMENTS
	-	-			-							
	115		0.8	0.8	57.5	N/A	80	N/A	<1	-101		
	120		0.8	0.8	60.1		80		<1	-101		
	125		0.8	0.8	62.5		79		<1	-100		
	130		0.8	0.8	64.9		79		<1	-100		
	135		0.8	0.8	67.6		79		<1	-100		
	140		0.8	0.8	70.0		79		<1	-100		
	145		0.8	0.8	72.4		79		<1	-100		
	150		0.8	0.8	75.0		79		<1	-100		
	155		0.8	0.8	77.5		80		<1	-100		
	160		0.8	0.8	79.9		80		<1	-100		
	165		0.8	0.8	82.5		80		<1	-100		
	170		0.8	0.8	85.1		80		<1	-100		
	175		0.8	0.8	87.6		80		<1	-100		
	180		0.8	0.8	90.0		80		<1	-100		
	185		0.8	0.8	92.5		80		<1	-100		
	190		0.8	0.8	95.0		80		<1	-100		
	195		0.8	0.8	97.5		80		<1	-100		
	197	1337 ✓	0.8	0.8	98.611		80		<1	-100		
			0.8	Avg Delta H: 0.8	Total Volume: 98.611 ✓	Avg Tm: 78.0		Max Temp	Max Vac: <1	Max Temp: -100		

Comments:

FIELD DATA SHEET

MM 18 - HFPO Dimer Acid

Client	Chemours	Run No.	2	Meter Box ID	5				
W.O.#	15418.002.021	Test Method	Modified M18	Meter Box Y	0.9996 ✓				
Project ID	CHEM-F	Date	4 Feb. 2020	Probe ID/Length	—	—	Leak Check @ (in Hg)	0.008 ✓	0.008 ✓
Mode/Source ID	Thermal Oxidizer	Baro. Press (in Hg)	30.06 ✓	Probe Material	TFE		Pitot leak check good	~~yes / no~~	~~yes / no~~ yes / no
Samp. Loc.	TO Inlet	Ambient Temp (°F)	65 ✓						
Source	Polymers	Operator	KS						
		Sample Time							

Comments: Initial Probe Leak check: 0.008 ✓

Final Probe Leak check: 0.008 ✓

	0	1455 ✓			0.000					0		
	5		0.8	0.8	2.5	N/A	82	N/A	<1	-100		
	10		0.8	0.8	4.9		82		<1	-100		
	15		0.8	0.8	7.5		82		<1	-100		
	20		0.8	0.8	9.9		82		<1	-101		
	25		0.8	0.8	12.5		82		<1	-101		
	30		0.8	0.8	15.0		82		<1	-100		
	35		0.8	0.8	17.5		82		<1	-100		
	40		0.8	0.8	20.1		82		<1	-100		
	45		0.8	0.8	22.4		80		<1	-100		
	50		0.8	0.8	25.0		80		<1	-100		
	55		0.8	0.8	27.4		80		<1	-100		
	60		0.8	0.8	30.0		79		<1	-101		
	65		0.8	0.8	32.6		79		<1	-101		
	70		0.8	0.8	34.9		79		<1	-101		
	75		0.8	0.8	37.5		78		<1	-101		
	80		0.8	0.8	39.9		78		<1	-101		
	85		0.8	0.8	42.4		77		<1	-100		
	90		0.8	0.8	45.0		77		<1	-100		
	95		0.8	0.8	47.5		77		<1	-100		
	100		0.8	0.8	50.0		76		<1	-100		
	105		0.8	0.8	52.6		76		<1	-100		
	110		0.8	0.8	55.0		76		<1	-100		
						N/A		N/A				
				Avg Delta H.	Total Volume		Avg Tm	Max Temp	Max Vac	Max Temp		

FIELD DATA SHEET

MM 18 - HFPO Dimer Acid

Client: Chemours | Operator: KS
Samp. Loc.: TO Inlet | Run No.: 2
Source: Polymers | Date: 4 Feb. 2020

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING	VELOCITY PRESSURE Delta H (in H2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C)	DGM OUTLET TEMP (°F)	STACK TEMP (°C)	SAMPLE TRAIN VAC (in Hg)	METHANOL BATH TEMP (°C/F)		COMMENTS
	—	—			—							
	115		0.8	0.8	57.5	N/A	76	N/A	<1	-100		
	120		0.8	0.8	59.9		75		<1	-101		
	125		0.8	0.8	62.5		75		<1	-101		
	130		0.8	0.8	65.0		75		<1	-101		
	135		0.8	0.8	67.4		75		<1	-101		
	140		0.8	0.8	70.0		75		<1	-101		
	145		0.8	0.8	72.4		74		<1	-100		
	150		0.8	0.8	75.0		74		<1	-100		
	155		0.8	0.8	77.4		74		<1	-100		
	160		0.8	0.8	80.2		74		<1	-100		
	165		0.8	0.8	82.5		74		<1	-100		
	170		0.8	0.8	85.0		74		<1	-100		
	175		0.8	0.8	87.3		73		<1	-100		
	180		0.8	0.8	90.0		73		<1	-100		
	185		0.8	0.8	92.5		73		<1	-100		
	190		0.8	0.8	95.0		73		<1	-100		
	195	1810	0.8	0.8	97.481		72		<1	-100		
						N/A		N/A				
WESTON SOLUTIONS			0.8	Avg Delta H: 0.8 ✓	Total Volume: 97.481 ✓	Avg Tm: 77.10 ✓		Max Temp	Max Vac: <1	Max Temp: -100		

Comments:

FIELD DATA SHEET

MM 18 - HFPO Dimer Acid

Client	Chemours	Run No.	3	Meter Box ID	5				
W.O.#	15418.002.021	Test Method	Modified M18	Meter Box Y	0.9996 ✓				
Project ID	CHEM-F	Date	5 Feb. 2020	Probe ID/Length	—	—	Leak Check @ (in Hg)	0.006@1	—	0.006@1
Mode/Source ID	Thermal Oxidizer	Baro. Press (in Hg)	30.02 ✓	Probe Material	TFE		Pitot leak check good	~~yes / no~~	yes / no	yes / no
Samp. Loc.	TO Inlet	Ambient Temp (°F)	53							
Source	Polymers	Operator	KS ✓							
		Sample Time								

Comments: Initial Probe Leak check: 0.006@1
Final Probe Leak check: 0.006@1

	0	0950 ✓			0.000					0			
	5		0.8	0.8	2.5	N/A	62	N/A	<1	-103			
	10		0.8	0.8	4.9		62		<1	-103			
	15		0.8	0.8	7.4		62		<1	-103			
	20		0.8	0.8	9.9		63		<1	-103			
	25		0.8	0.8	12.5		63		<1	-103			
	30		0.8	0.8	15.0		64		<1	-103			
	35		0.8	0.8	17.5		65		<1	-103			
	40		0.8	0.8	20.0		65		<1	-103			
	45		0.8	0.8	22.5		66		<1	-103			
	50		0.8	0.8	25.1		66		<1	-103			
	55		0.8	0.8	27.6		67		<1	-103			
	60		0.8	0.8	30.0		68		<1	-103			
	65		0.8	0.8	32.5		68		<1	-103			
	70		0.8	0.8	35.0		68		<1	-103			
	75		0.8	0.8	37.5		69		<1	-103			
	80		0.8	0.8	40.0		69		<1	-103			
	85		0.8	0.8	42.5		69		<1	-102			
	90		0.8	0.8	45.0		69		<1	-102			
	95		0.8	0.8	47.6		69		<1	-102			
	100		0.8	0.8	50.0		69		<1	-102			
	105		0.8	0.8	52.5		70		<1	-102			
	110		0.8	0.8	55.0		70		<1	-102			
						N/A		N/A					
				Avg Delta H	Total Volume		Avg Tm	Max Temp	Max Vac	Max Temp			

FIELD DATA SHEET

MM 18 - HFPO Dimer Acid

Client: Chemours | Operator: KS
Samp. Loc.: TO Inlet | Run No.: 3
Source: Polymers | Date: 5 Feb. 2020

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	ROTOMETER SETTING	VELOCITY PRESSURE Delta H (in H2O)	DRY GAS METER READING (liters)	DGM INLET TEMP (°C)	DGM OUTLET TEMP (°F)	STACK TEMP (°C)	SAMPLE TRAIN VAC (in Hg)	METHANOL BATH TEMP (°C/F)		COMMENTS
	—	—			—							
	115		0.8	0.8	57.5	N/A	71	N/A	<1	-101		
	120		0.8	0.8	60.0		71		<1	-101		
	125		0.8	0.8	62.5		71		<1	-101		
	130		0.8	0.8	65.0		71		<1	-101		
	135		0.8	0.8	67.6		71		<1	-101		
	140		0.8	0.8	70.0		71		<1	-101		
	145		0.8	0.8	72.4		72		<1	-101		
	150		0.8	0.8	75.0		72		<1	-101		
	155		0.8	0.8	77.5		72		<1	-101		
	160		0.8	0.8	80.0		72		<1	-101		
	165		0.8	0.8	82.5		72		<1	-101		
	170		0.8	0.8	85.0		72		<1	-101		
	175		0.8	0.8	87.4		72		<1	-101		
	180		0.8	0.8	90.0		72		<1	-101		
	185		0.8	0.8	92.5		73		<1	-101		
	190		0.8	0.8	95.0		73		<1	-101		
	195		0.8	0.8	97.5		73		<1	-101		
	196	1306 ✓	0.8	0.8	98.092		73		<1	-101		
						N/A		N/A				

WESTON SOLUTIONS		Avg Delta H	Total Volume	Avg Tm	Max Temp	Max Vac	Max Temp	
	0.8	0.8 ✓	98.092 ✓	68.80	—	<1	-101	

Comments:

68.9

2/5/2020

M18 INLET

SAMPLE RECOVERY FIELD DATA

Client Chemours W.O. # 15418.002.021
Location/Plant Fayetteville, NC Source & Location Polymers P

Run No. 1 Sample Date 02/04/20 Recovery Date 02/04/20
Sample I.D. — Analyst SR Filter Number —

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents									Silica Gel	
Final	599.6	599.9	601.5	604.6	604.9	603.5				
Initial	598.2	598.9	600.8	~~603.0~~ 606.3	604.3	603.0				
Gain	1.4	1.0	0.7	-1.7	0.6	0.5				2.5

Impinger Color Clear Labeled? ✓
Silica Gel Condition — Sealed? ✓

Run No. 2 Sample Date 02/04/20 Recovery Date 02/04/20
Sample I.D. — Analyst SR Filter Number —

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents									Silica Gel	
Final	608.9	610.7	608.3	615.4	620.0	621.7				
Initial	608.4	609.9	607.8	613.3	605.6	636.9				
Gain	0.5	0.8	0.5	2.1	14.4	-15.2				3.1

Impinger Color Clear Labeled? ✓
Silica Gel Condition — Sealed? ✓

Run No. 3 Sample Date 02/05/20 Recovery Date 02/05/20
Sample I.D. — Analyst SR Filter Number —

	Impinger									
	1	2	3	4	5	6	7	Imp.Total	8	Total
Contents									Silica Gel	
Final	603.0	601.6	601.5	~~604.0~~ 603.3	638.6	596.0				
Initial	601.9	600.8	600.5	~~600.7~~ 600.7	602.1	~~627.8~~ 630.8				
Gain	1.1	0.8	1.0	0.7	36.5	-34.8				5.3

Impinger Color Clear Labeled? ✓
Silica Gel Condition — Sealed? ✓

Check COC for Sample IDs of Media Blanks

METHODS AND ANALYZERS

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

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

ers.A-F\Chemours Fayetteville\15418.002.021 Fayetteville January 2020 Thermal Oxidizer Compliance\Data\CEMS\

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	**O_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**25.0**
Span Concentration, %	**21.3**

Channel 2

Analyte	**CO_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**20.0**
Span Concentration, %	**17.1**

CALIBRATION DATA

Number 1

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

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Start Time: 08:58

O_2

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

Calibration Standards

%	**Cylinder ID**
12.0	ALM056900
21.3	ALM047628

Calibration Results

Zero	7 mv
Span, 21.3 %	8125 mv

Curve Coefficients

Slope	**Intercept**
381.1	7

CO_2

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

Calibration Standards

%	**Cylinder ID**
8.9	ALM056900
17.1	ALM047628

Calibration Results

Zero	0 mv
Span, 17.1 %	8541 mv

Curve Coefficients

Slope	**Intercept**
499.5	0

CALIBRATION ERROR DATA

Number 1

Client: **Chemours** | Project Number: **15418.002.021.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **TO** | Calibration **1** | Date: **4 Feb 2020**

Start Time: 08:58

O_2
Method: EPA 3A
Span Conc. 21.3 %
Slope 381.1 **Intercept** 7.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
12.0	12.2	0.2	0.9	Pass
21.3	21.3	0.0	0.0	Pass

CO_2
Method: EPA 3A
Span Conc. 17.1 %
Slope 499.5 **Intercept** 0.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
8.9	8.9	0.0	0.0	Pass
17.1	17.1	0.0	0.0	Pass

BIAS

Number 1

Client: **Chemours** | Project Number: **15418.002.021.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **TO** | Calibration **1** | Date: **4 Feb 2020**

Start Time: 09:06

O_2
Method: EPA 3A
Span Conc. 21.3 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	12.2	12.0	-0.2	-0.9	Pass

CO_2
Method: EPA 3A
Span Conc. 17.1 %

Bias Results

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

RUN DATA

Number 1

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
10:21	20.8	0.0
10:22	18.4	1.0
10:23	15.2	3.1
10:24	14.8	3.4
10:25	14.8	3.5
10:26	14.8	3.7
10:27	14.8	3.7
10:28	14.7	3.8
10:29	14.8	3.8
10:30	14.8	3.8
10:31	14.8	3.8
10:32	14.7	3.8
10:33	14.8	3.8
10:34	14.8	3.8
10:35	14.8	3.8
10:36	14.8	3.8
10:37	14.8	3.8
10:38	14.8	3.8
10:39	14.8	3.8
10:40	14.8	3.8
10:41	14.8	3.8
10:42	14.8	3.8
10:43	14.8	3.8
10:44	14.8	3.8
10:45	14.8	3.8
10:46	14.8	3.8
10:47	14.8	3.8
10:48	14.7	3.9
10:49	14.8	3.9
10:50	14.8	3.9
10:51	14.8	3.9
10:52	14.8	3.8
10:53	14.8	3.8
10:54	14.8	3.9
10:55	14.8	3.9
10:56	14.8	3.8
10:57	14.8	3.8
10:58	14.8	3.8
10:59	14.8	3.8
11:00	14.8	3.8

RUN DATA

Number 1

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
11:01	14.8	3.8
11:02	14.8	3.8
11:03	14.8	3.8
11:04	14.8	3.8
11:05	14.9	3.8
11:06	14.8	3.8
11:07	14.9	3.8
11:08	14.9	3.8
11:09	14.9	3.8
11:10	14.9	3.8
11:11	14.8	3.8
11:12	14.9	3.8
11:13	14.9	3.8
11:14	14.9	3.8
11:15	14.9	3.8
11:16	14.9	3.8
11:17	14.9	3.8
11:18	14.8	3.8
11:19	14.9	3.8
11:20	14.9	3.8
11:21	14.9	3.8
11:22	14.9	3.8
11:23	14.9	3.8
11:24	14.9	3.8
11:25	14.9	3.8
11:26	15.0	3.8
11:27	14.9	3.8
11:28	14.9	3.8
11:29	14.9	3.8
11:30	14.9	3.8
11:31	14.9	3.8
11:32	15.0	3.8
11:33	15.0	3.7
11:34	14.9	3.7
11:35	14.9	3.7
11:36	14.9	3.7
11:37	14.9	3.7
11:38	14.9	3.7
11:39	14.9	3.7
11:40	14.9	3.7

RUN DATA

Number 1

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
11:41	14.9	3.7
11:42	14.9	3.7
11:43	14.9	3.7
11:44	14.8	3.8
11:45	14.9	3.8
11:46	14.9	3.8
11:47	14.9	3.8
11:48	14.9	3.8
11:49	14.9	3.8
11:50	14.8	3.8
PORT CHANGE		
12:07	20.8	0.1
12:08	19.7	0.7
12:09	15.8	3.1
12:10	14.8	3.6
12:11	14.7	3.7
12:12	14.7	3.8
12:13	14.7	3.8
12:14	14.7	3.8
12:15	14.7	3.9
12:16	14.7	3.9
12:17	14.7	3.8
12:18	14.7	3.8
12:19	14.7	3.8
12:20	14.7	3.8
12:21	14.7	3.8
12:22	14.7	3.8
12:23	14.7	3.8
12:24	14.7	3.8
12:25	14.7	3.9
12:26	14.8	3.8
12:27	14.7	3.8
12:28	14.7	3.8
12:29	14.7	3.8
12:30	14.7	3.8
12:31	14.7	3.8
12:32	14.7	3.8
12:33	14.7	3.8
12:34	14.7	3.8
12:35	14.7	3.8

RUN DATA

Number 1

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
12:36	14.7	3.9
12:37	14.7	3.9
12:38	14.7	3.9
12:39	14.7	3.8
12:40	14.7	3.9
12:41	14.7	3.9
12:42	14.7	3.9
12:43	14.7	3.9
12:44	14.7	3.9
12:45	14.7	3.9
12:46	14.7	3.9
12:47	14.7	3.9
12:48	14.6	3.8
12:49	14.7	3.9
12:50	14.7	3.8
12:51	14.7	3.8
12:52	14.7	3.8
12:53	14.7	3.8
12:54	14.7	3.8
12:55	14.7	3.8
12:56	14.7	3.8
12:57	14.7	3.8
12:58	14.7	3.8
12:59	14.7	3.8
13:00	14.6	3.8
13:01	14.6	3.8
13:02	14.6	3.8
13:03	14.6	3.8
13:04	14.5	3.8
13:05	14.6	3.8
13:06	14.6	3.8
13:07	14.5	3.8
13:08	14.5	3.8
13:09	14.6	3.8
13:10	14.6	3.8
13:11	14.5	3.8
13:12	14.6	3.8
13:13	14.6	3.8
13:14	14.6	3.8
13:15	14.6	3.8

RUN DATA

Number 1

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
13:16	14.6	3.8
13:17	14.6	3.8
13:18	14.6	3.8
13:19	14.6	3.8
13:20	14.6	3.8
13:21	14.6	3.8
13:22	14.5	3.8
13:23	14.5	3.8
13:24	14.6	3.8
13:25	14.6	3.8
13:26	14.6	3.8
13:27	14.6	3.8
13:28	14.6	3.8
13:29	14.6	3.7
13:30	14.6	3.7
13:31	14.6	3.7
13:32	14.6	3.7
13:33	14.6	3.7
13:34	14.6	3.7
13:35	14.6	3.7
13:36	14.6	3.7
13:37	14.6	3.7
Avgs	**14.9**	**3.7**

RUN SUMMARY

Number 1

Client:	**Chemours**	Project Number:	**15418.002.021.0001**
Location:	**Fayetteville, NC**	Operator:	**SR**
Source:	**TO**	Calibration **1**	Date: **4 Feb 2020**

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

Time: 10:20 to 13:37

Run Averages

14.9	3.7

Pre-run Bias at 09:06

Zero Bias	0.1	0.1
Span Bias	12.0	8.6
Span Gas	12.0	8.9

Post-run Bias at 13:39

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

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

14.9	3.8

BIAS AND CALIBRATION DRIFT

Number 2

Client: **Chemours** | Project Number: **15418.002.021.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **TO** | Calibration **1** | Date: **4 Feb 2020**

Start Time: 13:39

O_2
Method: EPA 3A
Span Conc. 21.3 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.5	Pass
Span	12.2	12.0	-0.2	-0.9	Pass

Calibration Drift

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

*Bias No. 1

CO_2
Method: EPA 3A
Span Conc. 17.1 %

Bias Results

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

Calibration Drift

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

*Bias No. 1

RUN DATA

Number 2

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
14:56	19.5	0.4
14:57	15.3	2.6
14:58	14.7	3.1
14:59	14.7	3.2
15:00	14.6	3.4
15:01	14.7	3.4
15:02	14.7	3.4
15:03	14.7	3.5
15:04	14.7	3.5
15:05	14.8	3.5
15:06	14.7	3.5
15:07	14.7	3.5
15:08	14.7	3.5
15:09	14.7	3.5
15:10	14.7	3.5
15:11	14.7	3.5
15:12	14.6	3.5
15:13	14.6	3.6
15:14	14.7	3.6
15:15	14.7	3.5
15:16	14.6	3.5
15:17	14.6	3.6
15:18	14.7	3.6
15:19	14.7	3.6
15:20	14.7	3.6
15:21	14.7	3.6
15:22	14.7	3.6
15:23	14.6	3.6
15:24	14.6	3.6
15:25	14.7	3.6
15:26	14.6	3.6
15:27	14.6	3.6
15:28	14.6	3.6
15:29	14.6	3.7
15:30	14.6	3.7
15:31	14.6	3.7
15:32	14.7	3.6
15:33	14.6	3.6
15:34	14.6	3.7
15:35	14.7	3.7

RUN DATA

Number 2

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
15:36	14.7	3.6
15:37	14.6	3.6
15:38	14.6	3.7
15:39	14.6	3.6
15:40	14.6	3.6
15:41	14.6	3.6
15:42	14.6	3.6
15:43	14.6	3.6
15:44	14.6	3.6
15:45	14.5	3.6
15:46	14.5	3.7
15:47	14.5	3.7
15:48	14.5	3.7
15:49	14.5	3.7
15:50	14.5	3.7
15:51	14.5	3.7
15:52	14.5	3.7
15:53	14.5	3.7
15:54	14.5	3.7
15:55	14.5	3.7
15:56	14.5	3.7
15:57	14.5	3.7
15:58	14.5	3.8
15:59	14.5	3.8
16:00	14.5	3.8
16:01	14.5	3.8
16:02	14.5	3.8
16:03	14.5	3.8
16:04	14.5	3.7
16:05	14.5	3.7
16:06	14.4	3.7
16:07	14.5	3.8
16:08	14.5	3.7
16:09	14.5	3.8
16:10	14.4	3.8
16:11	14.4	3.8
16:12	14.5	3.8
16:13	14.5	3.8
16:14	14.4	3.8
16:15	14.4	3.8

RUN DATA

Number 2

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
16:16	14.4	3.8
16:17	14.5	3.8
16:18	14.4	3.8
16:19	14.4	3.8
16:20	14.4	3.8
16:21	14.4	3.9
16:22	14.4	3.9
16:23	14.4	3.9
16:24	14.4	3.9
16:25	14.4	3.9
PORT CHANGE		
16:40	20.8	0.1
16:41	16.1	2.8
16:42	14.7	3.6
16:43	14.5	3.8
16:44	14.4	3.9
16:45	14.4	3.9
16:46	14.4	4.0
16:47	14.5	4.0
16:48	14.5	4.0
16:49	14.5	4.0
16:50	14.5	4.0
16:51	14.5	4.0
16:52	14.4	4.0
16:53	14.5	4.0
16:54	14.5	4.0
16:55	14.5	4.0
16:56	14.4	4.0
16:57	14.5	4.1
16:58	14.5	4.1
16:59	14.5	4.1
17:00	14.5	4.1
17:01	14.5	4.1
17:02	14.5	4.1
17:03	14.5	4.1
17:04	14.5	4.1
17:05	14.5	4.1
17:06	14.5	4.1
17:07	14.4	4.1
17:08	14.5	4.1

RUN DATA

Number 2

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
17:09	14.5	4.1
17:10	14.4	4.1
17:11	14.5	4.1
17:12	14.4	4.1
17:13	14.4	4.1
17:14	14.4	4.1
17:15	14.5	4.1
17:16	14.5	4.1
17:17	14.5	4.1
17:18	14.4	4.1
17:19	14.4	4.1
17:20	14.4	4.1
17:21	14.4	4.2
17:22	14.4	4.2
17:23	14.4	4.2
17:24	14.4	4.2
17:25	14.5	4.2
17:26	14.5	4.2
17:27	14.5	4.2
17:28	14.5	4.2
17:29	14.5	4.2
17:30	14.5	4.1
17:31	14.5	4.2
17:32	14.5	4.2
17:33	14.5	4.2
17:34	14.4	4.2
17:35	14.5	4.2
17:36	14.5	4.2
17:37	14.5	4.2
17:38	14.5	4.2
17:39	14.5	4.2
17:40	14.5	4.2
17:41	14.5	4.2
17:42	14.5	4.2
17:43	14.5	4.2
17:44	14.4	4.2
17:45	14.5	4.2
17:46	14.5	4.2
17:47	14.5	4.2
17:48	14.5	4.2

RUN DATA

Number 2

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **4 Feb 2020**

Time	O_2 %	CO_2 %
17:49	14.4	4.2
17:50	14.5	4.2
17:51	14.4	4.2
17:52	14.4	4.2
17:53	14.4	4.2
17:54	14.4	4.2
17:55	14.4	4.2
17:56	14.4	4.2
17:57	14.4	4.2
17:58	14.4	4.2
17:59	14.5	4.2
18:00	14.5	4.2
18:01	14.5	4.2
18:02	14.4	4.2
18:03	14.4	4.2
18:04	14.4	4.2
18:05	14.5	4.2
18:06	14.4	4.2
18:07	14.4	4.2
18:08	14.4	4.3
18:09	14.4	4.3
18:10	14.4	4.3
Avgs	**14.6**	**3.8**

RUN SUMMARY

Number 2

Client:	**Chemours**	Project Number:	**15418.002.021.0001**
Location:	**Fayetteville, NC**	Operator:	**SR**
Source:	**TO**	Calibration **1**	Date: **4 Feb 2020**

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

Time: 14:55 to 18:10

Run Averages

14.6	3.8

Pre-run Bias at 13:39

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

Post-run Bias at 18:37

Zero Bias	0.0	0.0
Span Bias	12.0	8.6
Span Gas	12.0	8.9

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

14.6	4.0

BIAS AND CALIBRATION DRIFT

Number 3

Client: **Chemours** | Project Number: **15418.002.021.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **TO** | Calibration **1** | Date: **4 Feb 2020**

Start Time: 18:37

O_2
Method: EPA 3A
Span Conc. 21.3 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	12.2	12.0	-0.2	-0.9	Pass

Calibration Drift

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

*Bias No. 2

CO_2
Method: EPA 3A
Span Conc. 17.1 %

Bias Results

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

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.0	0.0	0.0	0.0	Pass
Span	8.6	8.6	0.0	0.0	Pass

*Bias No. 2

METHODS AND ANALYZERS

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

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **5 Feb 2020**

olders.A-F\Chemours Fayetteville\15418.002.021 Fayetteville January 2020 Thermal Oxidizer Compliance\Data\CEM

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	**O_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**25.0**
Span Concentration, %	**21.3**

Channel 2

Analyte	**CO_2**
Method	**EPA 3A**, Using Bias
Analyzer Make, Model & Serial No.	**Servomex 4900**
Full-Scale Output, mv	**10000**
Analyzer Range, %	**20.0**
Span Concentration, %	**17.1**

CALIBRATION DATA

Number 1

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

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **5 Feb 2020**

Start Time: 09:34

O_2

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

Calibration Standards

%	**Cylinder ID**
12.0	ALM056900
21.3	ALM047628

Calibration Results

Zero	7 mv
Span, 21.3 %	8122 mv

Curve Coefficients

Slope	**Intercept**
381.0	7

CO_2

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

Calibration Standards

%	**Cylinder ID**
8.9	ALM056900
17.1	ALM047628

Calibration Results

Zero	-1 mv
Span, 17.1 %	8529 mv

Curve Coefficients

Slope	**Intercept**
498.8	-1

CALIBRATION ERROR DATA

Number 1

Client: **Chemours** | Project Number: **15418.002.021.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **TO** | Calibration **1** | Date: **5 Feb 2020**

Start Time: 09:34

O_2
Method: EPA 3A
Span Conc. 21.3 %
Slope 381.0 **Intercept** 7.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
12.0	12.1	0.1	0.5	Pass
21.3	21.3	0.0	0.0	Pass

CO_2
Method: EPA 3A
Span Conc. 17.1 %
Slope 498.8 **Intercept** -1.0

Standard %	Result %	Difference %	Error %	Status
Zero	0.0	0.0	0.0	Pass
8.9	8.8	-0.1	-0.6	Pass
17.1	17.1	0.0	0.0	Pass

BIAS

Number 1

Client: **Chemours** | Project Number: **15418.002.021.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **TO** | Calibration **1** | Date: **5 Feb 2020**

Start Time: 09:38

O_2
Method: EPA 3A
Span Conc. 21.3 %

Bias Results

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

CO_2
Method: EPA 3A
Span Conc. 17.1 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.8	8.7	-0.1	-0.6	Pass

RUN DATA

Number 3

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **5 Feb 2020**

Time	O_2 %	CO_2 %
09:51	21.0	0.0
09:52	17.2	1.6
09:53	14.7	3.5
09:54	14.5	3.7
09:55	14.4	3.9
09:56	14.4	4.1
09:57	14.4	4.1
09:58	14.4	4.2
09:59	14.4	4.2
10:00	14.4	4.2
10:01	14.4	4.2
10:02	14.4	4.2
10:03	14.4	4.2
10:04	14.4	4.2
10:05	14.4	4.2
10:06	14.4	4.2
10:07	14.4	4.1
10:08	14.4	4.2
10:09	14.4	4.2
10:10	14.4	4.1
10:11	14.4	4.1
10:12	14.4	4.1
10:13	14.4	4.1
10:14	14.4	4.0
10:15	14.4	4.0
10:16	14.4	4.0
10:17	14.4	4.0
10:18	14.4	4.0
10:19	14.4	4.0
10:20	14.5	4.0
10:21	14.5	4.0
10:22	14.5	4.0
10:23	14.5	4.0
10:24	14.5	3.9
10:25	14.5	3.9
10:26	14.5	3.9
10:27	14.5	3.9
10:28	14.5	3.9
10:29	14.5	4.0
10:30	14.5	3.9

RUN DATA

Number 3

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **5 Feb 2020**

Time	O_2 %	CO_2 %
10:31	14.5	3.9
10:32	14.5	3.9
10:33	14.5	3.9
10:34	14.5	4.0
10:35	14.5	4.0
10:36	14.5	4.0
10:37	14.5	4.0
10:38	14.5	4.0
10:39	14.5	4.0
10:40	14.5	4.0
10:41	14.6	4.0
10:42	14.5	4.0
10:43	14.5	4.0
10:44	14.5	4.0
10:45	14.5	4.0
10:46	14.5	4.0
10:47	14.5	4.0
10:48	14.6	4.0
10:49	14.6	4.0
10:50	14.6	4.0
10:51	14.5	4.0
10:52	14.6	4.0
10:53	14.6	4.0
10:54	14.6	4.0
10:55	14.6	4.0
10:56	14.6	4.0
10:57	14.6	4.0
10:58	14.6	4.0
10:59	14.6	4.0
11:00	14.6	4.0
11:01	14.6	4.0
11:02	14.6	4.0
11:03	14.6	4.0
11:04	14.6	4.0
11:05	14.6	4.0
11:06	14.6	4.0
11:07	14.6	4.0
11:08	14.6	4.1
11:09	14.6	4.1
11:10	14.6	4.1

RUN DATA

Number 3

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **5 Feb 2020**

Time	O_2 %	CO_2 %
11:11	14.6	4.1
11:12	14.6	4.1
11:13	14.6	4.1
11:14	14.6	4.1
11:15	14.6	4.1
11:16	14.6	4.1
11:17	14.6	4.1
11:18	14.6	4.1
11:19	14.6	4.1
11:20	14.6	4.1
PORT CHANGE		
11:36	21.1	0.0
11:37	20.6	0.3
11:38	15.2	3.6
11:39	14.9	3.6
11:40	14.5	3.7
11:41	14.5	4.0
11:42	14.5	4.0
11:43	14.5	4.0
11:44	14.5	4.0
11:45	14.5	4.0
11:46	14.5	4.0
11:47	14.5	4.0
11:48	14.5	4.0
11:49	14.5	3.9
11:50	14.5	3.9
11:51	14.5	3.9
11:52	14.5	3.9
11:53	14.5	3.9
11:54	14.6	3.9
11:55	14.6	3.9
11:56	14.6	3.9
11:57	14.6	3.9
11:58	14.6	3.9
11:59	14.6	3.9
12:00	14.6	3.9
12:01	14.7	3.9
12:02	14.6	3.9
12:03	14.7	3.9
12:04	14.7	3.9

RUN DATA

Number 3

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **5 Feb 2020**

Time	O_2 %	CO_2 %
12:05	14.7	3.9
12:06	14.7	3.9
12:07	14.7	3.9
12:08	14.7	3.9
12:09	14.7	3.9
12:10	14.6	3.9
12:11	14.7	3.9
12:12	14.7	3.9
12:13	14.7	3.9
12:14	14.7	3.9
12:15	14.7	3.9
12:16	14.7	3.9
12:17	14.6	3.9
12:18	14.7	3.9
12:19	14.7	3.9
12:20	14.6	3.9
12:21	14.6	3.9
12:22	14.7	3.9
12:23	14.7	3.9
12:24	14.7	3.9
12:25	14.7	3.9
12:26	14.6	3.9
12:27	14.7	4.0
12:28	14.7	3.9
12:29	14.6	3.9
12:30	14.7	3.9
12:31	14.7	3.9
12:32	14.6	3.9
12:33	14.6	4.0
12:34	14.7	4.0
12:35	14.7	4.0
12:36	14.6	3.9
12:37	14.6	4.0
12:38	14.6	4.0
12:39	14.6	4.0
12:40	14.6	4.0
12:41	14.6	4.0
12:42	14.6	4.0
12:43	14.6	4.0
12:44	14.6	4.0

RUN DATA

Number 3

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

Calibration **1**

Project Number: **15418.002.021.0001**
Operator: **SR**
Date: **5 Feb 2020**

Time	O_2 %	CO_2 %
12:45	14.6	4.0
12:46	14.6	4.0
12:47	14.6	4.0
12:48	14.6	4.0
12:49	14.6	4.0
12:50	14.6	4.1
12:51	14.6	4.1
12:52	14.6	4.1
12:53	14.6	4.1
12:54	14.6	4.1
12:55	14.6	4.1
12:56	14.6	4.1
12:57	14.6	4.1
12:58	14.6	4.1
12:59	14.6	4.1
13:00	14.6	4.1
13:01	14.6	4.1
13:02	14.6	4.1
13:03	14.6	4.1
13:04	14.6	4.1
13:05	14.6	4.1
13:06	14.5	4.1
Avgs	**14.7**	**3.9**

RUN SUMMARY

Number 3

Client:	**Chemours**	Project Number:	**15418.002.021.0001**
Location:	**Fayetteville, NC**	Operator:	**SR**
Source:	**TO**	Calibration **1**	Date: **5 Feb 2020**

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

Time: 09:50 to 13:06

Run Averages

14.7	3.9

Pre-run Bias at 09:38

Zero Bias	0.1	0.1
Span Bias	12.1	8.7
Span Gas	12.0	8.9

Post-run Bias at 13:08

Zero Bias	0.1	0.1
Span Bias	12.1	8.6
Span Gas	12.0	8.9

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

14.6	4.0

BIAS AND CALIBRATION DRIFT

Number 2

Client: **Chemours** | Project Number: **15418.002.021.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **TO** | Calibration **1** | Date: **5 Feb 2020**

Start Time: 13:08

O_2
Method: EPA 3A
Span Conc. 21.3 %

Bias Results

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

Calibration Drift

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

*Bias No. 1

CO_2
Method: EPA 3A
Span Conc. 17.1 %

Bias Results

Standard Gas	Cal. %	Bias %	Difference %	Error %	Status
Zero	0.0	0.1	0.1	0.6	Pass
Span	8.8	8.6	-0.2	-1.2	Pass

Calibration Drift

Standard Gas	Initial* %	Final %	Difference %	Drift %	Status
Zero	0.1	0.1	0.0	0.0	Pass
Span	8.7	8.6	-0.1	-0.6	Pass

*Bias No. 1

APPENDIX C
LABORATORY ANALYTICAL REPORT

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Job Number: 140-18180-1

Job Description: TO CPT Stack - M0010

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager II
3/2/2020 10:30 AM

Courtney M Adkins, Project Manager II
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
03/02/2020

Table of Contents

Table of Contents

Definitions/Glossary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Stack - M0010

Job ID: 140-18180-1

Qualifiers

LCMS

Qualifier	Qualifier Description
X	Surrogate is outside control limits

Glossary

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

Method Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18180-1
Project/Site: TO CPT Stack - M0010

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Stack - M0010

Job ID: 140-18180-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18180-1	M-2477,2478 TO CPT STACK R1 M0010 FH	Air	02/04/20 00:00	02/06/20 13:12	
140-18180-2	M-2479,2480,2482 TO CPT STACK R1 M0010 BH	Air	02/04/20 00:00	02/06/20 13:12	
140-18180-3	M-2481 TO CPT STACK R1 M0010 IMPINGERS 1,2&3 COND	Air	02/04/20 00:00	02/06/20 13:12	
140-18180-4	M-2483 TO CPT STACK R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	02/04/20 00:00	02/06/20 13:12	
140-18180-5	M-2484,2485 TO CPT STACK R2 M0010 FH	Air	02/04/20 00:00	02/06/20 13:12	
140-18180-6	M-2486,2487,2489 TO CPT STACK R2 M0010 BH	Air	02/04/20 00:00	02/06/20 13:12	
140-18180-7	M-2488 TO CPT STACK R2 M0010 IMPINGERS 1,2&3 COND	Air	02/04/20 00:00	02/06/20 13:12	
140-18180-8	M-2490 TO CPT STACK R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	02/04/20 00:00	02/06/20 13:12	
140-18180-9	M-2491,2492 TO CPT STACK R3 M0010 FH	Air	02/05/20 00:00	02/06/20 13:12	
140-18180-10	M-2493,2494,2496 TO CPT STACK R3 M0010 BH	Air	02/05/20 00:00	02/06/20 13:12	
140-18180-11	M-2495 TO CPT STACK R3 M0010 IMPINGERS 1,2&3 COND	Air	02/05/20 00:00	02/06/20 13:12	
140-18180-12	M-2497 TO CPT STACK R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	02/05/20 00:00	02/06/20 13:12	

Job Narrative
140-18180-1

Sample Receipt

The samples were received on 2/6/2020 7:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.6º C

Quality Control and Data Interpretation

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

Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

LCMS

Method 537 (modified): Results for the following samples were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

M-2488 TO CPT STACK R2 M0010 IMPINGERS 1,2&3 COND (140-18180-7)
M-2477,2478 TO CPT STACK R1 M0010 FH (140-18180-1)
M-2484,2485 TO CPT STACK R2 M0010 FH (140-18180-5)
M-2491,2492 TO CPT STACK R3 M0010 FH (140-18180-9)
M-2486,2487,2489 TO CPT STACK R2 M0010 BH (140-18180-6)

Method 537 (modified): Surrogate recovery for 13C8 PFOA and 13C8 PFOS, in the following samples were below control limits: M-2479,2480,2482 TO CPT STACK R1 M0010 BH (140-18180-2), M-2486,2487,2489 TO CPT STACK R2 M0010 BH (140-18180-6), M-2493,2494,2496 TO CPT STACK R3 M0010 BH (140-18180-10). The field surrogates are not used to quantitate the target analytes.

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

Notes

Breakthrough from the Modified Method 0010 Sampling Train for PFAS compounds will be measured by the percentage (%) concentration of a specific PFAS target analyte determined to be present in the Breakthrough XAD-2 resin module of a test run. If the concentration of a specific PFAS compound is ≤30% of the sum of the concentrations determined for the other three (3) fractions of the sampling train, then sampling breakthrough is determined not to have occurred. Also, no breakthrough will be determined to have occurred if < 250 µg of a target analyte is collected on all fractions of a sampling train. Breakthrough the sampling train implies that sample loss through the train has occurred and results in a negative bias to the sample results.

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Stack - M0010

Job ID: 140-18180-1

LCMS

Prep Batch: 356142

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-2	M-2479,2480,2482 TO CPT STACK R1 M0010 B	Total/NA	Air	None	
140-18180-4	M-2483 TO CPT STACK R1 M0010 BREAKTHR(	Total/NA	Air	None	
140-18180-6	M-2486,2487,2489 TO CPT STACK R2 M0010 B	Total/NA	Air	None	
140-18180-8	M-2490 TO CPT STACK R2 M0010 BREAKTHR(	Total/NA	Air	None	
140-18180-10	M-2493,2494,2496 TO CPT STACK R3 M0010 B	Total/NA	Air	None	
140-18180-12	M-2497 TO CPT STACK R3 M0010 BREAKTHR(	Total/NA	Air	None	
MB 320-356142/1-C	Method Blank	Total/NA	Air	None	
LCS 320-356142/2-C	Lab Control Sample	Total/NA	Air	None	
LCSD 320-356142/3-C	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 356291

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-3	M-2481 TO CPT STACK R1 M0010 IMPINGERS	Total/NA	Air	None	
140-18180-7	M-2488 TO CPT STACK R2 M0010 IMPINGERS	Total/NA	Air	None	
140-18180-11	M-2495 TO CPT STACK R3 M0010 IMPINGERS	Total/NA	Air	None	
MB 320-356291/1-B	Method Blank	Total/NA	Air	None	
LCS 320-356291/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 320-356291/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 356471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-1	M-2477,2478 TO CPT STACK R1 M0010 FH	Total/NA	Air	None	
140-18180-5	M-2484,2485 TO CPT STACK R2 M0010 FH	Total/NA	Air	None	
140-18180-9	M-2491,2492 TO CPT STACK R3 M0010 FH	Total/NA	Air	None	
MB 320-356471/1-D	Method Blank	Total/NA	Air	None	
LCS 320-356471/2-D	Lab Control Sample	Total/NA	Air	None	
LCSD 320-356471/3-D	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 356472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-3	M-2481 TO CPT STACK R1 M0010 IMPINGERS	Total/NA	Air	Preparation	356291
140-18180-7	M-2488 TO CPT STACK R2 M0010 IMPINGERS	Total/NA	Air	Preparation	356291
140-18180-11	M-2495 TO CPT STACK R3 M0010 IMPINGERS	Total/NA	Air	Preparation	356291
MB 320-356291/1-B	Method Blank	Total/NA	Air	Preparation	356291
LCS 320-356291/2-B	Lab Control Sample	Total/NA	Air	Preparation	356291
LCSD 320-356291/3-B	Lab Control Sample Dup	Total/NA	Air	Preparation	356291

Cleanup Batch: 356775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-1	M-2477,2478 TO CPT STACK R1 M0010 FH	Total/NA	Air	Split	356471
140-18180-5	M-2484,2485 TO CPT STACK R2 M0010 FH	Total/NA	Air	Split	356471
140-18180-9	M-2491,2492 TO CPT STACK R3 M0010 FH	Total/NA	Air	Split	356471
MB 320-356471/1-D	Method Blank	Total/NA	Air	Split	356471
LCS 320-356471/2-D	Lab Control Sample	Total/NA	Air	Split	356471
LCSD 320-356471/3-D	Lab Control Sample Dup	Total/NA	Air	Split	356471

Cleanup Batch: 356776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-2	M-2479,2480,2482 TO CPT STACK R1 M0010 B	Total/NA	Air	Split	356142
140-18180-4	M-2483 TO CPT STACK R1 M0010 BREAKTHR(	Total/NA	Air	Split	356142
140-18180-6	M-2486,2487,2489 TO CPT STACK R2 M0010 B	Total/NA	Air	Split	356142

LCMS (Continued)

Cleanup Batch: 356776 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-8	M-2490 TO CPT STACK R2 M0010 BREAKTHR(	Total/NA	Air	Split	356142
140-18180-10	M-2493,2494,2496 TO CPT STACK R3 M0010 B	Total/NA	Air	Split	356142
140-18180-12	M-2497 TO CPT STACK R3 M0010 BREAKTHR(	Total/NA	Air	Split	356142
MB 320-356142/1-C	Method Blank	Total/NA	Air	Split	356142
LCS 320-356142/2-C	Lab Control Sample	Total/NA	Air	Split	356142
LCSD 320-356142/3-C	Lab Control Sample Dup	Total/NA	Air	Split	356142

Cleanup Batch: 357407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-2	M-2479,2480,2482 TO CPT STACK R1 M0010 B	Total/NA	Air	Preparation	356776
140-18180-4	M-2483 TO CPT STACK R1 M0010 BREAKTHR(	Total/NA	Air	Preparation	356776
140-18180-6	M-2486,2487,2489 TO CPT STACK R2 M0010 B	Total/NA	Air	Preparation	356776
140-18180-8	M-2490 TO CPT STACK R2 M0010 BREAKTHR(	Total/NA	Air	Preparation	356776
140-18180-10	M-2493,2494,2496 TO CPT STACK R3 M0010 B	Total/NA	Air	Preparation	356776
140-18180-12	M-2497 TO CPT STACK R3 M0010 BREAKTHR(	Total/NA	Air	Preparation	356776
MB 320-356142/1-C	Method Blank	Total/NA	Air	Preparation	356776
LCS 320-356142/2-C	Lab Control Sample	Total/NA	Air	Preparation	356776
LCSD 320-356142/3-C	Lab Control Sample Dup	Total/NA	Air	Preparation	356776

Cleanup Batch: 357408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-1	M-2477,2478 TO CPT STACK R1 M0010 FH	Total/NA	Air	Preparation	356775
140-18180-5	M-2484,2485 TO CPT STACK R2 M0010 FH	Total/NA	Air	Preparation	356775
140-18180-9	M-2491,2492 TO CPT STACK R3 M0010 FH	Total/NA	Air	Preparation	356775
MB 320-356471/1-D	Method Blank	Total/NA	Air	Preparation	356775
LCS 320-356471/2-D	Lab Control Sample	Total/NA	Air	Preparation	356775
LCSD 320-356471/3-D	Lab Control Sample Dup	Total/NA	Air	Preparation	356775

Analysis Batch: 357729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-3	M-2481 TO CPT STACK R1 M0010 IMPINGERS	Total/NA	Air	537 (modified)	356472
MB 320-356291/1-B	Method Blank	Total/NA	Air	537 (modified)	356472
LCS 320-356291/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	356472
LCSD 320-356291/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	356472

Analysis Batch: 357832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-7	M-2488 TO CPT STACK R2 M0010 IMPINGERS	Total/NA	Air	537 (modified)	356472
140-18180-11	M-2495 TO CPT STACK R3 M0010 IMPINGERS	Total/NA	Air	537 (modified)	356472

Analysis Batch: 358236

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-356471/1-D	Method Blank	Total/NA	Air	537 (modified)	357408
LCS 320-356471/2-D	Lab Control Sample	Total/NA	Air	537 (modified)	357408
LCSD 320-356471/3-D	Lab Control Sample Dup	Total/NA	Air	537 (modified)	357408

Analysis Batch: 358244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-2	M-2479,2480,2482 TO CPT STACK R1 M0010 B	Total/NA	Air	537 (modified)	357407
140-18180-4	M-2483 TO CPT STACK R1 M0010 BREAKTHR(	Total/NA	Air	537 (modified)	357407
140-18180-8	M-2490 TO CPT STACK R2 M0010 BREAKTHR(	Total/NA	Air	537 (modified)	357407

LCMS (Continued)

Analysis Batch: 358244 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-10	M-2493,2494,2496 TO CPT STACK R3 M0010 B	Total/NA	Air	537 (modified)	357407
140-18180-12	M-2497 TO CPT STACK R3 M0010 BREAKTHR(	Total/NA	Air	537 (modified)	357407
MB 320-356142/1-C	Method Blank	Total/NA	Air	537 (modified)	357407
LCS 320-356142/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	357407
LCSD 320-356142/3-C	Lab Control Sample Dup	Total/NA	Air	537 (modified)	357407

Analysis Batch: 358488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-1	M-2477,2478 TO CPT STACK R1 M0010 FH	Total/NA	Air	537 (modified)	357408
140-18180-5	M-2484,2485 TO CPT STACK R2 M0010 FH	Total/NA	Air	537 (modified)	357408
140-18180-9	M-2491,2492 TO CPT STACK R3 M0010 FH	Total/NA	Air	537 (modified)	357408

Analysis Batch: 358492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18180-6	M-2486,2487,2489 TO CPT STACK R2 M0010 B	Total/NA	Air	537 (modified)	357407

Client Sample ID: M-2477,2478 TO CPT STACK R1 M0010 FH

Lab Sample ID: 140-18180-1

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 13:12
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	738		59.4	29.9	ng/Sample		02/11/20 06:00	02/19/20 11:37	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*97*		*25 - 150*	*02/11/20 06:00*	*02/19/20 11:37*	*20*

Client Sample ID: M-2479,2480,2482 TO CPT STACK R1 M0010 BH

Lab Sample ID: 140-18180-2

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 13:12
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	120		1.60	0.814	ng/Sample		02/10/20 12:15	02/18/20 14:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*57*		*25 - 150*	*02/10/20 12:15*	*02/18/20 14:28*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*42*	*X*	*50 - 150*	*02/10/20 12:15*	*02/18/20 14:28*	*1*
13C8 PFOS	*37*	*X*	*50 - 150*	*02/10/20 12:15*	*02/18/20 14:28*	*1*

Client Sample ID: M-2481 TO CPT STACK R1 M0010 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-18180-3

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 13:12
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	71.5		12.0	5.98	ng/Sample		02/11/20 05:30	02/14/20 17:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*25 - 150*	*02/11/20 05:30*	*02/14/20 17:10*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.1*	*X*	*50 - 150*	*02/11/20 05:30*	*02/14/20 17:10*	*1*
13C8 PFOS	*0*	*X*	*50 - 150*	*02/11/20 05:30*	*02/14/20 17:10*	*1*

Client Sample ID: M-2483 TO CPT STACK R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-18180-4

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 13:12
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	5.33		1.60	0.814	ng/Sample		02/10/20 12:15	02/18/20 14:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*53*		*25 - 150*	*02/10/20 12:15*	*02/18/20 14:38*	*1*

Client Sample ID: M-2483 TO CPT STACK R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-18180-4

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.01	X	50 - 150	02/10/20 12:15	02/18/20 14:38	1
13C8 PFOS	0	X	50 - 150	02/10/20 12:15	02/18/20 14:38	1

Client Sample ID: M-2484,2485 TO CPT STACK R2 M0010 FH

Lab Sample ID: 140-18180-5

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	324		14.8	7.47	ng/Sample		02/11/20 06:00	02/19/20 11:27	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	87		25 - 150	02/11/20 06:00	02/19/20 11:27	5

Client Sample ID: M-2486,2487,2489 TO CPT STACK R2 M0010 BH

Lab Sample ID: 140-18180-6

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2200		160	81.4	ng/Sample		02/10/20 12:15	02/19/20 12:27	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	52		25 - 150	02/10/20 12:15	02/19/20 12:27	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	68		50 - 150	02/10/20 12:15	02/19/20 12:27	100
13C8 PFOS	59		50 - 150	02/10/20 12:15	02/19/20 12:27	100

Client Sample ID: M-2488 TO CPT STACK R2 M0010 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-18180-7

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	1700		120	59.8	ng/Sample		02/11/20 05:30	02/16/20 21:50	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	83		25 - 150	02/11/20 05:30	02/16/20 21:50	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.1	X	50 - 150	02/11/20 05:30	02/16/20 21:50	10
13C8 PFOS	0	X	50 - 150	02/11/20 05:30	02/16/20 21:50	10

Client Sample ID: M-2490 TO CPT STACK R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-18180-8

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	33.9		1.60	0.814	ng/Sample		02/10/20 12:15	02/18/20 14:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*87*		*25 - 150*	*02/10/20 12:15*	*02/18/20 14:58*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.02*	*X*	*50 - 150*	*02/10/20 12:15*	*02/18/20 14:58*	*1*
13C8 PFOS	*0*	*X*	*50 - 150*	*02/10/20 12:15*	*02/18/20 14:58*	*1*

Client Sample ID: M-2491,2492 TO CPT STACK R3 M0010 FH

Lab Sample ID: 140-18180-9

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	938		59.4	29.9	ng/Sample		02/11/20 06:00	02/19/20 11:47	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*84*		*25 - 150*	*02/11/20 06:00*	*02/19/20 11:47*	*20*

Client Sample ID: M-2493,2494,2496 TO CPT STACK R3 M0010 BH

Lab Sample ID: 140-18180-10

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	121		1.60	0.814	ng/Sample		02/10/20 12:15	02/18/20 15:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*41*		*25 - 150*	*02/10/20 12:15*	*02/18/20 15:08*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*36*	*X*	*50 - 150*	*02/10/20 12:15*	*02/18/20 15:08*	*1*
13C8 PFOS	*30*	*X*	*50 - 150*	*02/10/20 12:15*	*02/18/20 15:08*	*1*

Client Sample ID: M-2495 TO CPT STACK R3 M0010 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-18180-11

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	264		24.0	12.0	ng/Sample		02/11/20 05:30	02/16/20 22:00	2

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*92*		*25 - 150*	*02/11/20 05:30*	*02/16/20 22:00*	*2*

Client Sample ID: M-2495 TO CPT STACK R3 M0010 IMPINGERS 1,2&3 COND

Lab Sample ID: 140-18180-11

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.05	X	50 - 150	02/11/20 05:30	02/16/20 22:00	2
13C8 PFOS	0	X	50 - 150	02/11/20 05:30	02/16/20 22:00	2

Client Sample ID: M-2497 TO CPT STACK R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-18180-12

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 13:12
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	5.90		1.60	0.814	ng/Sample		02/10/20 12:15	02/18/20 15:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	78		25 - 150	02/10/20 12:15	02/18/20 15:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.008	X	50 - 150	02/10/20 12:15	02/18/20 15:18	1
13C8 PFOS	0	X	50 - 150	02/10/20 12:15	02/18/20 15:18	1

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Stack - M0010

Job ID: 140-18180-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	3.00	1.51	ng/Sample
HFPO-DA	1.60	0.814	ng/Sample
HFPO-DA	12.0	5.98	ng/Sample

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ANALYTICAL REPORT

Job Number: 140-18182-1

Job Description: TO CPT Stack - M0010 QC Samples

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager II
3/2/2020 10:36 AM

Courtney M Adkins, Project Manager II
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
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03/02/2020

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Definitions/Glossary

Client: The Chemours Company FC, LLC
Job ID: 140-18182-1
Project/Site: TO CPT Stack - M0010 QC Samples

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits

Glossary

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

Method Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18182-1
Project/Site: TO CPT Stack - M0010 QC Samples

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18182-1
Project/Site: TO CPT Stack - M0010 QC Samples

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18182-1	X-2477,2478 TO CPT STACK QC M0010 FH BT	Air	02/05/20 00:00	02/06/20 07:00	
140-18182-2	X-2479,2480,2482 TO CPT STACK QC M0010 BH BT	Air	02/05/20 00:00	02/06/20 07:00	
140-18182-3	X-2481 TO CPT STACK QC M0010 IMPINGERS 1,2&3 COND BT	Air	02/05/20 00:00	02/06/20 07:00	
140-18182-4	X-2483 TO CPT STACK QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT	Air	02/05/20 00:00	02/06/20 07:00	
140-18182-5	X-2484 TO CPT STACK QC M0010 MEOH RB	Air	02/05/20 00:00	02/06/20 07:00	
140-18182-6	X-2485 TO CPT STACK QC M0010 DI WATER RB	Air	02/05/20 00:00	02/06/20 07:00	
140-18182-7	X-2486 TO CPT STACK QC M0010 PROOF BLANK	Air	02/05/20 00:00	02/06/20 07:00	
140-18182-8	A-6979 MEDIA CHECK XAD	Air	02/05/20 00:00	02/06/20 07:00	
140-18182-9	A-6980 MEDIA CHECK FILTER	Air	02/05/20 00:00	02/06/20 07:00	

Job Narrative
140-18182-1

Sample Receipt

The samples were received on February 6, 2020 at 7:00 AM in good condition and properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.7º C.

Quality Control and Data Interpretation

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

Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

LCMS

Method 537 (modified): Results for samples X-2479,2480,2482 TO CPT STACK QC M0010 BH BT (140-18182-2) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method 537 (modified): Surrogate recovery for 13C8 PFOA and 13C8 PFOS, in the following sample were below control limits: X-2479,2480,2482 TO CPT STACK QC M0010 BH BT (140-18182-2). The field surrogates are not used to quantitate the target analytes.

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

QC Association Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18182-1
Project/Site: TO CPT Stack - M0010 QC Samples

LCMS

Prep Batch: 356142

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-2	X-2479,2480,2482 TO CPT STACK QC M0010 B	Total/NA	Air	None	
140-18182-4	X-2483 TO CPT STACK QC M0010 BREAKTHR	Total/NA	Air	None	
140-18182-5	X-2484 TO CPT STACK QC M0010 MEOH RB	Total/NA	Air	None	
140-18182-7	X-2486 TO CPT STACK QC M0010 PROOF BLA	Total/NA	Air	None	
140-18182-8	A-6979 MEDIA CHECK XAD	Total/NA	Air	None	
MB 320-356142/1-C	Method Blank	Total/NA	Air	None	
LCS 320-356142/2-C	Lab Control Sample	Total/NA	Air	None	
LCSD 320-356142/3-C	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 356291

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-3	X-2481 TO CPT STACK QC M0010 IMPINGERS	Total/NA	Air	None	
140-18182-6	X-2485 TO CPT STACK QC M0010 DI WATER F	Total/NA	Air	None	
MB 320-356291/1-B	Method Blank	Total/NA	Air	None	
LCS 320-356291/2-B	Lab Control Sample	Total/NA	Air	None	
LCSD 320-356291/3-B	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 356471

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-1	X-2477,2478 TO CPT STACK QC M0010 FH BT	Total/NA	Air	None	
140-18182-9	A-6980 MEDIA CHECK FILTER	Total/NA	Air	None	
MB 320-356471/1-D	Method Blank	Total/NA	Air	None	
LCS 320-356471/2-D	Lab Control Sample	Total/NA	Air	None	
LCSD 320-356471/3-D	Lab Control Sample Dup	Total/NA	Air	None	

Cleanup Batch: 356472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-3	X-2481 TO CPT STACK QC M0010 IMPINGERS	Total/NA	Air	Preparation	356291
140-18182-6	X-2485 TO CPT STACK QC M0010 DI WATER F	Total/NA	Air	Preparation	356291
MB 320-356291/1-B	Method Blank	Total/NA	Air	Preparation	356291
LCS 320-356291/2-B	Lab Control Sample	Total/NA	Air	Preparation	356291
LCSD 320-356291/3-B	Lab Control Sample Dup	Total/NA	Air	Preparation	356291

Cleanup Batch: 356775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-1	X-2477,2478 TO CPT STACK QC M0010 FH BT	Total/NA	Air	Split	356471
140-18182-9	A-6980 MEDIA CHECK FILTER	Total/NA	Air	Split	356471
MB 320-356471/1-D	Method Blank	Total/NA	Air	Split	356471
LCS 320-356471/2-D	Lab Control Sample	Total/NA	Air	Split	356471
LCSD 320-356471/3-D	Lab Control Sample Dup	Total/NA	Air	Split	356471

Cleanup Batch: 356776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-2	X-2479,2480,2482 TO CPT STACK QC M0010 B	Total/NA	Air	Split	356142
140-18182-4	X-2483 TO CPT STACK QC M0010 BREAKTHR	Total/NA	Air	Split	356142
140-18182-5	X-2484 TO CPT STACK QC M0010 MEOH RB	Total/NA	Air	Split	356142
140-18182-7	X-2486 TO CPT STACK QC M0010 PROOF BLA	Total/NA	Air	Split	356142
140-18182-8	A-6979 MEDIA CHECK XAD	Total/NA	Air	Split	356142
MB 320-356142/1-C	Method Blank	Total/NA	Air	Split	356142
LCS 320-356142/2-C	Lab Control Sample	Total/NA	Air	Split	356142
LCSD 320-356142/3-C	Lab Control Sample Dup	Total/NA	Air	Split	356142

QC Association Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18182-1
Project/Site: TO CPT Stack - M0010 QC Samples

LCMS

Cleanup Batch: 357407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-2	X-2479,2480,2482 TO CPT STACK QC M0010 B	Total/NA	Air	Preparation	356776
140-18182-4	X-2483 TO CPT STACK QC M0010 BREAKTHR	Total/NA	Air	Preparation	356776
140-18182-5	X-2484 TO CPT STACK QC M0010 MEOH RB	Total/NA	Air	Preparation	356776
140-18182-7	X-2486 TO CPT STACK QC M0010 PROOF BLA	Total/NA	Air	Preparation	356776
140-18182-8	A-6979 MEDIA CHECK XAD	Total/NA	Air	Preparation	356776
MB 320-356142/1-C	Method Blank	Total/NA	Air	Preparation	356776
LCS 320-356142/2-C	Lab Control Sample	Total/NA	Air	Preparation	356776
LCSD 320-356142/3-C	Lab Control Sample Dup	Total/NA	Air	Preparation	356776

Cleanup Batch: 357408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-1	X-2477,2478 TO CPT STACK QC M0010 FH BT	Total/NA	Air	Preparation	356775
140-18182-9	A-6980 MEDIA CHECK FILTER	Total/NA	Air	Preparation	356775
MB 320-356471/1-D	Method Blank	Total/NA	Air	Preparation	356775
LCS 320-356471/2-D	Lab Control Sample	Total/NA	Air	Preparation	356775
LCSD 320-356471/3-D	Lab Control Sample Dup	Total/NA	Air	Preparation	356775

Analysis Batch: 357729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-3	X-2481 TO CPT STACK QC M0010 IMPINGERS	Total/NA	Air	537 (modified)	356472
140-18182-6	X-2485 TO CPT STACK QC M0010 DI WATER F	Total/NA	Air	537 (modified)	356472
MB 320-356291/1-B	Method Blank	Total/NA	Air	537 (modified)	356472
LCS 320-356291/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	356472
LCSD 320-356291/3-B	Lab Control Sample Dup	Total/NA	Air	537 (modified)	356472

Analysis Batch: 358236

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-1	X-2477,2478 TO CPT STACK QC M0010 FH BT	Total/NA	Air	537 (modified)	357408
140-18182-9	A-6980 MEDIA CHECK FILTER	Total/NA	Air	537 (modified)	357408
MB 320-356471/1-D	Method Blank	Total/NA	Air	537 (modified)	357408
LCS 320-356471/2-D	Lab Control Sample	Total/NA	Air	537 (modified)	357408
LCSD 320-356471/3-D	Lab Control Sample Dup	Total/NA	Air	537 (modified)	357408

Analysis Batch: 358244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-4	X-2483 TO CPT STACK QC M0010 BREAKTHR	Total/NA	Air	537 (modified)	357407
140-18182-5	X-2484 TO CPT STACK QC M0010 MEOH RB	Total/NA	Air	537 (modified)	357407
140-18182-7	X-2486 TO CPT STACK QC M0010 PROOF BLA	Total/NA	Air	537 (modified)	357407
140-18182-8	A-6979 MEDIA CHECK XAD	Total/NA	Air	537 (modified)	357407
MB 320-356142/1-C	Method Blank	Total/NA	Air	537 (modified)	357407
LCS 320-356142/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	357407
LCSD 320-356142/3-C	Lab Control Sample Dup	Total/NA	Air	537 (modified)	357407

Analysis Batch: 358492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18182-2	X-2479,2480,2482 TO CPT STACK QC M0010 B	Total/NA	Air	537 (modified)	357407

Client Sample ID: X-2477,2478 TO CPT STACK QC M0010 FH BT

Lab Sample ID: 140-18182-1

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	42.2		3.00	1.51	ng/Sample		02/11/20 06:00	02/18/20 13:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*76*		*25 - 150*	*02/11/20 06:00*	*02/18/20 13:08*	*1*

Client Sample ID: X-2479,2480,2482 TO CPT STACK QC M0010 BH BT

Lab Sample ID: 140-18182-2

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	519		16.0	8.14	ng/Sample		02/10/20 12:15	02/19/20 12:17	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*62*		*25 - 150*	*02/10/20 12:15*	*02/19/20 12:17*	*10*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*50*		*50 - 150*	*02/10/20 12:15*	*02/19/20 12:17*	*10*
13C8 PFOS	*50*		*50 - 150*	*02/10/20 12:15*	*02/19/20 12:17*	*10*

Client Sample ID: X-2481 TO CPT STACK QC M0010 IMPINGERS 1,2&3 COND BT

Lab Sample ID: 140-18182-3

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	10.3	J	12.0	5.98	ng/Sample		02/11/20 05:30	02/14/20 17:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*107*		*25 - 150*	*02/11/20 05:30*	*02/14/20 17:40*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.01*	*X*	*50 - 150*	*02/11/20 05:30*	*02/14/20 17:40*	*1*
13C8 PFOS	*0*	*X*	*50 - 150*	*02/11/20 05:30*	*02/14/20 17:40*	*1*

Client Sample ID: X-2483 TO CPT STACK QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT

Lab Sample ID: 140-18182-4

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	15.2		1.60	0.814	ng/Sample		02/10/20 12:15	02/18/20 15:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*79*		*25 - 150*	*02/10/20 12:15*	*02/18/20 15:58*	*1*

Client Sample ID: X-2483 TO CPT STACK QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT

Lab Sample ID: 140-18182-4

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Air Train

Matrix: Air

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.01	X	50 - 150	02/10/20 12:15	02/18/20 15:58	1
13C8 PFOS	0	X	50 - 150	02/10/20 12:15	02/18/20 15:58	1

Client Sample ID: X-2484 TO CPT STACK QC M0010 MEOH RB

Lab Sample ID: 140-18182-5

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		1.60	0.814	ng/Sample		02/10/20 12:15	02/18/20 16:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	76		25 - 150	02/10/20 12:15	02/18/20 16:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA				02/10/20 12:15	02/18/20 16:08	1
13C8 PFOS				02/10/20 12:15	02/18/20 16:08	1

Client Sample ID: X-2485 TO CPT STACK QC M0010 DI WATER RB

Lab Sample ID: 140-18182-6

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		12.0	5.98	ng/Sample		02/11/20 05:30	02/14/20 18:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	114		25 - 150	02/11/20 05:30	02/14/20 18:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA				02/11/20 05:30	02/14/20 18:10	1
13C8 PFOS				02/11/20 05:30	02/14/20 18:10	1

Client Sample ID: X-2486 TO CPT STACK QC M0010 PROOF BLANK

Lab Sample ID: 140-18182-7

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**196**		1.60	0.814	ng/Sample		02/10/20 12:15	02/18/20 16:18	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	81		25 - 150	02/10/20 12:15	02/18/20 16:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA				02/10/20 12:15	02/18/20 16:18	1
13C8 PFOS				02/10/20 12:15	02/18/20 16:18	1

Client Sample ID: A-6979 MEDIA CHECK XAD
Lab Sample ID: 140-18182-8

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		1.60	0.814	ng/Sample		02/10/20 12:15	02/18/20 16:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*79*		*25 - 150*	*02/10/20 12:15*	*02/18/20 16:28*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA				*02/10/20 12:15*	*02/18/20 16:28*	*1*
13C8 PFOS				*02/10/20 12:15*	*02/18/20 16:28*	*1*

Client Sample ID: A-6980 MEDIA CHECK FILTER
Lab Sample ID: 140-18182-9

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		3.00	1.51	ng/Sample		02/11/20 06:00	02/18/20 13:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*85*		*25 - 150*	*02/11/20 06:00*	*02/18/20 13:18*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Job ID: 140-18182-1
Project/Site: TO CPT Stack - M0010 QC Samples

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
HFPO-DA	3.00	1.51	ng/Sample
HFPO-DA	1.60	0.814	ng/Sample
HFPO-DA	12.0	5.98	ng/Sample

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ANALYTICAL REPORT

Job Number: 140-18167-1

Job Description: TO CPT Stack - MM18

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager II
3/12/2020 4:12 PM

Courtney M Adkins, Project Manager II
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
03/12/2020
Revision: 1

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Qualifiers

GC/MS VOA

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

Glossary

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Stack - MM18

Job ID: 140-18167-1

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

Protocol References:

None = None

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

Laboratory References:

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

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Stack - MM18

Job ID: 140-18167-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18167-1	D-2764 R1 CPT TO STACK-IMP #1/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-2	D-2765 R1 CPT TO STACK-IMP #2/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-4	D-2766 R1 CPT TO STACK-IMP #3/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-5	D-2767 R1 CPT TO STACK-IMP #4/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-6	D-2768 R1 CPT TO STACK-IMP #5/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-7	D-2769 R1 CPT TO STACK-IMP #6/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-8	D-2782 R1 CPT TO STACK-IMP #7/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-9	D-2770 R2 CPT TO STACK-IMP #1/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-10	D-2771 R2 CPT TO STACK-IMP #2/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-11	D-2772 R2 CPT TO STACK-IMP #3/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-12	D-2773 R2 CPT TO STACK-IMP #4/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-13	D-2774 R2 CPT TO STACK-IMP #5/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-14	D-2775 R2 CPT TO STACK-IMP #6/MEOH RINS	Air	02/04/20 00:00	02/06/20 07:30	
140-18167-15	D-2783 R2 CPT TO STACK-IMP #7/MEOH RINS	Air	02/05/20 00:00	02/06/20 07:30	
140-18167-16	D-2776 R3 CPT TO STACK-IMP #1/MEOH RINS	Air	02/05/20 00:00	02/06/20 07:30	
140-18167-17	D-2777 R3 CPT TO STACK-IMP #2/MEOH RINS	Air	02/05/20 00:00	02/06/20 07:30	
140-18167-18	D-2778 R3 CPT TO STACK-IMP #3/MEOH RINS	Air	02/05/20 00:00	02/06/20 07:30	
140-18167-19	D-2779 R3 CPT TO STACK-IMP #4/MEOH RINS	Air	02/05/20 00:00	02/06/20 07:30	
140-18167-20	D-2780 R3 CPT TO STACK-IMP #5/MEOH RINS	Air	02/05/20 00:00	02/06/20 07:30	
140-18167-21	D-2781 R3 CPT TO STACK-IMP #6/MEOH RINS	Air	02/05/20 00:00	02/06/20 07:30	
140-18167-22	D-2784 R3 CPT TO STACK-IMP #7/MEOH RINS	Air	02/05/20 00:00	02/06/20 07:30	

Job Narrative
140-18167-1

Sample Receipt

The samples were received on February 6, 2020 at 7:00 AM in good condition and properly preserved. The temperature of the cooler at receipt was 0.7º C.

Quality Control and Data Interpretation

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

GC/MS VOA

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

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

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

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL

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

GC/MS VOA

Prep Batch: 37297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18167-1	D-2764 R1 CPT TO STACK-IMP #1/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-2	D-2765 R1 CPT TO STACK-IMP #2/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-4	D-2766 R1 CPT TO STACK-IMP #3/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-5	D-2767 R1 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	MeOH Prep	
MB 140-37297/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-37297/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-18167-5 MS	D-2767 R1 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-5 MSD	D-2767 R1 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	MeOH Prep	

Analysis Batch: 37299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18167-1	D-2764 R1 CPT TO STACK-IMP #1/MEOH RINS	Total/NA	Air	8260B SIM	37297
140-18167-2	D-2765 R1 CPT TO STACK-IMP #2/MEOH RINS	Total/NA	Air	8260B SIM	37297
140-18167-4	D-2766 R1 CPT TO STACK-IMP #3/MEOH RINS	Total/NA	Air	8260B SIM	37297
140-18167-5	D-2767 R1 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	8260B SIM	37297
MB 140-37297/2-A	Method Blank	Total/NA	Air	8260B SIM	37297
LCS 140-37297/1-A	Lab Control Sample	Total/NA	Air	8260B SIM	37297
140-18167-5 MS	D-2767 R1 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	8260B SIM	37297
140-18167-5 MSD	D-2767 R1 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	8260B SIM	37297

Prep Batch: 37306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18167-6	D-2768 R1 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-7	D-2769 R1 CPT TO STACK-IMP #6/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-8	D-2782 R1 CPT TO STACK-IMP #7/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-9	D-2770 R2 CPT TO STACK-IMP #1/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-10	D-2771 R2 CPT TO STACK-IMP #2/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-11	D-2772 R2 CPT TO STACK-IMP #3/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-12	D-2773 R2 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-13	D-2774 R2 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-14	D-2775 R2 CPT TO STACK-IMP #6/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-14 - DL	D-2775 R2 CPT TO STACK-IMP #6/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-15 - DL	D-2783 R2 CPT TO STACK-IMP #7/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-15	D-2783 R2 CPT TO STACK-IMP #7/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-16	D-2776 R3 CPT TO STACK-IMP #1/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-17	D-2777 R3 CPT TO STACK-IMP #2/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-18	D-2778 R3 CPT TO STACK-IMP #3/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-19	D-2779 R3 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-20	D-2780 R3 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-21	D-2781 R3 CPT TO STACK-IMP #6/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-22	D-2784 R3 CPT TO STACK-IMP #7/MEOH RINS	Total/NA	Air	MeOH Prep	
MB 140-37306/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-37306/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-18167-6 MS	D-2768 R1 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	MeOH Prep	
140-18167-6 MSD	D-2768 R1 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	MeOH Prep	

Analysis Batch: 37318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18167-6	D-2768 R1 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-7	D-2769 R1 CPT TO STACK-IMP #6/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-8	D-2782 R1 CPT TO STACK-IMP #7/MEOH RINS	Total/NA	Air	8260B SIM	37306

GC/MS VOA (Continued)

Analysis Batch: 37318 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18167-9	D-2770 R2 CPT TO STACK-IMP #1/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-10	D-2771 R2 CPT TO STACK-IMP #2/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-11	D-2772 R2 CPT TO STACK-IMP #3/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-12	D-2773 R2 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-13	D-2774 R2 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-14	D-2775 R2 CPT TO STACK-IMP #6/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-14 - DL	D-2775 R2 CPT TO STACK-IMP #6/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-15	D-2783 R2 CPT TO STACK-IMP #7/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-15 - DL	D-2783 R2 CPT TO STACK-IMP #7/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-16	D-2776 R3 CPT TO STACK-IMP #1/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-17	D-2777 R3 CPT TO STACK-IMP #2/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-18	D-2778 R3 CPT TO STACK-IMP #3/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-19	D-2779 R3 CPT TO STACK-IMP #4/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-20	D-2780 R3 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-21	D-2781 R3 CPT TO STACK-IMP #6/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-22	D-2784 R3 CPT TO STACK-IMP #7/MEOH RINS	Total/NA	Air	8260B SIM	37306
MB 140-37306/2-A	Method Blank	Total/NA	Air	8260B SIM	37306
LCS 140-37306/1-A	Lab Control Sample	Total/NA	Air	8260B SIM	37306
140-18167-6 MS	D-2768 R1 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	8260B SIM	37306
140-18167-6 MSD	D-2768 R1 CPT TO STACK-IMP #5/MEOH RINS	Total/NA	Air	8260B SIM	37306

Client Sample ID: D-2764 R1 CPT TO STACK-IMP #1/MEOH RINSE

Lab Sample ID: 140-18167-1

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.85	1.85	ug/Sample		02/06/20 10:06	02/06/20 20:41	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.611	0.611	ug/Sample		02/06/20 10:06	02/06/20 20:41	1
2-MTP as HFPO	**2.98**		0.0276	0.0276	ug/Sample		02/06/20 10:06	02/06/20 20:41	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0316	0.0316	ug/Sample		02/06/20 10:06	02/06/20 20:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*50 - 150*	*02/06/20 10:06*	*02/06/20 20:41*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 10:06*	*02/06/20 20:41*	*1*

Client Sample ID: D-2765 R1 CPT TO STACK-IMP #2/MEOH RINSE

Lab Sample ID: 140-18167-2

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.28	2.28	ug/Sample		02/06/20 10:06	02/06/20 21:06	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.751	0.751	ug/Sample		02/06/20 10:06	02/06/20 21:06	1
2-MTP as HFPO	**2.38**		0.0340	0.0340	ug/Sample		02/06/20 10:06	02/06/20 21:06	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0389	0.0389	ug/Sample		02/06/20 10:06	02/06/20 21:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*50 - 150*	*02/06/20 10:06*	*02/06/20 21:06*	*1*
Dibromofluoromethane (Surr)	*93*		*50 - 150*	*02/06/20 10:06*	*02/06/20 21:06*	*1*

Client Sample ID: D-2766 R1 CPT TO STACK-IMP #3/MEOH RINSE

Lab Sample ID: 140-18167-4

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.95	1.95	ug/Sample		02/06/20 10:06	02/06/20 21:31	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.642	0.642	ug/Sample		02/06/20 10:06	02/06/20 21:31	1
2-MTP as HFPO	**1.72**		0.0290	0.0290	ug/Sample		02/06/20 10:06	02/06/20 21:31	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0332	0.0332	ug/Sample		02/06/20 10:06	02/06/20 21:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 10:06*	*02/06/20 21:31*	*1*
Dibromofluoromethane (Surr)	*97*		*50 - 150*	*02/06/20 10:06*	*02/06/20 21:31*	*1*

Client Sample ID: D-2767 R1 CPT TO STACK-IMP #4/MEOH RINSE

Lab Sample ID: 140-18167-5

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.92	1.92	ug/Sample		02/06/20 10:06	02/06/20 21:55	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.633	0.633	ug/Sample		02/06/20 10:06	02/06/20 21:55	1
2-MTP as HFPO	**1.86**		0.0286	0.0286	ug/Sample		02/06/20 10:06	02/06/20 21:55	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0328	0.0328	ug/Sample		02/06/20 10:06	02/06/20 21:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 10:06*	*02/06/20 21:55*	*1*
Dibromofluoromethane (Surr)	*98*		*50 - 150*	*02/06/20 10:06*	*02/06/20 21:55*	*1*

Client Sample ID: D-2768 R1 CPT TO STACK-IMP #5/MEOH RINSE

Lab Sample ID: 140-18167-6

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.83	1.83	ug/Sample		02/06/20 12:54	02/07/20 12:16	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.604	0.604	ug/Sample		02/06/20 12:54	02/07/20 12:16	1
2-MTP as HFPO	**1.55**		0.0273	0.0273	ug/Sample		02/06/20 12:54	02/07/20 12:16	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0313	0.0313	ug/Sample		02/06/20 12:54	02/07/20 12:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*50 - 150*	*02/06/20 12:54*	*02/07/20 12:16*	*1*
Dibromofluoromethane (Surr)	*86*		*50 - 150*	*02/06/20 12:54*	*02/07/20 12:16*	*1*

Client Sample ID: D-2769 R1 CPT TO STACK-IMP #6/MEOH RINSE

Lab Sample ID: 140-18167-7

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.04	2.04	ug/Sample		02/06/20 12:54	02/07/20 12:41	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.674	0.674	ug/Sample		02/06/20 12:54	02/07/20 12:41	1
2-MTP as HFPO	**2.24**		0.0305	0.0305	ug/Sample		02/06/20 12:54	02/07/20 12:41	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0349	0.0349	ug/Sample		02/06/20 12:54	02/07/20 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*50 - 150*	*02/06/20 12:54*	*02/07/20 12:41*	*1*
Dibromofluoromethane (Surr)	*85*		*50 - 150*	*02/06/20 12:54*	*02/07/20 12:41*	*1*

Client Sample ID: D-2782 R1 CPT TO STACK-IMP #7/MEOH RINSE

Lab Sample ID: 140-18167-8

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.02	2.02	ug/Sample		02/06/20 12:54	02/07/20 13:06	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.666	0.666	ug/Sample		02/06/20 12:54	02/07/20 13:06	1
2-MTP as HFPO	**2.33**		0.0301	0.0301	ug/Sample		02/06/20 12:54	02/07/20 13:06	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0345	0.0345	ug/Sample		02/06/20 12:54	02/07/20 13:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*50 - 150*	*02/06/20 12:54*	*02/07/20 13:06*	*1*
Dibromofluoromethane (Surr)	*89*		*50 - 150*	*02/06/20 12:54*	*02/07/20 13:06*	*1*

Client Sample ID: D-2770 R2 CPT TO STACK-IMP #1/MEOH RINSE

Lab Sample ID: 140-18167-9

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.58	1.58	ug/Sample		02/06/20 12:54	02/07/20 13:31	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.522	0.522	ug/Sample		02/06/20 12:54	02/07/20 13:31	1
2-MTP as HFPO	**0.355**		0.0237	0.0237	ug/Sample		02/06/20 12:54	02/07/20 13:31	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0271	0.0271	ug/Sample		02/06/20 12:54	02/07/20 13:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*50 - 150*	*02/06/20 12:54*	*02/07/20 13:31*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 12:54*	*02/07/20 13:31*	*1*

Client Sample ID: D-2771 R2 CPT TO STACK-IMP #2/MEOH RINSE

Lab Sample ID: 140-18167-10

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.14	2.14	ug/Sample		02/06/20 12:54	02/07/20 13:55	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.704	0.704	ug/Sample		02/06/20 12:54	02/07/20 13:55	1
2-MTP as HFPO	**0.437**		0.0319	0.0319	ug/Sample		02/06/20 12:54	02/07/20 13:55	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0365	0.0365	ug/Sample		02/06/20 12:54	02/07/20 13:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*50 - 150*	*02/06/20 12:54*	*02/07/20 13:55*	*1*
Dibromofluoromethane (Surr)	*89*		*50 - 150*	*02/06/20 12:54*	*02/07/20 13:55*	*1*

Client Sample ID: D-2772 R2 CPT TO STACK-IMP #3/MEOH RINSE

Lab Sample ID: 140-18167-11

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.93	1.93	ug/Sample		02/06/20 12:54	02/07/20 14:20	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.634	0.634	ug/Sample		02/06/20 12:54	02/07/20 14:20	1
2-MTP as HFPO	**0.369**		0.0286	0.0286	ug/Sample		02/06/20 12:54	02/07/20 14:20	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0328	0.0328	ug/Sample		02/06/20 12:54	02/07/20 14:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 12:54*	*02/07/20 14:20*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 12:54*	*02/07/20 14:20*	*1*

Client Sample ID: D-2773 R2 CPT TO STACK-IMP #4/MEOH RINSE

Lab Sample ID: 140-18167-12

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.80	1.80	ug/Sample		02/06/20 12:54	02/07/20 14:44	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.590	0.590	ug/Sample		02/06/20 12:54	02/07/20 14:44	1
2-MTP as HFPO	**0.303**		0.0267	0.0267	ug/Sample		02/06/20 12:54	02/07/20 14:44	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0306	0.0306	ug/Sample		02/06/20 12:54	02/07/20 14:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*50 - 150*	*02/06/20 12:54*	*02/07/20 14:44*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 12:54*	*02/07/20 14:44*	*1*

Client Sample ID: D-2774 R2 CPT TO STACK-IMP #5/MEOH RINSE

Lab Sample ID: 140-18167-13

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.06	2.06	ug/Sample		02/06/20 12:54	02/07/20 15:09	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.677	0.677	ug/Sample		02/06/20 12:54	02/07/20 15:09	1
2-MTP as HFPO	**0.535**		0.0307	0.0307	ug/Sample		02/06/20 12:54	02/07/20 15:09	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0351	0.0351	ug/Sample		02/06/20 12:54	02/07/20 15:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*50 - 150*	*02/06/20 12:54*	*02/07/20 15:09*	*1*
Dibromofluoromethane (Surr)	*92*		*50 - 150*	*02/06/20 12:54*	*02/07/20 15:09*	*1*

Client Sample ID: D-2775 R2 CPT TO STACK-IMP #6/MEOH RINSE

Lab Sample ID: 140-18167-14

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.85	1.85	ug/Sample		02/06/20 12:54	02/07/20 15:33	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.611	0.611	ug/Sample		02/06/20 12:54	02/07/20 15:33	1
2-MTP as HFPO	**9.43**	**E**	0.0276	0.0276	ug/Sample		02/06/20 12:54	02/07/20 15:33	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0316	0.0316	ug/Sample		02/06/20 12:54	02/07/20 15:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 12:54*	*02/07/20 15:33*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 12:54*	*02/07/20 15:33*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**9.87**		0.0553	0.0553	ug/Sample		02/06/20 12:54	02/07/20 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*50 - 150*	*02/06/20 12:54*	*02/07/20 19:15*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 12:54*	*02/07/20 19:15*	*1*

Client Sample ID: D-2783 R2 CPT TO STACK-IMP #7/MEOH RINSE

Lab Sample ID: 140-18167-15

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.76	1.76	ug/Sample		02/06/20 12:54	02/07/20 15:58	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.579	0.579	ug/Sample		02/06/20 12:54	02/07/20 15:58	1
2-MTP as HFPO	**15.0**	**E**	0.0262	0.0262	ug/Sample		02/06/20 12:54	02/07/20 15:58	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0300	0.0300	ug/Sample		02/06/20 12:54	02/07/20 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*50 - 150*	*02/06/20 12:54*	*02/07/20 15:58*	*1*
Dibromofluoromethane (Surr)	*89*		*50 - 150*	*02/06/20 12:54*	*02/07/20 15:58*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**15.0**		0.105	0.105	ug/Sample		02/06/20 12:54	02/07/20 19:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 12:54*	*02/07/20 19:39*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 12:54*	*02/07/20 19:39*	*1*

Client Sample ID: D-2776 R3 CPT TO STACK-IMP #1/MEOH RINSE

Lab Sample ID: 140-18167-16

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.58	1.58	ug/Sample		02/06/20 12:54	02/07/20 16:23	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.522	0.522	ug/Sample		02/06/20 12:54	02/07/20 16:23	1
2-MTP as HFPO	**0.367**		0.0236	0.0236	ug/Sample		02/06/20 12:54	02/07/20 16:23	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0270	0.0270	ug/Sample		02/06/20 12:54	02/07/20 16:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*50 - 150*	*02/06/20 12:54*	*02/07/20 16:23*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 12:54*	*02/07/20 16:23*	*1*

Client Sample ID: D-2777 R3 CPT TO STACK-IMP #2/MEOH RINSE

Lab Sample ID: 140-18167-17

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.15	2.15	ug/Sample		02/06/20 12:54	02/07/20 16:47	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.707	0.707	ug/Sample		02/06/20 12:54	02/07/20 16:47	1
2-MTP as HFPO	**0.403**		0.0320	0.0320	ug/Sample		02/06/20 12:54	02/07/20 16:47	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0366	0.0366	ug/Sample		02/06/20 12:54	02/07/20 16:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*50 - 150*	*02/06/20 12:54*	*02/07/20 16:47*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 12:54*	*02/07/20 16:47*	*1*

Client Sample ID: D-2778 R3 CPT TO STACK-IMP #3/MEOH RINSE

Lab Sample ID: 140-18167-18

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.61	1.61	ug/Sample		02/06/20 12:54	02/07/20 17:12	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.531	0.531	ug/Sample		02/06/20 12:54	02/07/20 17:12	1
2-MTP as HFPO	**0.0838**		0.0240	0.0240	ug/Sample		02/06/20 12:54	02/07/20 17:12	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0275	0.0275	ug/Sample		02/06/20 12:54	02/07/20 17:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*50 - 150*	*02/06/20 12:54*	*02/07/20 17:12*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 12:54*	*02/07/20 17:12*	*1*

Client Sample ID: D-2779 R3 CPT TO STACK-IMP #4/MEOH RINSE

Lab Sample ID: 140-18167-19

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.82	1.82	ug/Sample		02/06/20 12:54	02/07/20 17:36	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.601	0.601	ug/Sample		02/06/20 12:54	02/07/20 17:36	1
2-MTP as HFPO	**0.470**		0.0272	0.0272	ug/Sample		02/06/20 12:54	02/07/20 17:36	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0312	0.0312	ug/Sample		02/06/20 12:54	02/07/20 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*50 - 150*	*02/06/20 12:54*	*02/07/20 17:36*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 12:54*	*02/07/20 17:36*	*1*

Client Sample ID: D-2780 R3 CPT TO STACK-IMP #5/MEOH RINSE

Lab Sample ID: 140-18167-20

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.83	1.83	ug/Sample		02/06/20 12:54	02/07/20 18:01	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.602	0.602	ug/Sample		02/06/20 12:54	02/07/20 18:01	1
2-MTP as HFPO	**0.460**		0.0272	0.0272	ug/Sample		02/06/20 12:54	02/07/20 18:01	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0312	0.0312	ug/Sample		02/06/20 12:54	02/07/20 18:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*50 - 150*	*02/06/20 12:54*	*02/07/20 18:01*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 12:54*	*02/07/20 18:01*	*1*

Client Sample ID: D-2781 R3 CPT TO STACK-IMP #6/MEOH RINSE

Lab Sample ID: 140-18167-21

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.02	2.02	ug/Sample		02/06/20 12:54	02/07/20 18:25	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.662	0.662	ug/Sample		02/06/20 12:54	02/07/20 18:25	1
2-MTP as HFPO	**0.522**		0.0300	0.0300	ug/Sample		02/06/20 12:54	02/07/20 18:25	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0343	0.0343	ug/Sample		02/06/20 12:54	02/07/20 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 12:54*	*02/07/20 18:25*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 12:54*	*02/07/20 18:25*	*1*

Client Sample ID: D-2784 R3 CPT TO STACK-IMP #7/MEOH RINSE

Lab Sample ID: 140-18167-22

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:30
Sample Container: Plastic 250 - Wide - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.78	1.78	ug/Sample		02/06/20 12:54	02/07/20 18:50	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.586	0.586	ug/Sample		02/06/20 12:54	02/07/20 18:50	1
2-MTP as HFPO	**0.296**		0.0266	0.0266	ug/Sample		02/06/20 12:54	02/07/20 18:50	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0304	0.0304	ug/Sample		02/06/20 12:54	02/07/20 18:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*50 - 150*	*02/06/20 12:54*	*02/07/20 18:50*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 12:54*	*02/07/20 18:50*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Stack - MM18

Job ID: 140-18167-1

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

Prep: MeOH Prep

Analyte	RL	MDL	Units
2-MTP as HFPO	0.00250	0.00250	ug/Sample
Carbonyl Difluoride	0.200	0.200	ug/Sample
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	0.00250	0.00250	ug/Sample
HFPO dimer, methyl ester as HFPO-DAF	0.0500	0.0500	ug/Sample

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ANALYTICAL REPORT

Job Number: 140-18165-1

Job Description: TO CPT Stack - MM18 QC Samples

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager II
3/12/2020 3:59 PM

Courtney M Adkins, Project Manager II
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
03/12/2020
Revision: 1

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Glossary

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

Method Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18165-1
Project/Site: TO CPT Stack - MM18 QC Samples

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

Protocol References:

None = None

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

Laboratory References:

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

Sample Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18165-1
Project/Site: TO CPT Stack - MM18 QC Samples

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18165-1	Q-1734 QC CPT TO STACK MM-18 IMP #1/MEC RINSES BT	Air	02/05/20 00:00	02/06/20 07:19	
140-18165-2	Q-1735 QC CPT TO STACK MM-18 IMP #2/MEC RINSES BT	Air	02/05/20 00:00	02/06/20 07:19	
140-18165-3	Q-1736 QC CPT TO STACK MM-18 IMP #3/MEC RINSES BT	Air	02/05/20 00:00	02/06/20 07:19	
140-18165-4	Q-1737 QC CPT TO STACK MM-18 IMP #4/MEC RINSES BT	Air	02/05/20 00:00	02/06/20 07:19	
140-18165-5	Q-1738 QC CPT TO STACK MM-18 IMP #5/MEC RINSES BT	Air	02/05/20 00:00	02/06/20 07:19	
140-18165-6	Q-1739 QC CPT TO STACK MM-18 IMP #6/MEC RINSES BT	Air	02/05/20 00:00	02/06/20 07:19	
140-18165-7	Q-1741 QC CPT TO STACK MM-18 IMP #6/MEC RINSES BT	Air	02/05/20 00:00	02/06/20 07:19	
140-18165-8	Q-1740 QC CPT TO STACK MM-18 MEOH RB	Air	02/05/20 00:00	02/06/20 07:19	
140-18165-10	Q-1741 QC CPT TO STACK MM-18 MEOH PROOF BLANK	Air	02/04/20 00:00	02/06/20 07:19	

Job Narrative
140-18165-1

Sample Receipt

The samples were received on February 6, 2020 at 7:00 AM in good condition and properly preserved. The temperature of the cooler at receipt was 0.7º C.

Quality Control and Data Interpretation

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

GC/MS VOA

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

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

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

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL

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

QC Association Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18165-1
Project/Site: TO CPT Stack - MM18 QC Samples

GC/MS VOA

Prep Batch: 37297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18165-1	Q-1734 QC CPT TO STACK MM-18 IMP #1/MEC	Total/NA	Air	MeOH Prep	
140-18165-2	Q-1735 QC CPT TO STACK MM-18 IMP #2/MEC	Total/NA	Air	MeOH Prep	
140-18165-3	Q-1736 QC CPT TO STACK MM-18 IMP #3/MEC	Total/NA	Air	MeOH Prep	
140-18165-4	Q-1737 QC CPT TO STACK MM-18 IMP #4/MEC	Total/NA	Air	MeOH Prep	
140-18165-5	Q-1738 QC CPT TO STACK MM-18 IMP #5/MEC	Total/NA	Air	MeOH Prep	
140-18165-6	Q-1739 QC CPT TO STACK MM-18 IMP #6/MEC	Total/NA	Air	MeOH Prep	
140-18165-7	Q-1741 QC CPT TO STACK MM-18 IMP #6/MEC	Total/NA	Air	MeOH Prep	
140-18165-8	Q-1740 QC CPT TO STACK MM-18 MEOH RB	Total/NA	Air	MeOH Prep	
140-18165-10	Q-1741 QC CPT TO STACK MM-18 MEOH PRC	Total/NA	Air	MeOH Prep	
MB 140-37297/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-37297/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	

Analysis Batch: 37299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18165-1	Q-1734 QC CPT TO STACK MM-18 IMP #1/MEC	Total/NA	Air	8260B SIM	37297
140-18165-2	Q-1735 QC CPT TO STACK MM-18 IMP #2/MEC	Total/NA	Air	8260B SIM	37297
140-18165-3	Q-1736 QC CPT TO STACK MM-18 IMP #3/MEC	Total/NA	Air	8260B SIM	37297
140-18165-4	Q-1737 QC CPT TO STACK MM-18 IMP #4/MEC	Total/NA	Air	8260B SIM	37297
140-18165-5	Q-1738 QC CPT TO STACK MM-18 IMP #5/MEC	Total/NA	Air	8260B SIM	37297
140-18165-6	Q-1739 QC CPT TO STACK MM-18 IMP #6/MEC	Total/NA	Air	8260B SIM	37297
140-18165-7	Q-1741 QC CPT TO STACK MM-18 IMP #6/MEC	Total/NA	Air	8260B SIM	37297
140-18165-8	Q-1740 QC CPT TO STACK MM-18 MEOH RB	Total/NA	Air	8260B SIM	37297
140-18165-10	Q-1741 QC CPT TO STACK MM-18 MEOH PRC	Total/NA	Air	8260B SIM	37297
MB 140-37297/2-A	Method Blank	Total/NA	Air	8260B SIM	37297
LCS 140-37297/1-A	Lab Control Sample	Total/NA	Air	8260B SIM	37297

Client Sample ID: Q-1734 QC CPT TO STACK MM-18 IMP #1/MEOH RINSES BT

Lab Sample ID: 140-18165-1

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:19
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.80	1.80	ug/Sample		02/06/20 10:06	02/06/20 15:21	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.593	0.593	ug/Sample		02/06/20 10:06	02/06/20 15:21	1
2-MTP as HFPO	**0.195**		0.0268	0.0268	ug/Sample		02/06/20 10:06	02/06/20 15:21	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0307	0.0307	ug/Sample		02/06/20 10:06	02/06/20 15:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*50 - 150*	*02/06/20 10:06*	*02/06/20 15:21*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 10:06*	*02/06/20 15:21*	*1*

Client Sample ID: Q-1735 QC CPT TO STACK MM-18 IMP #2/MEOH RINSES BT

Lab Sample ID: 140-18165-2

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:19
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.92	1.92	ug/Sample		02/06/20 10:06	02/06/20 15:46	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.631	0.631	ug/Sample		02/06/20 10:06	02/06/20 15:46	1
2-MTP as HFPO	**0.222**		0.0286	0.0286	ug/Sample		02/06/20 10:06	02/06/20 15:46	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0327	0.0327	ug/Sample		02/06/20 10:06	02/06/20 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 10:06*	*02/06/20 15:46*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 10:06*	*02/06/20 15:46*	*1*

Client Sample ID: Q-1736 QC CPT TO STACK MM-18 IMP #3/MEOH RINSES BT

Lab Sample ID: 140-18165-3

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:19
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.06	2.06	ug/Sample		02/06/20 10:06	02/06/20 16:10	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.678	0.678	ug/Sample		02/06/20 10:06	02/06/20 16:10	1
2-MTP as HFPO	**0.315**		0.0307	0.0307	ug/Sample		02/06/20 10:06	02/06/20 16:10	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0351	0.0351	ug/Sample		02/06/20 10:06	02/06/20 16:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 10:06*	*02/06/20 16:10*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 10:06*	*02/06/20 16:10*	*1*

Client Sample ID: Q-1737 QC CPT TO STACK MM-18 IMP #4/MEOH RINSES BT

Lab Sample ID: 140-18165-4

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:19
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.91	1.91	ug/Sample		02/06/20 10:06	02/06/20 16:35	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.628	0.628	ug/Sample		02/06/20 10:06	02/06/20 16:35	1
2-MTP as HFPO	**0.245**		0.0285	0.0285	ug/Sample		02/06/20 10:06	02/06/20 16:35	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0326	0.0326	ug/Sample		02/06/20 10:06	02/06/20 16:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*50 - 150*	*02/06/20 10:06*	*02/06/20 16:35*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 10:06*	*02/06/20 16:35*	*1*

Client Sample ID: Q-1738 QC CPT TO STACK MM-18 IMP #5/MEOH RINSES BT

Lab Sample ID: 140-18165-5

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:19
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.84	1.84	ug/Sample		02/06/20 10:06	02/06/20 16:59	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.605	0.605	ug/Sample		02/06/20 10:06	02/06/20 16:59	1
2-MTP as HFPO	**0.203**		0.0274	0.0274	ug/Sample		02/06/20 10:06	02/06/20 16:59	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0314	0.0314	ug/Sample		02/06/20 10:06	02/06/20 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*50 - 150*	*02/06/20 10:06*	*02/06/20 16:59*	*1*
Dibromofluoromethane (Surr)	*92*		*50 - 150*	*02/06/20 10:06*	*02/06/20 16:59*	*1*

Client Sample ID: Q-1739 QC CPT TO STACK MM-18 IMP #6/MEOH RINSES BT

Lab Sample ID: 140-18165-6

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:19
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.33	2.33	ug/Sample		02/06/20 10:06	02/06/20 17:24	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.767	0.767	ug/Sample		02/06/20 10:06	02/06/20 17:24	1
2-MTP as HFPO	**0.453**		0.0347	0.0347	ug/Sample		02/06/20 10:06	02/06/20 17:24	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0397	0.0397	ug/Sample		02/06/20 10:06	02/06/20 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 10:06*	*02/06/20 17:24*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 10:06*	*02/06/20 17:24*	*1*

Client Sample ID: Q-1741 QC CPT TO STACK MM-18 IMP #6/MEOH RINSES BT

Lab Sample ID: 140-18165-7

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:19
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		1.85	1.85	ug/Sample		02/06/20 10:06	02/06/20 17:48	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.608	0.608	ug/Sample		02/06/20 10:06	02/06/20 17:48	1
2-MTP as HFPO	**0.208**		0.0275	0.0275	ug/Sample		02/06/20 10:06	02/06/20 17:48	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0315	0.0315	ug/Sample		02/06/20 10:06	02/06/20 17:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*50 - 150*	*02/06/20 10:06*	*02/06/20 17:48*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 10:06*	*02/06/20 17:48*	*1*

Client Sample ID: Q-1740 QC CPT TO STACK MM-18 MEOH RB

Lab Sample ID: 140-18165-8

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:19
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.53	2.53	ug/Sample		02/06/20 10:06	02/06/20 14:07	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.834	0.834	ug/Sample		02/06/20 10:06	02/06/20 14:07	1
2-MTP as HFPO	ND		0.0377	0.0377	ug/Sample		02/06/20 10:06	02/06/20 14:07	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0432	0.0432	ug/Sample		02/06/20 10:06	02/06/20 14:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*50 - 150*	*02/06/20 10:06*	*02/06/20 14:07*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 10:06*	*02/06/20 14:07*	*1*

Client Sample ID: Q-1741 QC CPT TO STACK MM-18 MEOH PROOF BLANK

Lab Sample ID: 140-18165-10

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:19
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.93	2.93	ug/Sample		02/06/20 10:06	02/06/20 14:32	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.965	0.965	ug/Sample		02/06/20 10:06	02/06/20 14:32	1
2-MTP as HFPO	**8.66**		0.0437	0.0437	ug/Sample		02/06/20 10:06	02/06/20 14:32	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0500	0.0500	ug/Sample		02/06/20 10:06	02/06/20 14:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*50 - 150*	*02/06/20 10:06*	*02/06/20 14:32*	*1*
Dibromofluoromethane (Surr)	*89*		*50 - 150*	*02/06/20 10:06*	*02/06/20 14:32*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Job ID: 140-18165-1
Project/Site: TO CPT Stack - MM18 QC Samples

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

Prep: MeOH Prep

Analyte	RL	MDL	Units
2-MTP as HFPO	0.00250	0.00250	ug/Sample
Carbonyl Difluoride	0.200	0.200	ug/Sample
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	0.00250	0.00250	ug/Sample
HFPO dimer, methyl ester as HFPO-DAF	0.0500	0.0500	ug/Sample

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ANALYTICAL REPORT

Job Number: 140-18172-1

Job Description: TO CPT Inlet Line #1 - MM18

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager II
3/13/2020 3:41 PM

Courtney M Adkins, Project Manager II
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
03/13/2020
Revision: 1

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time

LCMS

Qualifier	Qualifier Description
X	Surrogate recovery exceeds control limits

Glossary

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Inlet Line #1 - MM18

Job ID: 140-18172-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL KNX
8321A	PFOA and PFOS	SW846	TAL DEN
MeOH Prep	Methanol Impinger Preparation	None	TAL KNX
None	Leaching Procedure	TAL SOP	TAL DEN

Protocol References:

None = None

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

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Inlet Line #1 - MM18

Job ID: 140-18172-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18172-1	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-2	Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-3	Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-4	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-5	Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-6	Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-7	Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-8	Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-9	Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-10	Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-11	Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-12	Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH RINSES	Air	02/04/20 00:00	02/06/20 09:35	
140-18172-13	Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH RINSES	Air	02/05/20 00:00	02/06/20 09:35	
140-18172-14	Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH RINSES	Air	02/05/20 00:00	02/06/20 09:35	
140-18172-15	Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH RINSES	Air	02/05/20 00:00	02/06/20 09:35	
140-18172-16	Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH RINSES	Air	02/05/20 00:00	02/06/20 09:35	
140-18172-17	Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH RINSES	Air	02/05/20 00:00	02/06/20 09:35	
140-18172-18	Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH RINSES	Air	02/05/20 00:00	02/06/20 09:35	

Job Narrative
140-18172-1

Sample Receipt

The samples were received on 2/6/2020 7:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3º C.

Quality Control and Data Interpretation

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

GC/MS VOA

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

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

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

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL

Method 8260B: The following samples were diluted to bring the concentration of target analytes within the calibration range: Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH RINSES (140-18172-1), Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH RINSES (140-18172-2), Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH RINSES (140-18172-3), Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH RINSES (140-18172-4), Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH RINSES (140-18172-5), Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH RINSES (140-18172-6), Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH RINSES (140-18172-7), Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH RINSES (140-18172-8), Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH RINSES (140-18172-9), Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH RINSES (140-18172-10), Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH RINSES (140-18172-11), Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH RINSES (140-18172-12), Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH RINSES (140-18172-13), Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH RINSES (140-18172-14), Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH RINSES (140-18172-15), Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH RINSES (140-18172-16), Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH RINSES (140-18172-17) and Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH RINSES (140-18172-18). Elevated reporting limits (RLs) are provided.

Method 8260B: Reanalysis of the following samples was performed outside of the analytical holding time due to client request for lower reporting limits for Methyl undecafluoro-2-methyl-3-oxahexanoate : Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH RINSES (140-18172-1), Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH RINSES (140-18172-2), Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH RINSES (140-18172-7), Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH RINSES (140-18172-8), Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH RINSES (140-18172-13) and Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH RINSES (140-18172-14).

Method 8260B: A more concentrated reanalysis of the following samples were performed outside of the analytical holding time per project manager instructions: Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH RINSES (140-18172-3), Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH RINSES (140-18172-4), Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH RINSES (140-18172-5), Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH RINSES (140-18172-6), Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH RINSES (140-18172-9), Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH RINSES (140-18172-10), Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH RINSES (140-18172-11), Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH RINSES (140-18172-12), Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH RINSES (140-18172-15), Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH RINSES (140-18172-16), Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH RINSES (140-18172-17) and Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH RINSES (140-18172-18).

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

LCMS

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended

limit: Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH RINSES (140-18172-1) and Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH RINSES (140-18172-7). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Method 8321A: The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: (CCV 280-486183/43) and (CCV 280-486183/49). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s), Target %R is in control. All detection limits are below the lower calibration.

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

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Inlet Line #1 - MM18

Job ID: 140-18172-1

GC/MS VOA

Prep Batch: 37376

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-1 - DL	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	MeOH Prep	
140-18172-2 - DL	Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	MeOH Prep	
140-18172-3 - RA	Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	MeOH Prep	
140-18172-3 - DL	Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	MeOH Prep	
140-18172-4 - DL	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	MeOH Prep	
140-18172-4 - RA	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	MeOH Prep	
140-18172-5 - RA	Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	MeOH Prep	
140-18172-5 - DL	Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	MeOH Prep	
140-18172-6 - DL	Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	MeOH Prep	
140-18172-6 - RA	Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	MeOH Prep	
140-18172-7 - DL	Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	MeOH Prep	
140-18172-8 - DL	Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	MeOH Prep	
140-18172-9 - DL	Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	MeOH Prep	
140-18172-9 - RA	Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	MeOH Prep	
140-18172-10 - RA	Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	MeOH Prep	
140-18172-10 - DL	Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	MeOH Prep	
140-18172-11 - DL	Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	MeOH Prep	
140-18172-11 - RA	Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	MeOH Prep	
140-18172-12 - DL	Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	MeOH Prep	
140-18172-12 - RA	Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	MeOH Prep	
140-18172-13 - DL	Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	MeOH Prep	
140-18172-14 - DL	Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	MeOH Prep	
140-18172-15 - DL	Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	MeOH Prep	
140-18172-15 - RA	Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	MeOH Prep	
140-18172-16 - DL	Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	MeOH Prep	
140-18172-16 - RA	Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	MeOH Prep	
140-18172-17 - DL	Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	MeOH Prep	
140-18172-17 - RA	Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	MeOH Prep	
140-18172-18 - RA	Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	MeOH Prep	
140-18172-18 - DL	Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	MeOH Prep	
MB 140-37376/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-37376/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-18172-4 MS	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	MeOH Prep	
140-18172-4 MSD	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	MeOH Prep	
140-18172-5 MS	Z-2338 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	MeOH Prep	
140-18172-5 MSD	Z-2338 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	MeOH Prep	

Analysis Batch: 37463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-1 - DL	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8260B	37376
140-18172-2 - DL	Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	8260B	37376
140-18172-3 - DL	Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	8260B	37376
140-18172-4 - DL	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8260B	37376
140-18172-5 - DL	Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8260B	37376
140-18172-6 - DL	Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	8260B	37376
140-18172-7 - DL	Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8260B	37376
140-18172-8 - DL	Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	8260B	37376
140-18172-9 - DL	Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	8260B	37376
140-18172-10 - DL	Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8260B	37376
140-18172-11 - DL	Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8260B	37376
140-18172-12 - DL	Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	8260B	37376

GC/MS VOA (Continued)

Analysis Batch: 37463 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-13 - DL	Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8260B	37376
140-18172-14 - DL	Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	8260B	37376
140-18172-15 - DL	Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	8260B	37376
140-18172-16 - DL	Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8260B	37376
140-18172-17 - DL	Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8260B	37376
140-18172-18 - DL	Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	8260B	37376
MB 140-37376/2-A	Method Blank	Total/NA	Air	8260B	37376
LCS 140-37376/1-A	Lab Control Sample	Total/NA	Air	8260B	37376
140-18172-4 MS	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8260B	37376
140-18172-4 MSD	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8260B	37376
140-18172-5 MS	Z-2338 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8260B	37376
140-18172-5 MSD	Z-2338 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8260B	37376

Prep Batch: 37657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-1 - RA	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	MeOH Prep	
140-18172-2 - RA	Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	MeOH Prep	
140-18172-7 - RA	Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	MeOH Prep	
140-18172-8 - RA	Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	MeOH Prep	
140-18172-13 - RA	Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	MeOH Prep	
140-18172-14 - RA	Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	MeOH Prep	
MB 140-37657/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-37657/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-18172-1 MS	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	MeOH Prep	
140-18172-1 MSD	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	MeOH Prep	

Analysis Batch: 37666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-1 - RA	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8260B	37657
140-18172-2 - RA	Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	8260B	37657
140-18172-7 - RA	Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8260B	37657
140-18172-8 - RA	Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	8260B	37657
140-18172-13 - RA	Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8260B	37657
140-18172-14 - RA	Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	8260B	37657
MB 140-37657/2-A	Method Blank	Total/NA	Air	8260B	37657
LCS 140-37657/1-A	Lab Control Sample	Total/NA	Air	8260B	37657
140-18172-1 MS	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8260B	37657
140-18172-1 MSD	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8260B	37657

Analysis Batch: 37921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-3 - RA	Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	8260B	37376
140-18172-4 - RA	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8260B	37376
140-18172-5 - RA	Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8260B	37376
140-18172-6 - RA	Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	8260B	37376
140-18172-9 - RA	Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	8260B	37376
140-18172-10 - RA	Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8260B	37376
140-18172-11 - RA	Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8260B	37376
140-18172-12 - RA	Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	8260B	37376
140-18172-15 - RA	Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	8260B	37376
140-18172-16 - RA	Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8260B	37376

GC/MS VOA (Continued)

Analysis Batch: 37921 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-17 - RA	Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8260B	37376
140-18172-18 - RA	Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	8260B	37376

LCMS

Analysis Batch: 481729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-481729/13	Lab Control Sample	Total/NA	Air	8321A	

Prep Batch: 485535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-1	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	None	
140-18172-2	Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	None	
140-18172-3	Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	None	
140-18172-4	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	None	
140-18172-5	Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	None	
140-18172-6	Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	None	
140-18172-7	Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	None	
MB 280-485535/14-A	Method Blank	Total/NA	Air	None	
MB 280-485535/1-A	Method Blank	Total/NA	Air	None	
LCS 280-485535/2-A	Lab Control Sample	Total/NA	Air	None	
LCSD 280-485535/3-A	Lab Control Sample Dup	Total/NA	Air	None	

Prep Batch: 485670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-8	Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	None	
140-18172-9	Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	None	
140-18172-10	Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	None	
140-18172-11	Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	None	
140-18172-12	Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	None	
140-18172-13	Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	None	
140-18172-14	Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	None	
140-18172-15	Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	None	
140-18172-16	Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	None	
140-18172-17	Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	None	
140-18172-18	Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	None	
MB 280-485670/14-A	Method Blank	Total/NA	Air	None	
MB 280-485670/1-A	Method Blank	Total/NA	Air	None	
LCS 280-485670/2-A	Lab Control Sample	Total/NA	Air	None	
LCSD 280-485670/3-A	Lab Control Sample Dup	Total/NA	Air	None	

Analysis Batch: 486182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-1	Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8321A	485535
140-18172-2	Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	8321A	485535
140-18172-3	Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	8321A	485535
140-18172-4	Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8321A	485535
140-18172-5	Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8321A	485535
140-18172-6	Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	8321A	485535
140-18172-7	Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8321A	485535
MB 280-485535/14-A	Method Blank	Total/NA	Air	8321A	485535

LCMS (Continued)

Analysis Batch: 486182 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-485535/1-A	Method Blank	Total/NA	Air	8321A	485535
LCS 280-485535/2-A	Lab Control Sample	Total/NA	Air	8321A	485535
LCSD 280-485535/3-A	Lab Control Sample Dup	Total/NA	Air	8321A	485535

Analysis Batch: 486183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18172-8	Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	8321A	485670
140-18172-9	Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	8321A	485670
140-18172-10	Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8321A	485670
140-18172-11	Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8321A	485670
140-18172-12	Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	8321A	485670
140-18172-13	Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH	Total/NA	Air	8321A	485670
140-18172-14	Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH	Total/NA	Air	8321A	485670
140-18172-15	Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH	Total/NA	Air	8321A	485670
140-18172-16	Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH	Total/NA	Air	8321A	485670
140-18172-17	Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH	Total/NA	Air	8321A	485670
140-18172-18	Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH	Total/NA	Air	8321A	485670
MB 280-485670/14-A	Method Blank	Total/NA	Air	8321A	485670
MB 280-485670/1-A	Method Blank	Total/NA	Air	8321A	485670
LCS 280-485670/2-A	Lab Control Sample	Total/NA	Air	8321A	485670
LCSD 280-485670/3-A	Lab Control Sample Dup	Total/NA	Air	8321A	485670

Client Sample ID: Z-2334 R1 CPT TO FEED LINE #1 IMP #1/MEOH RINSES

Lab Sample ID: 140-18172-1

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	55800000		2090000	2090000	ug/Sample		02/10/20 14:29	02/12/20 12:17	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*02/10/20 14:29*	*02/12/20 12:17*	*200*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:29*	*02/12/20 12:17*	*200*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/12/20 12:17*	*200*
Toluene-d8 (Surr)	*95*		*71 - 139*	*02/10/20 14:29*	*02/12/20 12:17*	*200*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	74000000	H	139000	139000	ug/Sample		02/19/20 10:37	02/19/20 15:55	100
HFPO dimer, methyl ester as HFPO-DAF	72200	H	45900	45900	ug/Sample		02/19/20 10:37	02/19/20 15:55	100
2-MTP as HFPO	686000	H	41600	41600	ug/Sample		02/19/20 10:37	02/19/20 15:55	100
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	47600	47600	ug/Sample		02/19/20 10:37	02/19/20 15:55	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 160*	*02/19/20 10:37*	*02/19/20 15:55*	*100*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*02/19/20 10:37*	*02/19/20 15:55*	*100*
Dibromofluoromethane (Surr)	*97*		*62 - 134*	*02/19/20 10:37*	*02/19/20 15:55*	*100*
Toluene-d8 (Surr)	*98*		*71 - 139*	*02/19/20 10:37*	*02/19/20 15:55*	*100*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	6310		139	27.8	ug/Sample		02/12/20 06:25	02/17/20 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*45*	*X*	*50 - 200*	*02/12/20 06:25*	*02/17/20 15:52*	*1*

Client Sample ID: Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH RINSES

Lab Sample ID: 140-18172-2

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	2470000		62200	62200	ug/Sample		02/10/20 14:29	02/12/20 12:42	200
2-MTP as HFPO	445000		18500	18500	ug/Sample		02/10/20 14:29	02/12/20 12:42	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 12:42*	*200*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:29*	*02/12/20 12:42*	*200*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/12/20 12:42*	*200*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 12:42*	*200*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	3000000	H	6220	6220	ug/Sample		02/19/20 10:37	02/19/20 16:20	50

Client Sample ID: Z-2335 R1 CPT TO FEED LINE #1 IMP #2/MEOH RINSES

Lab Sample ID: 140-18172-2

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO dimer, methyl ester as HFPO-DAF	**3080**	**H**	2050	2050	ug/Sample		02/19/20 10:37	02/19/20 16:20	50
2-MTP as HFPO	**425000**	**H**	1850	1850	ug/Sample		02/19/20 10:37	02/19/20 16:20	50
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	2120	2120	ug/Sample		02/19/20 10:37	02/19/20 16:20	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 160*	*02/19/20 10:37*	*02/19/20 16:20*	*50*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*02/19/20 10:37*	*02/19/20 16:20*	*50*
Dibromofluoromethane (Surr)	*96*		*62 - 134*	*02/19/20 10:37*	*02/19/20 16:20*	*50*
Toluene-d8 (Surr)	*100*		*71 - 139*	*02/19/20 10:37*	*02/19/20 16:20*	*50*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**1030**		86.2	17.2	ug/Sample		02/12/20 06:25	02/17/20 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*89*		*50 - 200*	*02/12/20 06:25*	*02/17/20 15:55*	*1*

Client Sample ID: Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH RINSES

Lab Sample ID: 140-18172-3

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**319000**		10400	10400	ug/Sample		02/10/20 14:29	02/12/20 13:07	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 13:07*	*100*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*02/10/20 14:29*	*02/12/20 13:07*	*100*
Dibromofluoromethane (Surr)	*92*		*62 - 134*	*02/10/20 14:29*	*02/12/20 13:07*	*100*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 13:07*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	**119000**	**H**	3490	3490	ug/Sample		02/10/20 14:29	02/28/20 12:10	1
HFPO dimer, methyl ester as HFPO-DAF	ND	H	1150	1150	ug/Sample		02/10/20 14:29	02/28/20 12:10	1
2-MTP as HFPO	**311000**	**H E**	1040	1040	ug/Sample		02/10/20 14:29	02/28/20 12:10	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	1190	1190	ug/Sample		02/10/20 14:29	02/28/20 12:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/28/20 12:10*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/28/20 12:10*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/28/20 12:10*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/10/20 14:29*	*02/28/20 12:10*	*1*

Client Sample ID: Z-2336 R1 CPT TO FEED LINE #1 IMP #3/MEOH RINSES

Lab Sample ID: 140-18172-3

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	501		35.7	7.14	ug/Sample		02/12/20 06:25	02/17/20 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*93*		*50 - 200*	*02/12/20 06:25*	*02/17/20 15:58*	*1*

Client Sample ID: Z-2337 R1 CPT TO FEED LINE #1 IMP #4/MEOH RINSES

Lab Sample ID: 140-18172-4

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	249000		6370	6370	ug/Sample		02/10/20 14:29	02/12/20 13:31	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 160*	*02/10/20 14:29*	*02/12/20 13:31*	*100*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*02/10/20 14:29*	*02/12/20 13:31*	*100*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/12/20 13:31*	*100*
Toluene-d8 (Surr)	*95*		*71 - 139*	*02/10/20 14:29*	*02/12/20 13:31*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	6120	H	2140	2140	ug/Sample		02/10/20 14:29	02/28/20 12:34	1
HFPO dimer, methyl ester as HFPO-DAF	ND	H	703	703	ug/Sample		02/10/20 14:29	02/28/20 12:34	1
2-MTP as HFPO	257000	H E	637	637	ug/Sample		02/10/20 14:29	02/28/20 12:34	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	729	729	ug/Sample		02/10/20 14:29	02/28/20 12:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 160*	*02/10/20 14:29*	*02/28/20 12:34*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/28/20 12:34*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/28/20 12:34*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/10/20 14:29*	*02/28/20 12:34*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	286		36.2	7.25	ug/Sample		02/12/20 06:25	02/17/20 16:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*50 - 200*	*02/12/20 06:25*	*02/17/20 16:05*	*1*

Client Sample ID: Z-2238 R1 CPT TO FEED LINE #1 IMP #5/MEOH RINSES

Lab Sample ID: 140-18172-5

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**186000**		3800	3800	ug/Sample		02/10/20 14:29	02/12/20 13:56	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*02/10/20 14:29*	*02/12/20 13:56*	*100*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*02/10/20 14:29*	*02/12/20 13:56*	*100*
Dibromofluoromethane (Surr)	*89*		*62 - 134*	*02/10/20 14:29*	*02/12/20 13:56*	*100*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 13:56*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND	H	2390	2390	ug/Sample		02/10/20 14:29	02/28/20 12:59	1
HFPO dimer, methyl ester as HFPO-DAF	ND	H	787	787	ug/Sample		02/10/20 14:29	02/28/20 12:59	1
2-MTP as HFPO	**198000**	**H E**	713	713	ug/Sample		02/10/20 14:29	02/28/20 12:59	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	816	816	ug/Sample		02/10/20 14:29	02/28/20 12:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 160*	*02/10/20 14:29*	*02/28/20 12:59*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/28/20 12:59*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/28/20 12:59*	*1*
Toluene-d8 (Surr)	*98*		*71 - 139*	*02/10/20 14:29*	*02/28/20 12:59*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**193**		13.1	2.62	ug/Sample		02/12/20 06:25	02/17/20 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*68*		*50 - 200*	*02/12/20 06:25*	*02/17/20 16:09*	*1*

Client Sample ID: Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH RINSES

Lab Sample ID: 140-18172-6

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**126000**		2480	2480	ug/Sample		02/10/20 14:29	02/12/20 14:21	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 14:21*	*100*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*02/10/20 14:29*	*02/12/20 14:21*	*100*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/12/20 14:21*	*100*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 14:21*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND	H	1670	1670	ug/Sample		02/10/20 14:29	02/28/20 13:23	1

Client Sample ID: Z-2339 R1 CPT TO FEED LINE #1 IMP #6/MEOH RINSES

Lab Sample ID: 140-18172-6

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO dimer, methyl ester as HFPO-DAF	ND	H	549	549	ug/Sample		02/10/20 14:29	02/28/20 13:23	1
2-MTP as HFPO	**136000**	**H E**	497	497	ug/Sample		02/10/20 14:29	02/28/20 13:23	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	569	569	ug/Sample		02/10/20 14:29	02/28/20 13:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 160*	*02/10/20 14:29*	*02/28/20 13:23*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/28/20 13:23*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/28/20 13:23*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/10/20 14:29*	*02/28/20 13:23*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**105**		11.4	2.27	ug/Sample		02/12/20 06:25	02/17/20 16:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*69*		*50 - 200*	*02/12/20 06:25*	*02/17/20 16:12*	*1*

Client Sample ID: Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH RINSES

Lab Sample ID: 140-18172-7

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	**52800000**		1090000	1090000	ug/Sample		02/10/20 14:29	02/12/20 17:15	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 160*	*02/10/20 14:29*	*02/12/20 17:15*	*200*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:29*	*02/12/20 17:15*	*200*
Dibromofluoromethane (Surr)	*92*		*62 - 134*	*02/10/20 14:29*	*02/12/20 17:15*	*200*
Toluene-d8 (Surr)	*95*		*71 - 139*	*02/10/20 14:29*	*02/12/20 17:15*	*200*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	**70100000**	**H**	146000	146000	ug/Sample		02/19/20 10:37	02/19/20 16:45	100
HFPO dimer, methyl ester as HFPO-DAF	**68900**	**H**	48100	48100	ug/Sample		02/19/20 10:37	02/19/20 16:45	100
2-MTP as HFPO	**634000**	**H**	43500	43500	ug/Sample		02/19/20 10:37	02/19/20 16:45	100
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	49800	49800	ug/Sample		02/19/20 10:37	02/19/20 16:45	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 160*	*02/19/20 10:37*	*02/19/20 16:45*	*100*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*02/19/20 10:37*	*02/19/20 16:45*	*100*
Dibromofluoromethane (Surr)	*96*		*62 - 134*	*02/19/20 10:37*	*02/19/20 16:45*	*100*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/19/20 10:37*	*02/19/20 16:45*	*100*

Client Sample ID: Z-2340 R2 CPT TO FEED LINE #1 IMP #1/MEOH RINSES

Lab Sample ID: 140-18172-7

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	2200		29.8	5.95	ug/Sample		02/12/20 06:25	02/17/20 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*31*	*X*	*50 - 200*	*02/12/20 06:25*	*02/17/20 16:15*	*1*

Client Sample ID: Z-2341 R2 CPT TO FEED LINE #1 IMP #2/MEOH RINSES

Lab Sample ID: 140-18172-8

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	2140000		61800	61800	ug/Sample		02/10/20 14:29	02/12/20 15:12	200
2-MTP as HFPO	399000		18400	18400	ug/Sample		02/10/20 14:29	02/12/20 15:12	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 15:12*	*200*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:29*	*02/12/20 15:12*	*200*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/12/20 15:12*	*200*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 15:12*	*200*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	3160000	H	6180	6180	ug/Sample		02/19/20 10:37	02/19/20 17:09	50
HFPO dimer, methyl ester as HFPO-DAF	2610	H	2040	2040	ug/Sample		02/19/20 10:37	02/19/20 17:09	50
2-MTP as HFPO	479000	H	1840	1840	ug/Sample		02/19/20 10:37	02/19/20 17:09	50
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	2110	2110	ug/Sample		02/19/20 10:37	02/19/20 17:09	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 160*	*02/19/20 10:37*	*02/19/20 17:09*	*50*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/19/20 10:37*	*02/19/20 17:09*	*50*
Dibromofluoromethane (Surr)	*97*		*62 - 134*	*02/19/20 10:37*	*02/19/20 17:09*	*50*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/19/20 10:37*	*02/19/20 17:09*	*50*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	601		83.3	16.7	ug/Sample		02/12/20 12:15	02/17/20 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*50 - 200*	*02/12/20 12:15*	*02/17/20 16:32*	*1*

Client Sample ID: Z-2342 R2 CPT TO FEED LINE #1 IMP #3/MEOH RINSES

Lab Sample ID: 140-18172-9

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	331000		10700	10700	ug/Sample		02/10/20 14:29	02/12/20 15:37	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 15:37*	*100*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:29*	*02/12/20 15:37*	*100*
Dibromofluoromethane (Surr)	*92*		*62 - 134*	*02/10/20 14:29*	*02/12/20 15:37*	*100*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 15:37*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	138000	H	3620	3620	ug/Sample		02/10/20 14:29	02/28/20 13:48	1
HFPO dimer, methyl ester as HFPO-DAF	ND	H	1190	1190	ug/Sample		02/10/20 14:29	02/28/20 13:48	1
2-MTP as HFPO	396000	H E	1070	1070	ug/Sample		02/10/20 14:29	02/28/20 13:48	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	1230	1230	ug/Sample		02/10/20 14:29	02/28/20 13:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 160*	*02/10/20 14:29*	*02/28/20 13:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/28/20 13:48*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/28/20 13:48*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/10/20 14:29*	*02/28/20 13:48*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	476		36.8	7.35	ug/Sample		02/12/20 12:15	02/17/20 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*50 - 200*	*02/12/20 12:15*	*02/17/20 16:36*	*1*

Client Sample ID: Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH RINSES

Lab Sample ID: 140-18172-10

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	207000		6450	6450	ug/Sample		02/10/20 14:29	02/12/20 16:01	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 16:01*	*100*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:29*	*02/12/20 16:01*	*100*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/12/20 16:01*	*100*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 16:01*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	4470	H	2170	2170	ug/Sample		02/10/20 14:29	02/28/20 14:13	1

Client Sample ID: Z-2343 R2 CPT TO FEED LINE #1 IMP #4/MEOH RINSES

Lab Sample ID: 140-18172-10

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO dimer, methyl ester as HFPO-DAF	ND	H	713	713	ug/Sample		02/10/20 14:29	02/28/20 14:13	1
2-MTP as HFPO	**313000**	**H E**	645	645	ug/Sample		02/10/20 14:29	02/28/20 14:13	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	739	739	ug/Sample		02/10/20 14:29	02/28/20 14:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 160*	*02/10/20 14:29*	*02/28/20 14:13*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*02/10/20 14:29*	*02/28/20 14:13*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/28/20 14:13*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/10/20 14:29*	*02/28/20 14:13*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**288**		36.8	7.35	ug/Sample		02/12/20 12:15	02/17/20 16:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*50 - 200*	*02/12/20 12:15*	*02/17/20 16:39*	*1*

Client Sample ID: Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH RINSES

Lab Sample ID: 140-18172-11

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**190000**		4060	4060	ug/Sample		02/10/20 14:29	02/12/20 16:26	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 16:26*	*100*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*02/10/20 14:29*	*02/12/20 16:26*	*100*
Dibromofluoromethane (Surr)	*89*		*62 - 134*	*02/10/20 14:29*	*02/12/20 16:26*	*100*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 16:26*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND	H	2550	2550	ug/Sample		02/10/20 14:29	02/28/20 14:37	1
HFPO dimer, methyl ester as HFPO-DAF	ND	H	841	841	ug/Sample		02/10/20 14:29	02/28/20 14:37	1
2-MTP as HFPO	**223000**	**H E**	761	761	ug/Sample		02/10/20 14:29	02/28/20 14:37	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	871	871	ug/Sample		02/10/20 14:29	02/28/20 14:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 160*	*02/10/20 14:29*	*02/28/20 14:37*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*02/10/20 14:29*	*02/28/20 14:37*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/28/20 14:37*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/10/20 14:29*	*02/28/20 14:37*	*1*

Client Sample ID: Z-2344 R2 CPT TO FEED LINE #1 IMP #5/MEOH RINSES

Lab Sample ID: 140-18172-11

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**171**		14.0	2.79	ug/Sample		02/12/20 12:15	02/17/20 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*50 - 200*	*02/12/20 12:15*	*02/17/20 16:43*	*1*

Client Sample ID: Z-2345 R2 CPT TO FEED LINE #1 IMP #6/MEOH RINSES

Lab Sample ID: 140-18172-12

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**119000**		3070	3070	ug/Sample		02/10/20 14:29	02/12/20 16:51	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 160*	*02/10/20 14:29*	*02/12/20 16:51*	*100*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/12/20 16:51*	*100*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/12/20 16:51*	*100*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:29*	*02/12/20 16:51*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND	H	1470	1470	ug/Sample		02/10/20 14:29	02/28/20 15:02	1
HFPO dimer, methyl ester as HFPO-DAF	ND	H	485	485	ug/Sample		02/10/20 14:29	02/28/20 15:02	1
2-MTP as HFPO	**138000**	**H E**	439	439	ug/Sample		02/10/20 14:29	02/28/20 15:02	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	503	503	ug/Sample		02/10/20 14:29	02/28/20 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 160*	*02/10/20 14:29*	*02/28/20 15:02*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/28/20 15:02*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/28/20 15:02*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*02/10/20 14:29*	*02/28/20 15:02*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**91.2**		14.1	2.82	ug/Sample		02/12/20 12:15	02/17/20 16:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*105*		*50 - 200*	*02/12/20 12:15*	*02/17/20 16:46*	*1*

Client Sample ID: Z-2346 R3 CPT TO FEED LINE #1 IMP #1/MEOH RINSES

Lab Sample ID: 140-18172-13

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	64000000		1140000	1140000	ug/Sample		02/10/20 14:29	02/12/20 17:40	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*02/10/20 14:29*	*02/12/20 17:40*	*200*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/12/20 17:40*	*200*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/12/20 17:40*	*200*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 17:40*	*200*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	74000000		151000	151000	ug/Sample		02/19/20 10:37	02/19/20 17:34	100
HFPO dimer, methyl ester as HFPO-DAF	84500		49800	49800	ug/Sample		02/19/20 10:37	02/19/20 17:34	100
2-MTP as HFPO	213000		45100	45100	ug/Sample		02/19/20 10:37	02/19/20 17:34	100
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		51600	51600	ug/Sample		02/19/20 10:37	02/19/20 17:34	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 160*	*02/19/20 10:37*	*02/19/20 17:34*	*100*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/19/20 10:37*	*02/19/20 17:34*	*100*
Dibromofluoromethane (Surr)	*97*		*62 - 134*	*02/19/20 10:37*	*02/19/20 17:34*	*100*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/19/20 10:37*	*02/19/20 17:34*	*100*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	4850		156	31.3	ug/Sample		02/12/20 12:15	02/17/20 16:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*59*		*50 - 200*	*02/12/20 12:15*	*02/17/20 16:49*	*1*

Client Sample ID: Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH RINSES

Lab Sample ID: 140-18172-14

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	2040000		56900	56900	ug/Sample		02/10/20 14:29	02/12/20 18:04	200
2-MTP as HFPO	404000		16900	16900	ug/Sample		02/10/20 14:29	02/12/20 18:04	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 18:04*	*200*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:29*	*02/12/20 18:04*	*200*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/12/20 18:04*	*200*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 18:04*	*200*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	2490000		5690	5690	ug/Sample		02/19/20 10:37	02/19/20 17:58	50

Client Sample ID: Z-2347 R3 CPT TO FEED LINE #1 IMP #2/MEOH RINSES

Lab Sample ID: 140-18172-14

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO dimer, methyl ester as HFPO-DAF	**2550**		1870	1870	ug/Sample		02/19/20 10:37	02/19/20 17:58	50
2-MTP as HFPO	**410000**		1690	1690	ug/Sample		02/19/20 10:37	02/19/20 17:58	50
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1940	1940	ug/Sample		02/19/20 10:37	02/19/20 17:58	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 160*	*02/19/20 10:37*	*02/19/20 17:58*	*50*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*02/19/20 10:37*	*02/19/20 17:58*	*50*
Dibromofluoromethane (Surr)	*95*		*62 - 134*	*02/19/20 10:37*	*02/19/20 17:58*	*50*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/19/20 10:37*	*02/19/20 17:58*	*50*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**339**		78.1	15.6	ug/Sample		02/12/20 12:15	02/17/20 16:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*91*		*50 - 200*	*02/12/20 12:15*	*02/17/20 16:53*	*1*

Client Sample ID: Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH RINSES

Lab Sample ID: 140-18172-15

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**344000**		10700	10700	ug/Sample		02/10/20 14:29	02/12/20 18:29	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 18:29*	*100*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*02/10/20 14:29*	*02/12/20 18:29*	*100*
Dibromofluoromethane (Surr)	*89*		*62 - 134*	*02/10/20 14:29*	*02/12/20 18:29*	*100*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 18:29*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	**93100**	**H**	3580	3580	ug/Sample		02/10/20 14:29	02/28/20 15:26	1
HFPO dimer, methyl ester as HFPO-DAF	ND	H	1180	1180	ug/Sample		02/10/20 14:29	02/28/20 15:26	1
2-MTP as HFPO	**372000**	**H E**	1070	1070	ug/Sample		02/10/20 14:29	02/28/20 15:26	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	1220	1220	ug/Sample		02/10/20 14:29	02/28/20 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 160*	*02/10/20 14:29*	*02/28/20 15:26*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*02/10/20 14:29*	*02/28/20 15:26*	*1*
Dibromofluoromethane (Surr)	*89*		*62 - 134*	*02/10/20 14:29*	*02/28/20 15:26*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/10/20 14:29*	*02/28/20 15:26*	*1*

Client Sample ID: Z-2348 R3 CPT TO FEED LINE #1 IMP #3/MEOH RINSES

Lab Sample ID: 140-18172-15

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	192		36.8	7.35	ug/Sample		02/12/20 12:15	02/17/20 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*91*		*50 - 200*	*02/12/20 12:15*	*02/17/20 17:00*	*1*

Client Sample ID: Z-2349 R3 CPT TO FEED LINE #1 IMP #4/MEOH RINSES

Lab Sample ID: 140-18172-16

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	230000		6320	6320	ug/Sample		02/10/20 14:29	02/12/20 18:53	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 18:53*	*100*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/12/20 18:53*	*100*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/12/20 18:53*	*100*
Toluene-d8 (Surr)	*95*		*71 - 139*	*02/10/20 14:29*	*02/12/20 18:53*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	4850	H	2120	2120	ug/Sample		02/10/20 14:29	02/28/20 15:51	1
HFPO dimer, methyl ester as HFPO-DAF	ND	H	699	699	ug/Sample		02/10/20 14:29	02/28/20 15:51	1
2-MTP as HFPO	233000	H E	632	632	ug/Sample		02/10/20 14:29	02/28/20 15:51	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	724	724	ug/Sample		02/10/20 14:29	02/28/20 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 160*	*02/10/20 14:29*	*02/28/20 15:51*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:29*	*02/28/20 15:51*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/28/20 15:51*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*02/10/20 14:29*	*02/28/20 15:51*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	0.108		0.0362	0.00724	ug/Sample		02/12/20 12:15	02/17/20 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*105*		*50 - 200*	*02/12/20 12:15*	*02/17/20 17:03*	*1*

Client Sample ID: Z-2350 R3 CPT TO FEED LINE #1 IMP #5/MEOH RINSES

Lab Sample ID: 140-18172-17

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**164000**		4670	4670	ug/Sample		02/10/20 14:29	02/12/20 19:18	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 19:18*	*100*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*02/10/20 14:29*	*02/12/20 19:18*	*100*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:29*	*02/12/20 19:18*	*100*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 19:18*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND	H	1680	1680	ug/Sample		02/10/20 14:29	02/28/20 16:16	1
HFPO dimer, methyl ester as HFPO-DAF	ND	H	553	553	ug/Sample		02/10/20 14:29	02/28/20 16:16	1
2-MTP as HFPO	**168000**	**H E**	500	500	ug/Sample		02/10/20 14:29	02/28/20 16:16	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	573	573	ug/Sample		02/10/20 14:29	02/28/20 16:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 160*	*02/10/20 14:29*	*02/28/20 16:16*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*02/10/20 14:29*	*02/28/20 16:16*	*1*
Dibromofluoromethane (Surr)	*92*		*62 - 134*	*02/10/20 14:29*	*02/28/20 16:16*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/10/20 14:29*	*02/28/20 16:16*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**58.9**		16.0	3.21	ug/Sample		02/12/20 12:15	02/17/20 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*102*		*50 - 200*	*02/12/20 12:15*	*02/17/20 17:06*	*1*

Client Sample ID: Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH RINSES

Lab Sample ID: 140-18172-18

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**93500**		3290	3290	ug/Sample		02/10/20 14:29	02/12/20 19:43	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:29*	*02/12/20 19:43*	*100*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*02/10/20 14:29*	*02/12/20 19:43*	*100*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/12/20 19:43*	*100*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:29*	*02/12/20 19:43*	*100*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND	H	1110	1110	ug/Sample		02/10/20 14:29	02/28/20 16:40	1

Client Sample ID: Z-2351 R3 CPT TO FEED LINE #1 IMP #6/MEOH RINSES
Lab Sample ID: 140-18172-18
Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:35
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO dimer, methyl ester as HFPO-DAF	ND	H	364	364	ug/Sample		02/10/20 14:29	02/28/20 16:40	1
2-MTP as HFPO	**106000**	**H E**	329	329	ug/Sample		02/10/20 14:29	02/28/20 16:40	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND	H	377	377	ug/Sample		02/10/20 14:29	02/28/20 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 160*	*02/10/20 14:29*	*02/28/20 16:40*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:29*	*02/28/20 16:40*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:29*	*02/28/20 16:40*	*1*
Toluene-d8 (Surr)	*99*		*71 - 139*	*02/10/20 14:29*	*02/28/20 16:40*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**30.8**		15.1	3.01	ug/Sample		02/12/20 12:15	02/17/20 17:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*106*		*50 - 200*	*02/12/20 12:15*	*02/17/20 17:13*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Inlet Line #1 - MM18

Job ID: 140-18172-1

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

Prep: MeOH Prep

Analyte	RL	MDL	Units
2-MTP as HFPO	2.50	2.50	ug/Sample
Carbonyl Difluoride	10.0	10.0	ug/Sample
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	2.50	2.50	ug/Sample
HFPO dimer, methyl ester as HFPO-DAF	2.50	2.50	ug/Sample

Method: 8321A - PFOA and PFOS

Prep: None

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

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ANALYTICAL REPORT

Job Number: 140-18174-1

Job Description: TO CPT Inlet Line #2 - MM18

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager II
3/12/2020 4:42 PM

Courtney M Adkins, Project Manager II
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
03/12/2020
Revision: 1

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Qualifiers

LCMS

Qualifier	Qualifier Description
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate recovery exceeds control limits

Glossary

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Inlet Line #2 - MM18

Job ID: 140-18174-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL KNX
8321A	PFOA and PFOS	SW846	TAL DEN
MeOH Prep	Methanol Impinger Preparation	None	TAL KNX
None	Leaching Procedure	TAL SOP	TAL DEN

Protocol References:

None = None

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

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Inlet Line #2 - MM18

Job ID: 140-18174-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18174-1	K-2934 R1 CPT TO FEED LINE #2 IMP #1/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-2	K-2935 R1 CPT TO FEED LINE #2 IMP #2/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-3	K-2936 R1 CPT TO FEED LINE #2 IMP #3/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-4	K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-5	K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-6	K-2939 R1 CPT TO FEED LINE #2 IMP #6/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-7	K-2940 R2 CPT TO FEED LINE #2 IMP #1/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-8	K-2941 R2 CPT TO FEED LINE #2 IMP #2/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-9	K-2942 R2 CPT TO FEED LINE #2 IMP #3/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-10	K-2943 R2 CPT TO FEED LINE #2 IMP #4/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-11	K-2944 R2 CPT TO FEED LINE #2 IMP #5/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-12	K-2945 R2 CPT TO FEED LINE #2 IMP #6/MEOH RINSES	Air	02/04/20 00:00	02/06/20 07:00	
140-18174-13	K-2946 R3 CPT TO FEED LINE #2 IMP #1/MEOH RINSES	Air	02/05/20 00:00	02/06/20 07:00	
140-18174-14	K-2947 R3 CPT TO FEED LINE #2 IMP #2/MEOH RINSES	Air	02/05/20 00:00	02/06/20 07:00	
140-18174-15	K-2948 R3 CPT TO FEED LINE #2 IMP #3/MEOH RINSES	Air	02/05/20 00:00	02/06/20 07:00	
140-18174-16	K-2949 R3 CPT TO FEED LINE #2 IMP #4/MEOH RINSES	Air	02/05/20 00:00	02/06/20 07:00	
140-18174-17	K-2950 R3 CPT TO FEED LINE #2 IMP #5/MEOH RINSES	Air	02/05/20 00:00	02/06/20 07:00	
140-18174-18	K-2951 R3 CPT TO FEED LINE #2 IMP #6/MEOH RINSES	Air	02/05/20 00:00	02/06/20 07:00	

Job Narrative
140-18174-1

Sample Receipt

The samples were received on February 6, 2020 at 7:00 AM in good condition and properly preserved. The temperature of the cooler at receipt was 0.8º C.

Quality Control and Data Interpretation

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

GC/MS VOA

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

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

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

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL

Method 8260B: The following samples were diluted due to the abundance of non-target analytes: K-2934 R1 CPT TO FEED LINE #2 IMP #1/MEOH RINSES (140-18174-1), K-2935 R1 CPT TO FEED LINE #2 IMP #2/MEOH RINSES (140-18174-2), K-2936 R1 CPT TO FEED LINE #2 IMP #3/MEOH RINSES (140-18174-3), K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOH RINSES (140-18174-4), K-2940 R2 CPT TO FEED LINE #2 IMP #1/MEOH RINSES (140-18174-7), K-2941 R2 CPT TO FEED LINE #2 IMP #2/MEOH RINSES (140-18174-8), K-2942 R2 CPT TO FEED LINE #2 IMP #3/MEOH RINSES (140-18174-9), K-2943 R2 CPT TO FEED LINE #2 IMP #4/MEOH RINSES (140-18174-10), K-2946 R3 CPT TO FEED LINE #2 IMP #1/MEOH RINSES (140-18174-13), K-2947 R3 CPT TO FEED LINE #2 IMP #2/MEOH RINSES (140-18174-14), K-2948 R3 CPT TO FEED LINE #2 IMP #3/MEOH RINSES (140-18174-15) and K-2949 R3 CPT TO FEED LINE #2 IMP #4/MEOH RINSES (140-18174-16). Elevated reporting limits (RLs) are provided.

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

LCMS

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

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Inlet Line #2 - MM18

Job ID: 140-18174-1

GC/MS VOA

Prep Batch: 37377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18174-1	K-2934 R1 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	MeOH Prep	
140-18174-2	K-2935 R1 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	MeOH Prep	
140-18174-3	K-2936 R1 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	MeOH Prep	
140-18174-4	K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	MeOH Prep	
140-18174-5	K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	MeOH Prep	
140-18174-6	K-2939 R1 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	MeOH Prep	
140-18174-7	K-2940 R2 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	MeOH Prep	
140-18174-8	K-2941 R2 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	MeOH Prep	
140-18174-9	K-2942 R2 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	MeOH Prep	
140-18174-10	K-2943 R2 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	MeOH Prep	
140-18174-11	K-2944 R2 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	MeOH Prep	
140-18174-12	K-2945 R2 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	MeOH Prep	
140-18174-13	K-2946 R3 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	MeOH Prep	
140-18174-14	K-2947 R3 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	MeOH Prep	
140-18174-15	K-2948 R3 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	MeOH Prep	
140-18174-16	K-2949 R3 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	MeOH Prep	
140-18174-17	K-2950 R3 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	MeOH Prep	
140-18174-18	K-2951 R3 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	MeOH Prep	
MB 140-37377/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-37377/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-18174-4 MS	K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	MeOH Prep	
140-18174-4 MSD	K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	MeOH Prep	
140-18174-5 MS	K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	MeOH Prep	
140-18174-5 MSD	K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	MeOH Prep	

Analysis Batch: 37415

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18174-1	K-2934 R1 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	8260B	37377
140-18174-2	K-2935 R1 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	8260B	37377
140-18174-3	K-2936 R1 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	8260B	37377
140-18174-4	K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	8260B	37377
140-18174-5	K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	8260B	37377
140-18174-6	K-2939 R1 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	8260B	37377
140-18174-7	K-2940 R2 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	8260B	37377
140-18174-8	K-2941 R2 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	8260B	37377
140-18174-9	K-2942 R2 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	8260B	37377
140-18174-10	K-2943 R2 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	8260B	37377
140-18174-11	K-2944 R2 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	8260B	37377
140-18174-12	K-2945 R2 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	8260B	37377
140-18174-13	K-2946 R3 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	8260B	37377
140-18174-14	K-2947 R3 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	8260B	37377
140-18174-15	K-2948 R3 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	8260B	37377
140-18174-16	K-2949 R3 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	8260B	37377
140-18174-17	K-2950 R3 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	8260B	37377
140-18174-18	K-2951 R3 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	8260B	37377
MB 140-37377/2-A	Method Blank	Total/NA	Air	8260B	37377
LCS 140-37377/1-A	Lab Control Sample	Total/NA	Air	8260B	37377
140-18174-4 MS	K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	8260B	37377
140-18174-4 MSD	K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	8260B	37377
140-18174-5 MS	K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	8260B	37377
140-18174-5 MSD	K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	8260B	37377

LCMS

Analysis Batch: 481729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-481729/13	Lab Control Sample	Total/NA	Air	8321A	

Prep Batch: 485670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18174-1	K-2934 R1 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	None	
140-18174-2	K-2935 R1 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	None	
140-18174-3	K-2936 R1 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	None	
MB 280-485670/14-A	Method Blank	Total/NA	Air	None	
MB 280-485670/1-A	Method Blank	Total/NA	Air	None	
LCS 280-485670/2-A	Lab Control Sample	Total/NA	Air	None	
LCSD 280-485670/3-A	Lab Control Sample Dup	Total/NA	Air	None	

Analysis Batch: 486183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18174-1	K-2934 R1 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	8321A	485670
140-18174-2	K-2935 R1 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	8321A	485670
140-18174-3	K-2936 R1 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	8321A	485670
MB 280-485670/14-A	Method Blank	Total/NA	Air	8321A	485670
MB 280-485670/1-A	Method Blank	Total/NA	Air	8321A	485670
LCS 280-485670/2-A	Lab Control Sample	Total/NA	Air	8321A	485670
LCSD 280-485670/3-A	Lab Control Sample Dup	Total/NA	Air	8321A	485670

Prep Batch: 486250

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18174-4	K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	None	
140-18174-5	K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	None	
140-18174-6	K-2939 R1 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	None	
140-18174-7	K-2940 R2 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	None	
140-18174-8	K-2941 R2 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	None	
140-18174-9	K-2942 R2 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	None	
140-18174-10	K-2943 R2 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	None	
140-18174-11	K-2944 R2 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	None	
140-18174-12	K-2945 R2 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	None	
140-18174-13	K-2946 R3 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	None	
140-18174-14	K-2947 R3 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	None	
140-18174-15	K-2948 R3 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	None	
140-18174-16	K-2949 R3 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	None	
140-18174-17	K-2950 R3 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	None	
140-18174-18	K-2951 R3 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	None	
MB 280-486250/1-A	Method Blank	Total/NA	Air	None	
LCS 280-486250/2-A	Lab Control Sample	Total/NA	Air	None	
LCSD 280-486250/3-A	Lab Control Sample Dup	Total/NA	Air	None	

Analysis Batch: 486438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18174-4	K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	8321A	486250
140-18174-5	K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	8321A	486250
140-18174-6	K-2939 R1 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	8321A	486250
140-18174-7	K-2940 R2 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	8321A	486250
140-18174-8	K-2941 R2 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	8321A	486250
140-18174-9	K-2942 R2 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	8321A	486250

LCMS (Continued)

Analysis Batch: 486438 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18174-10	K-2943 R2 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	8321A	486250
140-18174-11	K-2944 R2 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	8321A	486250
140-18174-12	K-2945 R2 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	8321A	486250
140-18174-14	K-2947 R3 CPT TO FEED LINE #2 IMP #2/MEOI	Total/NA	Air	8321A	486250
140-18174-15	K-2948 R3 CPT TO FEED LINE #2 IMP #3/MEOI	Total/NA	Air	8321A	486250
140-18174-16	K-2949 R3 CPT TO FEED LINE #2 IMP #4/MEOI	Total/NA	Air	8321A	486250
140-18174-17	K-2950 R3 CPT TO FEED LINE #2 IMP #5/MEOI	Total/NA	Air	8321A	486250
140-18174-18	K-2951 R3 CPT TO FEED LINE #2 IMP #6/MEOI	Total/NA	Air	8321A	486250
MB 280-486250/1-A	Method Blank	Total/NA	Air	8321A	486250
LCS 280-486250/2-A	Lab Control Sample	Total/NA	Air	8321A	486250
LCSD 280-486250/3-A	Lab Control Sample Dup	Total/NA	Air	8321A	486250

Analysis Batch: 486459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18174-13	K-2946 R3 CPT TO FEED LINE #2 IMP #1/MEOI	Total/NA	Air	8321A	486250

Client Sample ID: K-2934 R1 CPT TO FEED LINE #2 IMP #1/MEOH RINSES

Lab Sample ID: 140-18174-1

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	522		499	499	ug/Sample		02/10/20 14:31	02/11/20 13:15	1
HFPO dimer, methyl ester as HFPO-DAF	355		164	164	ug/Sample		02/10/20 14:31	02/11/20 13:15	1
2-MTP as HFPO	276		148	148	ug/Sample		02/10/20 14:31	02/11/20 13:15	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	773		170	170	ug/Sample		02/10/20 14:31	02/11/20 13:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 160*	*02/10/20 14:31*	*02/11/20 13:15*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:31*	*02/11/20 13:15*	*1*
Dibromofluoromethane (Surr)	*93*		*62 - 134*	*02/10/20 14:31*	*02/11/20 13:15*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:31*	*02/11/20 13:15*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	93.8		13.6	2.72	ug/Sample		02/12/20 12:15	02/17/20 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*90*		*50 - 200*	*02/12/20 12:15*	*02/17/20 17:20*	*1*

Client Sample ID: K-2935 R1 CPT TO FEED LINE #2 IMP #2/MEOH RINSES

Lab Sample ID: 140-18174-2

Date Collected: 02/04/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		347	347	ug/Sample		02/10/20 14:31	02/11/20 15:43	1
HFPO dimer, methyl ester as HFPO-DAF	184		115	115	ug/Sample		02/10/20 14:31	02/11/20 15:43	1
2-MTP as HFPO	126		104	104	ug/Sample		02/10/20 14:31	02/11/20 15:43	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	140		119	119	ug/Sample		02/10/20 14:31	02/11/20 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:31*	*02/11/20 15:43*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:31*	*02/11/20 15:43*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:31*	*02/11/20 15:43*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:31*	*02/11/20 15:43*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	57.0		14.2	2.84	ug/Sample		02/12/20 12:15	02/17/20 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*50 - 200*	*02/12/20 12:15*	*02/17/20 17:24*	*1*

Client Sample ID: K-2936 R1 CPT TO FEED LINE #2 IMP #3/MEOH RINSES

Lab Sample ID: 140-18174-3

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		119	119	ug/Sample		02/10/20 14:31	02/11/20 16:08	1
HFPO dimer, methyl ester as HFPO-DAF	**81.6**		39.3	39.3	ug/Sample		02/10/20 14:31	02/11/20 16:08	1
2-MTP as HFPO	**44.0**		35.5	35.5	ug/Sample		02/10/20 14:31	02/11/20 16:08	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		40.7	40.7	ug/Sample		02/10/20 14:31	02/11/20 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:31*	*02/11/20 16:08*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:31*	*02/11/20 16:08*	*1*
Dibromofluoromethane (Surr)	*93*		*62 - 134*	*02/10/20 14:31*	*02/11/20 16:08*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:31*	*02/11/20 16:08*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**24.7**		11.4	2.28	ug/Sample		02/12/20 12:15	02/17/20 17:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*103*		*50 - 200*	*02/12/20 12:15*	*02/17/20 17:27*	*1*

Client Sample ID: K-2937 R1 CPT TO FEED LINE #2 IMP #4/MEOH RINSES

Lab Sample ID: 140-18174-4

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		130	130	ug/Sample		02/10/20 14:31	02/11/20 14:29	1
HFPO dimer, methyl ester as HFPO-DAF	ND		42.7	42.7	ug/Sample		02/10/20 14:31	02/11/20 14:29	1
2-MTP as HFPO	**52.4**		38.6	38.6	ug/Sample		02/10/20 14:31	02/11/20 14:29	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		44.2	44.2	ug/Sample		02/10/20 14:31	02/11/20 14:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*02/10/20 14:31*	*02/11/20 14:29*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:31*	*02/11/20 14:29*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:31*	*02/11/20 14:29*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:31*	*02/11/20 14:29*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**10.0**	**H**	0.331	0.0662	ug/Sample		02/18/20 11:37	02/19/20 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*40*	*X*	*50 - 200*	*02/18/20 11:37*	*02/19/20 16:13*	*1*

Client Sample ID: K-2938 R1 CPT TO FEED LINE #2 IMP #5/MEOH RINSES

Lab Sample ID: 140-18174-5

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		96.0	96.0	ug/Sample		02/10/20 14:31	02/11/20 14:54	1
HFPO dimer, methyl ester as HFPO-DAF	ND		31.7	31.7	ug/Sample		02/10/20 14:31	02/11/20 14:54	1
2-MTP as HFPO	**43.5**		28.6	28.6	ug/Sample		02/10/20 14:31	02/11/20 14:54	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		32.8	32.8	ug/Sample		02/10/20 14:31	02/11/20 14:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:31*	*02/11/20 14:54*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*02/10/20 14:31*	*02/11/20 14:54*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:31*	*02/11/20 14:54*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:31*	*02/11/20 14:54*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**2.29**	**H**	0.328	0.0655	ug/Sample		02/18/20 11:37	02/19/20 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*65*		*50 - 200*	*02/18/20 11:37*	*02/19/20 16:17*	*1*

Client Sample ID: K-2939 R1 CPT TO FEED LINE #2 IMP #6/MEOH RINSES

Lab Sample ID: 140-18174-6

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		100	100	ug/Sample		02/10/20 14:31	02/11/20 15:18	1
HFPO dimer, methyl ester as HFPO-DAF	ND		32.9	32.9	ug/Sample		02/10/20 14:31	02/11/20 15:18	1
2-MTP as HFPO	**45.9**		29.8	29.8	ug/Sample		02/10/20 14:31	02/11/20 15:18	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		34.1	34.1	ug/Sample		02/10/20 14:31	02/11/20 15:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*02/10/20 14:31*	*02/11/20 15:18*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:31*	*02/11/20 15:18*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:31*	*02/11/20 15:18*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:31*	*02/11/20 15:18*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**0.243**	**J H**	0.341	0.0683	ug/Sample		02/18/20 11:37	02/19/20 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*50 - 200*	*02/18/20 11:37*	*02/19/20 16:21*	*1*

Client Sample ID: K-2940 R2 CPT TO FEED LINE #2 IMP #1/MEOH RINSES

Lab Sample ID: 140-18174-7

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		487	487	ug/Sample		02/10/20 14:31	02/11/20 16:32	1
HFPO dimer, methyl ester as HFPO-DAF	**238**		160	160	ug/Sample		02/10/20 14:31	02/11/20 16:32	1
2-MTP as HFPO	ND		145	145	ug/Sample		02/10/20 14:31	02/11/20 16:32	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	**328**		166	166	ug/Sample		02/10/20 14:31	02/11/20 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 160*	*02/10/20 14:31*	*02/11/20 16:32*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:31*	*02/11/20 16:32*	*1*
Dibromofluoromethane (Surr)	*93*		*62 - 134*	*02/10/20 14:31*	*02/11/20 16:32*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:31*	*02/11/20 16:32*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**65.4**	**H**	0.333	0.0665	ug/Sample		02/18/20 11:37	02/19/20 16:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*11*	*X*	*50 - 200*	*02/18/20 11:37*	*02/19/20 16:25*	*1*

Client Sample ID: K-2941 R2 CPT TO FEED LINE #2 IMP #2/MEOH RINSES

Lab Sample ID: 140-18174-8

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		344	344	ug/Sample		02/10/20 14:31	02/11/20 16:57	1
HFPO dimer, methyl ester as HFPO-DAF	**174**		113	113	ug/Sample		02/10/20 14:31	02/11/20 16:57	1
2-MTP as HFPO	ND		102	102	ug/Sample		02/10/20 14:31	02/11/20 16:57	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		117	117	ug/Sample		02/10/20 14:31	02/11/20 16:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 160*	*02/10/20 14:31*	*02/11/20 16:57*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*02/10/20 14:31*	*02/11/20 16:57*	*1*
Dibromofluoromethane (Surr)	*92*		*62 - 134*	*02/10/20 14:31*	*02/11/20 16:57*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:31*	*02/11/20 16:57*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**52.7**	**H**	0.352	0.0704	ug/Sample		02/18/20 11:37	02/19/20 16:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*14*	*X*	*50 - 200*	*02/18/20 11:37*	*02/19/20 16:29*	*1*

Client Sample ID: K-2942 R2 CPT TO FEED LINE #2 IMP #3/MEOH RINSES

Lab Sample ID: 140-18174-9

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		141	141	ug/Sample		02/10/20 14:31	02/11/20 17:22	1
HFPO dimer, methyl ester as HFPO-DAF	**75.8**		46.3	46.3	ug/Sample		02/10/20 14:31	02/11/20 17:22	1
2-MTP as HFPO	ND		41.9	41.9	ug/Sample		02/10/20 14:31	02/11/20 17:22	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		48.0	48.0	ug/Sample		02/10/20 14:31	02/11/20 17:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:31*	*02/11/20 17:22*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:31*	*02/11/20 17:22*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:31*	*02/11/20 17:22*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:31*	*02/11/20 17:22*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**23.7**	**H**	0.336	0.0672	ug/Sample		02/18/20 11:37	02/19/20 16:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*25*	*X*	*50 - 200*	*02/18/20 11:37*	*02/19/20 16:32*	*1*

Client Sample ID: K-2943 R2 CPT TO FEED LINE #2 IMP #4/MEOH RINSES

Lab Sample ID: 140-18174-10

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		141	141	ug/Sample		02/10/20 14:31	02/11/20 17:56	1
HFPO dimer, methyl ester as HFPO-DAF	ND		46.4	46.4	ug/Sample		02/10/20 14:31	02/11/20 17:56	1
2-MTP as HFPO	ND		42.0	42.0	ug/Sample		02/10/20 14:31	02/11/20 17:56	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		48.1	48.1	ug/Sample		02/10/20 14:31	02/11/20 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:31*	*02/11/20 17:56*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*02/10/20 14:31*	*02/11/20 17:56*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:31*	*02/11/20 17:56*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:31*	*02/11/20 17:56*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**6.36**	**H**	0.361	0.0721	ug/Sample		02/18/20 11:37	02/19/20 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*49*	*X*	*50 - 200*	*02/18/20 11:37*	*02/19/20 16:36*	*1*

Client Sample ID: K-2944 R2 CPT TO FEED LINE #2 IMP #5/MEOH RINSES

Lab Sample ID: 140-18174-11

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		119	119	ug/Sample		02/10/20 14:31	02/11/20 18:20	1
HFPO dimer, methyl ester as HFPO-DAF	ND		39.2	39.2	ug/Sample		02/10/20 14:31	02/11/20 18:20	1
2-MTP as HFPO	**36.2**		35.5	35.5	ug/Sample		02/10/20 14:31	02/11/20 18:20	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		40.6	40.6	ug/Sample		02/10/20 14:31	02/11/20 18:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:31*	*02/11/20 18:20*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:31*	*02/11/20 18:20*	*1*
Dibromofluoromethane (Surr)	*93*		*62 - 134*	*02/10/20 14:31*	*02/11/20 18:20*	*1*
Toluene-d8 (Surr)	*95*		*71 - 139*	*02/10/20 14:31*	*02/11/20 18:20*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**0.697**	**H**	0.406	0.0812	ug/Sample		02/18/20 11:37	02/19/20 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*98*		*50 - 200*	*02/18/20 11:37*	*02/19/20 16:44*	*1*

Client Sample ID: K-2945 R2 CPT TO FEED LINE #2 IMP #6/MEOH RINSES

Lab Sample ID: 140-18174-12

Date Collected: 02/04/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		99.7	99.7	ug/Sample		02/10/20 14:31	02/11/20 18:45	1
HFPO dimer, methyl ester as HFPO-DAF	ND		32.9	32.9	ug/Sample		02/10/20 14:31	02/11/20 18:45	1
2-MTP as HFPO	**42.2**		29.8	29.8	ug/Sample		02/10/20 14:31	02/11/20 18:45	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		34.1	34.1	ug/Sample		02/10/20 14:31	02/11/20 18:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*02/10/20 14:31*	*02/11/20 18:45*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:31*	*02/11/20 18:45*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:31*	*02/11/20 18:45*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:31*	*02/11/20 18:45*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**0.0705**	**J H**	0.341	0.0682	ug/Sample		02/18/20 11:37	02/19/20 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*110*		*50 - 200*	*02/18/20 11:37*	*02/19/20 16:48*	*1*

Client Sample ID: K-2946 R3 CPT TO FEED LINE #2 IMP #1/MEOH RINSES

Lab Sample ID: 140-18174-13

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		602	602	ug/Sample		02/10/20 14:31	02/11/20 19:09	1
HFPO dimer, methyl ester as HFPO-DAF	**323**		198	198	ug/Sample		02/10/20 14:31	02/11/20 19:09	1
2-MTP as HFPO	ND		179	179	ug/Sample		02/10/20 14:31	02/11/20 19:09	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	**292**		205	205	ug/Sample		02/10/20 14:31	02/11/20 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:31*	*02/11/20 19:09*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*02/10/20 14:31*	*02/11/20 19:09*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:31*	*02/11/20 19:09*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:31*	*02/11/20 19:09*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**90.9**		0.822	0.164	ug/Sample		02/18/20 11:37	02/19/20 17:50	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*19*	*X D*	*50 - 200*	*02/18/20 11:37*	*02/19/20 17:50*	*2*

Client Sample ID: K-2947 R3 CPT TO FEED LINE #2 IMP #2/MEOH RINSES

Lab Sample ID: 140-18174-14

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		342	342	ug/Sample		02/10/20 14:31	02/11/20 19:34	1
HFPO dimer, methyl ester as HFPO-DAF	**167**		113	113	ug/Sample		02/10/20 14:31	02/11/20 19:34	1
2-MTP as HFPO	ND		102	102	ug/Sample		02/10/20 14:31	02/11/20 19:34	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		117	117	ug/Sample		02/10/20 14:31	02/11/20 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 160*	*02/10/20 14:31*	*02/11/20 19:34*	*1*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*	*02/10/20 14:31*	*02/11/20 19:34*	*1*
Dibromofluoromethane (Surr)	*93*		*62 - 134*	*02/10/20 14:31*	*02/11/20 19:34*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:31*	*02/11/20 19:34*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**46.6**		0.350	0.0700	ug/Sample		02/18/20 11:37	02/19/20 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*14*	*X*	*50 - 200*	*02/18/20 11:37*	*02/19/20 16:56*	*1*

Client Sample ID: K-2948 R3 CPT TO FEED LINE #2 IMP #3/MEOH RINSES

Lab Sample ID: 140-18174-15

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		153	153	ug/Sample		02/10/20 14:31	02/11/20 19:58	1
HFPO dimer, methyl ester as HFPO-DAF	**69.0**		50.5	50.5	ug/Sample		02/10/20 14:31	02/11/20 19:58	1
2-MTP as HFPO	ND		45.7	45.7	ug/Sample		02/10/20 14:31	02/11/20 19:58	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		52.3	52.3	ug/Sample		02/10/20 14:31	02/11/20 19:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*02/10/20 14:31*	*02/11/20 19:58*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:31*	*02/11/20 19:58*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:31*	*02/11/20 19:58*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:31*	*02/11/20 19:58*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**21.4**		0.366	0.0732	ug/Sample		02/18/20 11:37	02/19/20 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*26*	*X*	*50 - 200*	*02/18/20 11:37*	*02/19/20 17:00*	*1*

Client Sample ID: K-2949 R3 CPT TO FEED LINE #2 IMP #4/MEOH RINSES

Lab Sample ID: 140-18174-16

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		122	122	ug/Sample		02/10/20 14:31	02/11/20 20:23	1
HFPO dimer, methyl ester as HFPO-DAF	ND		40.0	40.0	ug/Sample		02/10/20 14:31	02/11/20 20:23	1
2-MTP as HFPO	ND		36.2	36.2	ug/Sample		02/10/20 14:31	02/11/20 20:23	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		41.4	41.4	ug/Sample		02/10/20 14:31	02/11/20 20:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 160*	*02/10/20 14:31*	*02/11/20 20:23*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*02/10/20 14:31*	*02/11/20 20:23*	*1*
Dibromofluoromethane (Surr)	*93*		*62 - 134*	*02/10/20 14:31*	*02/11/20 20:23*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:31*	*02/11/20 20:23*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**6.84**		0.310	0.0621	ug/Sample		02/18/20 11:37	02/19/20 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*46*	*X*	*50 - 200*	*02/18/20 11:37*	*02/19/20 17:04*	*1*

Client Sample ID: K-2950 R3 CPT TO FEED LINE #2 IMP #5/MEOH RINSES

Lab Sample ID: 140-18174-17

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		151	151	ug/Sample		02/10/20 14:31	02/11/20 20:51	1
HFPO dimer, methyl ester as HFPO-DAF	ND		49.7	49.7	ug/Sample		02/10/20 14:31	02/11/20 20:51	1
2-MTP as HFPO	ND		45.0	45.0	ug/Sample		02/10/20 14:31	02/11/20 20:51	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		51.5	51.5	ug/Sample		02/10/20 14:31	02/11/20 20:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*	*02/10/20 14:31*	*02/11/20 20:51*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:31*	*02/11/20 20:51*	*1*
Dibromofluoromethane (Surr)	*91*		*62 - 134*	*02/10/20 14:31*	*02/11/20 20:51*	*1*
Toluene-d8 (Surr)	*96*		*71 - 139*	*02/10/20 14:31*	*02/11/20 20:51*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**0.957**		0.515	0.103	ug/Sample		02/18/20 11:37	02/19/20 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*96*		*50 - 200*	*02/18/20 11:37*	*02/19/20 17:08*	*1*

Client Sample ID: K-2951 R3 CPT TO FEED LINE #2 IMP #6/MEOH RINSES

Lab Sample ID: 140-18174-18

Date Collected: 02/05/20 00:00
Date Received: 02/06/20 07:00
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		72.0	72.0	ug/Sample		02/10/20 14:31	02/11/20 21:15	1
HFPO dimer, methyl ester as HFPO-DAF	ND		23.7	23.7	ug/Sample		02/10/20 14:31	02/11/20 21:15	1
2-MTP as HFPO	ND		21.5	21.5	ug/Sample		02/10/20 14:31	02/11/20 21:15	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		24.6	24.6	ug/Sample		02/10/20 14:31	02/11/20 21:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*02/10/20 14:31*	*02/11/20 21:15*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*02/10/20 14:31*	*02/11/20 21:15*	*1*
Dibromofluoromethane (Surr)	*90*		*62 - 134*	*02/10/20 14:31*	*02/11/20 21:15*	*1*
Toluene-d8 (Surr)	*97*		*71 - 139*	*02/10/20 14:31*	*02/11/20 21:15*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**0.181**	**J**	0.246	0.0491	ug/Sample		02/18/20 11:37	02/19/20 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*112*		*50 - 200*	*02/18/20 11:37*	*02/19/20 17:11*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Inlet Line #2 - MM18

Job ID: 140-18174-1

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

Prep: MeOH Prep

Analyte	RL	MDL	Units
2-MTP as HFPO	2.50	2.50	ug/Sample
Carbonyl Difluoride	10.0	10.0	ug/Sample
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	2.50	2.50	ug/Sample
HFPO dimer, methyl ester as HFPO-DAF	2.50	2.50	ug/Sample

Method: 8321A - PFOA and PFOS

Prep: None

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

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ANALYTICAL REPORT

Job Number: 140-18171-1

Job Description: TO CPT Inlet - MM18 QC Samples

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager II
3/12/2020 4:22 PM

Courtney M Adkins, Project Manager II
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03/12/2020
Revision: 1

Table of Contents

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.

Glossary

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

Method Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18171-1
Project/Site: TO CPT Inlet - MM18 QC Samples

Method	Method Description	Protocol	Laboratory
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL KNX
8321A	PFOA and PFOS	SW846	TAL DEN
MeOH Prep	Methanol Impinger Preparation	None	TAL KNX
None	Leaching Procedure	TAL SOP	TAL DEN

Protocol References:

None = None

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

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Inlet - MM18 QC Samples

Job ID: 140-18171-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18171-1	Z-2790 QC CPT TO FEED LINES-IMP #1/MEOH RINSES BT	Air	02/05/20 00:00	02/06/20 09:11	
140-18171-2	Z-2791 QC CPT TO FEED LINES-IMP #2/MEOH RINSES BT	Air	02/05/20 00:00	02/06/20 09:11	
140-18171-3	Z-2792 QC CPT TO FEED LINES-IMP #3/MEOH RINSES BT	Air	02/05/20 00:00	02/06/20 09:11	
140-18171-4	Z-2793 QC CPT TO FEED LINES-IMP #4/MEOH RINSES BT	Air	02/05/20 00:00	02/06/20 09:11	
140-18171-5	Z-2794 QC CPT TO FEED LINES-IMP #5/MEOH RINSES BT	Air	02/05/20 00:00	02/06/20 09:11	
140-18171-6	Z-2795 QC CPT TO FEED LINES-IMP #6/MEOH RINSES BT	Air	02/05/20 00:00	02/06/20 09:11	
140-18171-7	Z-2796 QC CPT TO MEOH RB	Air	02/05/20 00:00	02/06/20 09:11	

Job Narrative
140-18171-1

Sample Receipt

The samples were received on February 6, 2020 at 7:00 AM in good condition and properly preserved. The temperature of the cooler at receipt was 1.4º C.

Quality Control and Data Interpretation

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

GC/MS VOA

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

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

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

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL

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

QC Association Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18171-1
Project/Site: TO CPT Inlet - MM18 QC Samples

GC/MS VOA

Prep Batch: 37297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18171-1 - DL	Z-2790 QC CPT TO FEED LINES-IMP #1/MEOH	Total/NA	Air	MeOH Prep	
140-18171-1	Z-2790 QC CPT TO FEED LINES-IMP #1/MEOH	Total/NA	Air	MeOH Prep	
140-18171-2 - DL	Z-2791 QC CPT TO FEED LINES-IMP #2/MEOH	Total/NA	Air	MeOH Prep	
140-18171-2	Z-2791 QC CPT TO FEED LINES-IMP #2/MEOH	Total/NA	Air	MeOH Prep	
140-18171-3	Z-2792 QC CPT TO FEED LINES-IMP #3/MEOH	Total/NA	Air	MeOH Prep	
140-18171-3 - DL	Z-2792 QC CPT TO FEED LINES-IMP #3/MEOH	Total/NA	Air	MeOH Prep	
140-18171-4	Z-2793 QC CPT TO FEED LINES-IMP #4/MEOH	Total/NA	Air	MeOH Prep	
140-18171-5	Z-2794 QC CPT TO FEED LINES-IMP #5/MEOH	Total/NA	Air	MeOH Prep	
140-18171-6 - DL	Z-2795 QC CPT TO FEED LINES-IMP #6/MEOH	Total/NA	Air	MeOH Prep	
140-18171-6	Z-2795 QC CPT TO FEED LINES-IMP #6/MEOH	Total/NA	Air	MeOH Prep	
140-18171-7	Z-2796 QC CPT TO MEOH RB	Total/NA	Air	MeOH Prep	
MB 140-37297/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-37297/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	

Analysis Batch: 37299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18171-1	Z-2790 QC CPT TO FEED LINES-IMP #1/MEOH	Total/NA	Air	8260B SIM	37297
140-18171-2	Z-2791 QC CPT TO FEED LINES-IMP #2/MEOH	Total/NA	Air	8260B SIM	37297
140-18171-3	Z-2792 QC CPT TO FEED LINES-IMP #3/MEOH	Total/NA	Air	8260B SIM	37297
140-18171-4	Z-2793 QC CPT TO FEED LINES-IMP #4/MEOH	Total/NA	Air	8260B SIM	37297
140-18171-5	Z-2794 QC CPT TO FEED LINES-IMP #5/MEOH	Total/NA	Air	8260B SIM	37297
140-18171-6	Z-2795 QC CPT TO FEED LINES-IMP #6/MEOH	Total/NA	Air	8260B SIM	37297
140-18171-7	Z-2796 QC CPT TO MEOH RB	Total/NA	Air	8260B SIM	37297
MB 140-37297/2-A	Method Blank	Total/NA	Air	8260B SIM	37297
LCS 140-37297/1-A	Lab Control Sample	Total/NA	Air	8260B SIM	37297

Analysis Batch: 37338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18171-1 - DL	Z-2790 QC CPT TO FEED LINES-IMP #1/MEOH	Total/NA	Air	8260B SIM	37297
140-18171-2 - DL	Z-2791 QC CPT TO FEED LINES-IMP #2/MEOH	Total/NA	Air	8260B SIM	37297
140-18171-3 - DL	Z-2792 QC CPT TO FEED LINES-IMP #3/MEOH	Total/NA	Air	8260B SIM	37297
140-18171-6 - DL	Z-2795 QC CPT TO FEED LINES-IMP #6/MEOH	Total/NA	Air	8260B SIM	37297

LCMS

Analysis Batch: 481729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-481729/13	Lab Control Sample	Total/NA	Air	8321A	

Prep Batch: 485535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18171-1	Z-2790 QC CPT TO FEED LINES-IMP #1/MEOH	Total/NA	Air	None	
140-18171-2	Z-2791 QC CPT TO FEED LINES-IMP #2/MEOH	Total/NA	Air	None	
140-18171-3	Z-2792 QC CPT TO FEED LINES-IMP #3/MEOH	Total/NA	Air	None	
140-18171-4	Z-2793 QC CPT TO FEED LINES-IMP #4/MEOH	Total/NA	Air	None	
140-18171-5	Z-2794 QC CPT TO FEED LINES-IMP #5/MEOH	Total/NA	Air	None	
140-18171-6	Z-2795 QC CPT TO FEED LINES-IMP #6/MEOH	Total/NA	Air	None	
140-18171-7	Z-2796 QC CPT TO MEOH RB	Total/NA	Air	None	
MB 280-485535/1-A	Method Blank	Total/NA	Air	None	
LCS 280-485535/2-A	Lab Control Sample	Total/NA	Air	None	
LCSD 280-485535/3-A	Lab Control Sample Dup	Total/NA	Air	None	

QC Association Summary

Client: The Chemours Company FC, LLC
Job ID: 140-18171-1
Project/Site: TO CPT Inlet - MM18 QC Samples

LCMS

Analysis Batch: 486182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18171-1	Z-2790 QC CPT TO FEED LINES-IMP #1/MEOH	Total/NA	Air	8321A	485535
140-18171-2	Z-2791 QC CPT TO FEED LINES-IMP #2/MEOH	Total/NA	Air	8321A	485535
140-18171-3	Z-2792 QC CPT TO FEED LINES-IMP #3/MEOH	Total/NA	Air	8321A	485535
140-18171-4	Z-2793 QC CPT TO FEED LINES-IMP #4/MEOH	Total/NA	Air	8321A	485535
140-18171-5	Z-2794 QC CPT TO FEED LINES-IMP #5/MEOH	Total/NA	Air	8321A	485535
140-18171-6	Z-2795 QC CPT TO FEED LINES-IMP #6/MEOH	Total/NA	Air	8321A	485535
140-18171-7	Z-2796 QC CPT TO MEOH RB	Total/NA	Air	8321A	485535
MB 280-485535/1-A	Method Blank	Total/NA	Air	8321A	485535
LCS 280-485535/2-A	Lab Control Sample	Total/NA	Air	8321A	485535
LCSD 280-485535/3-A	Lab Control Sample Dup	Total/NA	Air	8321A	485535

Client Sample ID: Z-2790 QC CPT TO FEED LINES-IMP #1/MEOH RINSES BT

Lab Sample ID: 140-18171-1

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:11
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	**10.5**		2.76	2.76	ug/Sample		02/06/20 10:06	02/06/20 18:13	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.907	0.907	ug/Sample		02/06/20 10:06	02/06/20 18:13	1
2-MTP as HFPO	**14.1**	**E**	0.0410	0.0410	ug/Sample		02/06/20 10:06	02/06/20 18:13	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	**0.128**		0.0470	0.0470	ug/Sample		02/06/20 10:06	02/06/20 18:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 10:06*	*02/06/20 18:13*	*1*
Dibromofluoromethane (Surr)	*92*		*50 - 150*	*02/06/20 10:06*	*02/06/20 18:13*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**14.2**		0.0821	0.0821	ug/Sample		02/06/20 10:06	02/08/20 11:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*50 - 150*	*02/06/20 10:06*	*02/08/20 11:37*	*1*
Dibromofluoromethane (Surr)	*85*		*50 - 150*	*02/06/20 10:06*	*02/08/20 11:37*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.0250	0.00500	ug/Sample		02/12/20 06:25	02/17/20 15:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*101*		*50 - 200*	*02/12/20 06:25*	*02/17/20 15:25*	*1*

Client Sample ID: Z-2791 QC CPT TO FEED LINES-IMP #2/MEOH RINSES BT

Lab Sample ID: 140-18171-2

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:11
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.54	2.54	ug/Sample		02/06/20 10:06	02/06/20 18:38	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.838	0.838	ug/Sample		02/06/20 10:06	02/06/20 18:38	1
2-MTP as HFPO	**10.7**	**E**	0.0379	0.0379	ug/Sample		02/06/20 10:06	02/06/20 18:38	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0434	0.0434	ug/Sample		02/06/20 10:06	02/06/20 18:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*50 - 150*	*02/06/20 10:06*	*02/06/20 18:38*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 10:06*	*02/06/20 18:38*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**10.9**		0.0758	0.0758	ug/Sample		02/06/20 10:06	02/08/20 12:02	1

Client Sample ID: Z-2791 QC CPT TO FEED LINES-IMP #2/MEOH RINSES BT

Lab Sample ID: 140-18171-2

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:11
Sample Container: Plastic 250ml - unpreserved

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*50 - 150*	*02/06/20 10:06*	*02/08/20 12:02*	*1*
Dibromofluoromethane (Surr)	*84*		*50 - 150*	*02/06/20 10:06*	*02/08/20 12:02*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.0250	0.00500	ug/Sample		02/12/20 06:25	02/17/20 15:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*101*		*50 - 200*	*02/12/20 06:25*	*02/17/20 15:28*	*1*

Client Sample ID: Z-2792 QC CPT TO FEED LINES-IMP #3/MEOH RINSES BT

Lab Sample ID: 140-18171-3

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:11
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.28	2.28	ug/Sample		02/06/20 10:06	02/06/20 19:02	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.749	0.749	ug/Sample		02/06/20 10:06	02/06/20 19:02	1
2-MTP as HFPO	**9.61**	**E**	0.0339	0.0339	ug/Sample		02/06/20 10:06	02/06/20 19:02	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0388	0.0388	ug/Sample		02/06/20 10:06	02/06/20 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*50 - 150*	*02/06/20 10:06*	*02/06/20 19:02*	*1*
Dibromofluoromethane (Surr)	*90*		*50 - 150*	*02/06/20 10:06*	*02/06/20 19:02*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**9.78**		0.0678	0.0678	ug/Sample		02/06/20 10:06	02/08/20 12:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*50 - 150*	*02/06/20 10:06*	*02/08/20 12:26*	*1*
Dibromofluoromethane (Surr)	*86*		*50 - 150*	*02/06/20 10:06*	*02/08/20 12:26*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.0250	0.00500	ug/Sample		02/12/20 06:25	02/17/20 15:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*103*		*50 - 200*	*02/12/20 06:25*	*02/17/20 15:31*	*1*

Client Sample ID: Z-2793 QC CPT TO FEED LINES-IMP #4/MEOH RINSES BT

Lab Sample ID: 140-18171-4

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:11
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.22	2.22	ug/Sample		02/06/20 10:06	02/06/20 19:27	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.731	0.731	ug/Sample		02/06/20 10:06	02/06/20 19:27	1
2-MTP as HFPO	**7.17**		0.0330	0.0330	ug/Sample		02/06/20 10:06	02/06/20 19:27	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0378	0.0378	ug/Sample		02/06/20 10:06	02/06/20 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*50 - 150*	*02/06/20 10:06*	*02/06/20 19:27*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 10:06*	*02/06/20 19:27*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.0250	0.00500	ug/Sample		02/12/20 06:25	02/17/20 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*50 - 200*	*02/12/20 06:25*	*02/17/20 15:35*	*1*

Client Sample ID: Z-2794 QC CPT TO FEED LINES-IMP #5/MEOH RINSES BT

Lab Sample ID: 140-18171-5

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:11
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.27	2.27	ug/Sample		02/06/20 10:06	02/06/20 19:51	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.749	0.749	ug/Sample		02/06/20 10:06	02/06/20 19:51	1
2-MTP as HFPO	**7.74**		0.0339	0.0339	ug/Sample		02/06/20 10:06	02/06/20 19:51	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0388	0.0388	ug/Sample		02/06/20 10:06	02/06/20 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*50 - 150*	*02/06/20 10:06*	*02/06/20 19:51*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 10:06*	*02/06/20 19:51*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.0250	0.00500	ug/Sample		02/12/20 06:25	02/17/20 15:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*101*		*50 - 200*	*02/12/20 06:25*	*02/17/20 15:38*	*1*

Client Sample ID: Z-2795 QC CPT TO FEED LINES-IMP #6/MEOH RINSES BT

Lab Sample ID: 140-18171-6

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:11
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.15	2.15	ug/Sample		02/06/20 10:06	02/06/20 20:16	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.708	0.708	ug/Sample		02/06/20 10:06	02/06/20 20:16	1
2-MTP as HFPO	**108**	**E**	0.0321	0.0321	ug/Sample		02/06/20 10:06	02/06/20 20:16	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	**0.0390**		0.0367	0.0367	ug/Sample		02/06/20 10:06	02/06/20 20:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 10:06*	*02/06/20 20:16*	*1*
Dibromofluoromethane (Surr)	*91*		*50 - 150*	*02/06/20 10:06*	*02/06/20 20:16*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-MTP as HFPO	**108**		0.641	0.641	ug/Sample		02/06/20 10:06	02/08/20 12:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*50 - 150*	*02/06/20 10:06*	*02/08/20 12:51*	*1*
Dibromofluoromethane (Surr)	*85*		*50 - 150*	*02/06/20 10:06*	*02/08/20 12:51*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.0250	0.00500	ug/Sample		02/12/20 06:25	02/17/20 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*50 - 200*	*02/12/20 06:25*	*02/17/20 15:41*	*1*

Client Sample ID: Z-2796 QC CPT TO MEOH RB

Lab Sample ID: 140-18171-7

Date Collected: 02/05/20 00:00
Matrix: Air
Date Received: 02/06/20 09:11
Sample Container: Plastic 250ml - unpreserved

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		2.20	2.20	ug/Sample		02/06/20 10:06	02/06/20 14:56	1
HFPO dimer, methyl ester as HFPO-DAF	ND		0.725	0.725	ug/Sample		02/06/20 10:06	02/06/20 14:56	1
2-MTP as HFPO	ND		0.0328	0.0328	ug/Sample		02/06/20 10:06	02/06/20 14:56	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		0.0375	0.0375	ug/Sample		02/06/20 10:06	02/06/20 14:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*50 - 150*	*02/06/20 10:06*	*02/06/20 14:56*	*1*
Dibromofluoromethane (Surr)	*89*		*50 - 150*	*02/06/20 10:06*	*02/06/20 14:56*	*1*

Method: 8321A - PFOA and PFOS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.0250	0.00500	ug/Sample		02/12/20 06:25	02/17/20 15:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*103*		*50 - 200*	*02/12/20 06:25*	*02/17/20 15:45*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Job ID: 140-18171-1
Project/Site: TO CPT Inlet - MM18 QC Samples

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

Prep: MeOH Prep

Analyte	RL	MDL	Units
2-MTP as HFPO	0.00250	0.00250	ug/Sample
Carbonyl Difluoride	0.200	0.200	ug/Sample
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	0.00250	0.00250	ug/Sample
HFPO dimer, methyl ester as HFPO-DAF	0.0500	0.0500	ug/Sample

Method: 8321A - PFOA and PFOS

Prep: None

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

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ANALYTICAL REPORT

Job Number: 140-18177-1

Job Description: TO CPT Process Samples

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager II
3/13/2020 9:51 AM

Courtney M Adkins, Project Manager II
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03/13/2020
Revision: 1

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Glossary

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

Method Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Process Samples

Job ID: 140-18177-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL KNX
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC
5030B	Purge and Trap	SW846	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

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

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Process Samples

Job ID: 140-18177-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18177-1	M-1131 R1 CPT TO MAKEUP WATER	Water	02/04/20 00:00	02/06/20 07:00	
140-18177-3	M-1133 R1 CPT TO MAKEUP WATER	Waste	02/04/20 00:00	02/06/20 07:00	
140-18177-4	M-1134 R1 CPT TO RECIRC ACID STREAM	Water	02/04/20 00:00	02/06/20 07:00	
140-18177-6	M-1136 R1 CPT TO RECIRC ACID STREAM	Waste	02/04/20 00:00	02/06/20 07:00	
140-18177-7	M-1140 R1 CPT TO STAGE 4 PURGE	Water	02/04/20 00:00	02/06/20 07:00	
140-18177-9	M-1142 R1 CPT TO STAGE 4 PURGE	Waste	02/04/20 00:00	02/06/20 07:00	
140-18177-10	M-1143 R2 CPT TO MAKEUP WATER	Water	02/04/20 00:00	02/06/20 07:00	
140-18177-12	M-1145 R2 CPT TO MAKEUP WATER	Waste	02/04/20 00:00	02/06/20 07:00	
140-18177-13	M-1146 R2 CPT TO RECIRC ACID STREAM	Water	02/04/20 00:00	02/06/20 07:00	
140-18177-15	M-1148 R2 CPT TO RECIRC ACID STREAM	Waste	02/04/20 00:00	02/06/20 07:00	
140-18177-16	M-1152 R2 CPT TO STAGE 4 PURGE	Water	02/04/20 00:00	02/06/20 07:00	
140-18177-18	M-1154 R2 CPT TO STAGE 4 PURGE	Waste	02/04/20 00:00	02/06/20 07:00	
140-18177-19	M-1155 R3 CPT TO MAKEUP WATER	Water	02/05/20 00:00	02/06/20 07:00	
140-18177-21	M-1157 R3 CPT TO MAKEUP WATER	Waste	02/05/20 00:00	02/06/20 07:00	
140-18177-22	M-1158 R3 CPT TO RECIRC ACID STREAM	Water	02/05/20 00:00	02/06/20 07:00	
140-18177-24	M-1160 R3 CPT TO RECIRC ACID STREAM	Waste	02/05/20 00:00	02/06/20 07:00	
140-18177-25	M-1164 R3 CPT TO STAGE 4 PURGE	Water	02/05/20 00:00	02/06/20 07:00	
140-18177-27	M-1166 R3 CPT TO STAGE 4 PURGE	Waste	02/05/20 00:00	02/06/20 07:00	

Job Narrative
140-18177-1

Sample Receipt

The samples were received on February 6, 2020 at 7:00 AM in good condition and properly preserved. The temperature of the cooler at receipt was 0.7º C.

Quality Control and Data Interpretation

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

GC/MS VOA

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

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

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

Waste sample results were calculated using the following equation:

Concentration ug/g or mg/kg = (C × DF × W × Vt) / (Va × Ws)

Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL
Ws = Weight of sample extracted, g

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

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Process Samples

Job ID: 140-18177-1

GC/MS VOA

Prep Batch: 37339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18177-3	M-1133 R1 CPT TO MAKEUP WATER	Total/NA	Waste	5030B	
140-18177-6	M-1136 R1 CPT TO RECIRC ACID STREAM	Total/NA	Waste	5030B	
140-18177-9	M-1142 R1 CPT TO STAGE 4 PURGE	Total/NA	Waste	5030B	
140-18177-12	M-1145 R2 CPT TO MAKEUP WATER	Total/NA	Waste	5030B	
140-18177-15	M-1148 R2 CPT TO RECIRC ACID STREAM	Total/NA	Waste	5030B	
140-18177-18	M-1154 R2 CPT TO STAGE 4 PURGE	Total/NA	Waste	5030B	
140-18177-21	M-1157 R3 CPT TO MAKEUP WATER	Total/NA	Waste	5030B	
140-18177-24	M-1160 R3 CPT TO RECIRC ACID STREAM	Total/NA	Waste	5030B	
140-18177-27	M-1166 R3 CPT TO STAGE 4 PURGE	Total/NA	Waste	5030B	
MB 140-37339/2-A	Method Blank	Total/NA	Waste	5030B	
LCS 140-37339/1-A	Lab Control Sample	Total/NA	Waste	5030B	
140-18177-3 MS	M-1133 R1 CPT TO MAKEUP WATER	Total/NA	Waste	5030B	
140-18177-3 MSD	M-1133 R1 CPT TO MAKEUP WATER	Total/NA	Waste	5030B	
140-18177-6 MS	M-1136 R1 CPT TO RECIRC ACID STREAM	Total/NA	Waste	5030B	
140-18177-6 MSD	M-1136 R1 CPT TO RECIRC ACID STREAM	Total/NA	Waste	5030B	
140-18177-9 MS	M-1142 R1 CPT TO STAGE 4 PURGE	Total/NA	Waste	5030B	
140-18177-9 MSD	M-1142 R1 CPT TO STAGE 4 PURGE	Total/NA	Waste	5030B	

Analysis Batch: 37365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18177-3	M-1133 R1 CPT TO MAKEUP WATER	Total/NA	Waste	8260B	37339
140-18177-6	M-1136 R1 CPT TO RECIRC ACID STREAM	Total/NA	Waste	8260B	37339
140-18177-9	M-1142 R1 CPT TO STAGE 4 PURGE	Total/NA	Waste	8260B	37339
140-18177-12	M-1145 R2 CPT TO MAKEUP WATER	Total/NA	Waste	8260B	37339
140-18177-15	M-1148 R2 CPT TO RECIRC ACID STREAM	Total/NA	Waste	8260B	37339
140-18177-18	M-1154 R2 CPT TO STAGE 4 PURGE	Total/NA	Waste	8260B	37339
140-18177-21	M-1157 R3 CPT TO MAKEUP WATER	Total/NA	Waste	8260B	37339
140-18177-24	M-1160 R3 CPT TO RECIRC ACID STREAM	Total/NA	Waste	8260B	37339
140-18177-27	M-1166 R3 CPT TO STAGE 4 PURGE	Total/NA	Waste	8260B	37339
MB 140-37339/2-A	Method Blank	Total/NA	Waste	8260B	37339
LCS 140-37339/1-A	Lab Control Sample	Total/NA	Waste	8260B	37339
140-18177-3 MS	M-1133 R1 CPT TO MAKEUP WATER	Total/NA	Waste	8260B	37339
140-18177-3 MSD	M-1133 R1 CPT TO MAKEUP WATER	Total/NA	Waste	8260B	37339
140-18177-6 MS	M-1136 R1 CPT TO RECIRC ACID STREAM	Total/NA	Waste	8260B	37339
140-18177-6 MSD	M-1136 R1 CPT TO RECIRC ACID STREAM	Total/NA	Waste	8260B	37339
140-18177-9 MS	M-1142 R1 CPT TO STAGE 4 PURGE	Total/NA	Waste	8260B	37339
140-18177-9 MSD	M-1142 R1 CPT TO STAGE 4 PURGE	Total/NA	Waste	8260B	37339

LCMS

Prep Batch: 356189

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18177-4	M-1134 R1 CPT TO RECIRC ACID STREAM	Total/NA	Water	3535	
140-18177-13	M-1146 R2 CPT TO RECIRC ACID STREAM	Total/NA	Water	3535	
140-18177-22	M-1158 R3 CPT TO RECIRC ACID STREAM	Total/NA	Water	3535	
MB 320-356189/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-356189/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-356189/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
140-18177-4 DU	M-1134 R1 CPT TO RECIRC ACID STREAM	Total/NA	Water	3535	

QC Association Summary

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Process Samples

Job ID: 140-18177-1

LCMS

Prep Batch: 357346

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18177-1	M-1131 R1 CPT TO MAKEUP WATER	Total/NA	Water	3535	
140-18177-7	M-1140 R1 CPT TO STAGE 4 PURGE	Total/NA	Water	3535	
140-18177-10	M-1143 R2 CPT TO MAKEUP WATER	Total/NA	Water	3535	
140-18177-16	M-1152 R2 CPT TO STAGE 4 PURGE	Total/NA	Water	3535	
140-18177-19	M-1155 R3 CPT TO MAKEUP WATER	Total/NA	Water	3535	
140-18177-25	M-1164 R3 CPT TO STAGE 4 PURGE	Total/NA	Water	3535	
MB 320-357346/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-357346/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-357346/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
140-18177-1 DU	M-1131 R1 CPT TO MAKEUP WATER	Total/NA	Water	3535	
140-18177-7 DU	M-1140 R1 CPT TO STAGE 4 PURGE	Total/NA	Water	3535	

Analysis Batch: 358567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18177-4	M-1134 R1 CPT TO RECIRC ACID STREAM	Total/NA	Water	537 (modified)	356189
140-18177-13	M-1146 R2 CPT TO RECIRC ACID STREAM	Total/NA	Water	537 (modified)	356189
140-18177-22	M-1158 R3 CPT TO RECIRC ACID STREAM	Total/NA	Water	537 (modified)	356189
MB 320-356189/1-A	Method Blank	Total/NA	Water	537 (modified)	356189
LCS 320-356189/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	356189
LCSD 320-356189/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	356189
140-18177-4 DU	M-1134 R1 CPT TO RECIRC ACID STREAM	Total/NA	Water	537 (modified)	356189

Analysis Batch: 359098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18177-1	M-1131 R1 CPT TO MAKEUP WATER	Total/NA	Water	537 (modified)	357346
140-18177-7	M-1140 R1 CPT TO STAGE 4 PURGE	Total/NA	Water	537 (modified)	357346
140-18177-10	M-1143 R2 CPT TO MAKEUP WATER	Total/NA	Water	537 (modified)	357346
140-18177-16	M-1152 R2 CPT TO STAGE 4 PURGE	Total/NA	Water	537 (modified)	357346
140-18177-19	M-1155 R3 CPT TO MAKEUP WATER	Total/NA	Water	537 (modified)	357346
140-18177-25	M-1164 R3 CPT TO STAGE 4 PURGE	Total/NA	Water	537 (modified)	357346
MB 320-357346/1-A	Method Blank	Total/NA	Water	537 (modified)	357346
LCS 320-357346/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	357346
LCSD 320-357346/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	357346
140-18177-1 DU	M-1131 R1 CPT TO MAKEUP WATER	Total/NA	Water	537 (modified)	357346
140-18177-7 DU	M-1140 R1 CPT TO STAGE 4 PURGE	Total/NA	Water	537 (modified)	357346

Client Sample ID: M-1131 R1 CPT TO MAKEUP WATER

Lab Sample ID: 140-18177-1
Date Collected: 02/04/20 00:00
Matrix: Water
Date Received: 02/06/20 07:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		4.0	1.5	ng/L		02/13/20 16:19	02/17/20 02:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*107*		*25 - 150*	*02/13/20 16:19*	*02/17/20 02:10*	*1*

Client Sample ID: M-1133 R1 CPT TO MAKEUP WATER

Lab Sample ID: 140-18177-3
Date Collected: 02/04/20 00:00
Matrix: Waste
Date Received: 02/06/20 07:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		4.2	4.2	mg/Kg		02/08/20 12:53	02/10/20 13:21	1
HFPO dimer, methyl ester as HFPO-DAF	ND		1.4	1.4	mg/Kg		02/08/20 12:53	02/10/20 13:21	1
2-MTP as HFPO	ND		1.2	1.2	mg/Kg		02/08/20 12:53	02/10/20 13:21	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1.4	1.4	mg/Kg		02/08/20 12:53	02/10/20 13:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*72 - 144*	*02/08/20 12:53*	*02/10/20 13:21*	*1*
4-Bromofluorobenzene (Surr)	*96*		*62 - 144*	*02/08/20 12:53*	*02/10/20 13:21*	*1*
Dibromofluoromethane (Surr)	*93*		*72 - 138*	*02/08/20 12:53*	*02/10/20 13:21*	*1*
Toluene-d8 (Surr)	*97*		*75 - 137*	*02/08/20 12:53*	*02/10/20 13:21*	*1*

Client Sample ID: M-1134 R1 CPT TO RECIRC ACID STREAM

Lab Sample ID: 140-18177-4
Date Collected: 02/04/20 00:00
Matrix: Water
Date Received: 02/06/20 07:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**140**		100	38	ng/L		02/10/20 14:00	02/19/20 13:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*91*		*25 - 150*	*02/10/20 14:00*	*02/19/20 13:27*	*1*

Client Sample ID: M-1136 R1 CPT TO RECIRC ACID STREAM

Lab Sample ID: 140-18177-6
Date Collected: 02/04/20 00:00
Matrix: Waste
Date Received: 02/06/20 07:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		4.1	4.1	mg/Kg		02/08/20 12:53	02/10/20 13:45	1
HFPO dimer, methyl ester as HFPO-DAF	ND		1.3	1.3	mg/Kg		02/08/20 12:53	02/10/20 13:45	1
2-MTP as HFPO	ND		1.1	1.1	mg/Kg		02/08/20 12:53	02/10/20 13:45	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1.3	1.3	mg/Kg		02/08/20 12:53	02/10/20 13:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*72 - 144*	*02/08/20 12:53*	*02/10/20 13:45*	*1*
4-Bromofluorobenzene (Surr)	*96*		*62 - 144*	*02/08/20 12:53*	*02/10/20 13:45*	*1*
Dibromofluoromethane (Surr)	*93*		*72 - 138*	*02/08/20 12:53*	*02/10/20 13:45*	*1*
Toluene-d8 (Surr)	*97*		*75 - 137*	*02/08/20 12:53*	*02/10/20 13:45*	*1*

Client Sample ID: M-1140 R1 CPT TO STAGE 4 PURGE

Lab Sample ID: 140-18177-7
Date Collected: 02/04/20 00:00
Matrix: Water
Date Received: 02/06/20 07:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		4.0	1.5	ng/L		02/13/20 16:19	02/17/20 02:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*107*		*25 - 150*	*02/13/20 16:19*	*02/17/20 02:30*	*1*

Client Sample ID: M-1142 R1 CPT TO STAGE 4 PURGE

Lab Sample ID: 140-18177-9
Date Collected: 02/04/20 00:00
Matrix: Waste
Date Received: 02/06/20 07:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		4.1	4.1	mg/Kg		02/08/20 12:53	02/10/20 14:10	1
HFPO dimer, methyl ester as HFPO-DAF	ND		1.3	1.3	mg/Kg		02/08/20 12:53	02/10/20 14:10	1
2-MTP as HFPO	ND		1.1	1.1	mg/Kg		02/08/20 12:53	02/10/20 14:10	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1.3	1.3	mg/Kg		02/08/20 12:53	02/10/20 14:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*72 - 144*	*02/08/20 12:53*	*02/10/20 14:10*	*1*
4-Bromofluorobenzene (Surr)	*97*		*62 - 144*	*02/08/20 12:53*	*02/10/20 14:10*	*1*
Dibromofluoromethane (Surr)	*92*		*72 - 138*	*02/08/20 12:53*	*02/10/20 14:10*	*1*
Toluene-d8 (Surr)	*96*		*75 - 137*	*02/08/20 12:53*	*02/10/20 14:10*	*1*

Client Sample ID: M-1143 R2 CPT TO MAKEUP WATER

Lab Sample ID: 140-18177-10
Date Collected: 02/04/20 00:00
Matrix: Water
Date Received: 02/06/20 07:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		4.0	1.5	ng/L		02/13/20 16:19	02/17/20 02:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*25 - 150*	*02/13/20 16:19*	*02/17/20 02:50*	*1*

Client Sample ID: M-1145 R2 CPT TO MAKEUP WATER

Lab Sample ID: 140-18177-12
Date Collected: 02/04/20 00:00
Matrix: Waste
Date Received: 02/06/20 07:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		4.2	4.2	mg/Kg		02/08/20 12:53	02/10/20 14:35	1
HFPO dimer, methyl ester as HFPO-DAF	ND		1.4	1.4	mg/Kg		02/08/20 12:53	02/10/20 14:35	1
2-MTP as HFPO	ND		1.2	1.2	mg/Kg		02/08/20 12:53	02/10/20 14:35	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1.4	1.4	mg/Kg		02/08/20 12:53	02/10/20 14:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*72 - 144*	*02/08/20 12:53*	*02/10/20 14:35*	*1*
4-Bromofluorobenzene (Surr)	*95*		*62 - 144*	*02/08/20 12:53*	*02/10/20 14:35*	*1*
Dibromofluoromethane (Surr)	*88*		*72 - 138*	*02/08/20 12:53*	*02/10/20 14:35*	*1*
Toluene-d8 (Surr)	*97*		*75 - 137*	*02/08/20 12:53*	*02/10/20 14:35*	*1*

Client Sample ID: M-1146 R2 CPT TO RECIRC ACID STREAM

Lab Sample ID: 140-18177-13
Date Collected: 02/04/20 00:00
Matrix: Water
Date Received: 02/06/20 07:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		100	38	ng/L		02/10/20 14:00	02/19/20 13:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*101*		*25 - 150*	*02/10/20 14:00*	*02/19/20 13:47*	*1*

Client Sample ID: M-1148 R2 CPT TO RECIRC ACID STREAM

Lab Sample ID: 140-18177-15
Date Collected: 02/04/20 00:00
Matrix: Waste
Date Received: 02/06/20 07:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		4.1	4.1	mg/Kg		02/08/20 12:53	02/10/20 14:59	1
HFPO dimer, methyl ester as HFPO-DAF	ND		1.3	1.3	mg/Kg		02/08/20 12:53	02/10/20 14:59	1
2-MTP as HFPO	ND		1.1	1.1	mg/Kg		02/08/20 12:53	02/10/20 14:59	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1.3	1.3	mg/Kg		02/08/20 12:53	02/10/20 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*72 - 144*	*02/08/20 12:53*	*02/10/20 14:59*	*1*
4-Bromofluorobenzene (Surr)	*96*		*62 - 144*	*02/08/20 12:53*	*02/10/20 14:59*	*1*
Dibromofluoromethane (Surr)	*91*		*72 - 138*	*02/08/20 12:53*	*02/10/20 14:59*	*1*
Toluene-d8 (Surr)	*97*		*75 - 137*	*02/08/20 12:53*	*02/10/20 14:59*	*1*

Client Sample ID: M-1152 R2 CPT TO STAGE 4 PURGE

Lab Sample ID: 140-18177-16
Date Collected: 02/04/20 00:00
Matrix: Water
Date Received: 02/06/20 07:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		4.0	1.5	ng/L		02/13/20 16:19	02/17/20 03:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*96*		*25 - 150*	*02/13/20 16:19*	*02/17/20 03:00*	*1*

Client Sample ID: M-1154 R2 CPT TO STAGE 4 PURGE

Lab Sample ID: 140-18177-18
Date Collected: 02/04/20 00:00
Matrix: Waste
Date Received: 02/06/20 07:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		4.1	4.1	mg/Kg		02/08/20 12:53	02/10/20 15:24	1
HFPO dimer, methyl ester as HFPO-DAF	ND		1.3	1.3	mg/Kg		02/08/20 12:53	02/10/20 15:24	1
2-MTP as HFPO	ND		1.1	1.1	mg/Kg		02/08/20 12:53	02/10/20 15:24	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1.3	1.3	mg/Kg		02/08/20 12:53	02/10/20 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*72 - 144*	*02/08/20 12:53*	*02/10/20 15:24*	*1*
4-Bromofluorobenzene (Surr)	*95*		*62 - 144*	*02/08/20 12:53*	*02/10/20 15:24*	*1*
Dibromofluoromethane (Surr)	*93*		*72 - 138*	*02/08/20 12:53*	*02/10/20 15:24*	*1*
Toluene-d8 (Surr)	*96*		*75 - 137*	*02/08/20 12:53*	*02/10/20 15:24*	*1*

Client Sample ID: M-1155 R3 CPT TO MAKEUP WATER
Lab Sample ID: 140-18177-19
Date Collected: 02/05/20 00:00
Matrix: Water
Date Received: 02/06/20 07:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**15**		4.0	1.5	ng/L		02/13/20 16:19	02/17/20 03:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*109*		*25 - 150*	*02/13/20 16:19*	*02/17/20 03:10*	*1*

Client Sample ID: M-1157 R3 CPT TO MAKEUP WATER
Lab Sample ID: 140-18177-21
Date Collected: 02/05/20 00:00
Matrix: Waste
Date Received: 02/06/20 07:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		4.2	4.2	mg/Kg		02/08/20 12:53	02/10/20 15:48	1
HFPO dimer, methyl ester as HFPO-DAF	ND		1.4	1.4	mg/Kg		02/08/20 12:53	02/10/20 15:48	1
2-MTP as HFPO	ND		1.2	1.2	mg/Kg		02/08/20 12:53	02/10/20 15:48	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1.4	1.4	mg/Kg		02/08/20 12:53	02/10/20 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*72 - 144*	*02/08/20 12:53*	*02/10/20 15:48*	*1*
4-Bromofluorobenzene (Surr)	*97*		*62 - 144*	*02/08/20 12:53*	*02/10/20 15:48*	*1*
Dibromofluoromethane (Surr)	*90*		*72 - 138*	*02/08/20 12:53*	*02/10/20 15:48*	*1*
Toluene-d8 (Surr)	*97*		*75 - 137*	*02/08/20 12:53*	*02/10/20 15:48*	*1*

Client Sample ID: M-1158 R3 CPT TO RECIRC ACID STREAM
Lab Sample ID: 140-18177-22
Date Collected: 02/05/20 00:00
Matrix: Water
Date Received: 02/06/20 07:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	**300**		100	38	ng/L		02/10/20 14:00	02/19/20 13:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*107*		*25 - 150*	*02/10/20 14:00*	*02/19/20 13:57*	*1*

Client Sample ID: M-1160 R3 CPT TO RECIRC ACID STREAM
Lab Sample ID: 140-18177-24
Date Collected: 02/05/20 00:00
Matrix: Waste
Date Received: 02/06/20 07:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		4.2	4.2	mg/Kg		02/08/20 12:53	02/10/20 16:13	1
HFPO dimer, methyl ester as HFPO-DAF	ND		1.4	1.4	mg/Kg		02/08/20 12:53	02/10/20 16:13	1
2-MTP as HFPO	ND		1.2	1.2	mg/Kg		02/08/20 12:53	02/10/20 16:13	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1.4	1.4	mg/Kg		02/08/20 12:53	02/10/20 16:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*72 - 144*	*02/08/20 12:53*	*02/10/20 16:13*	*1*
4-Bromofluorobenzene (Surr)	*96*		*62 - 144*	*02/08/20 12:53*	*02/10/20 16:13*	*1*
Dibromofluoromethane (Surr)	*91*		*72 - 138*	*02/08/20 12:53*	*02/10/20 16:13*	*1*
Toluene-d8 (Surr)	*97*		*75 - 137*	*02/08/20 12:53*	*02/10/20 16:13*	*1*

Client Sample ID: M-1164 R3 CPT TO STAGE 4 PURGE
Lab Sample ID: 140-18177-25
Date Collected: 02/05/20 00:00
Matrix: Water
Date Received: 02/06/20 07:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		4.0	1.5	ng/L		02/13/20 16:19	02/17/20 03:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*104*		*25 - 150*	*02/13/20 16:19*	*02/17/20 03:20*	*1*

Client Sample ID: M-1166 R3 CPT TO STAGE 4 PURGE
Lab Sample ID: 140-18177-27
Date Collected: 02/05/20 00:00
Matrix: Waste
Date Received: 02/06/20 07:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		4.2	4.2	mg/Kg		02/08/20 12:55	02/10/20 16:37	1
HFPO dimer, methyl ester as HFPO-DAF	ND		1.4	1.4	mg/Kg		02/08/20 12:55	02/10/20 16:37	1
2-MTP as HFPO	ND		1.2	1.2	mg/Kg		02/08/20 12:55	02/10/20 16:37	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		1.4	1.4	mg/Kg		02/08/20 12:55	02/10/20 16:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*72 - 144*	*02/08/20 12:55*	*02/10/20 16:37*	*1*
4-Bromofluorobenzene (Surr)	*96*		*62 - 144*	*02/08/20 12:55*	*02/10/20 16:37*	*1*
Dibromofluoromethane (Surr)	*91*		*72 - 138*	*02/08/20 12:55*	*02/10/20 16:37*	*1*
Toluene-d8 (Surr)	*97*		*75 - 137*	*02/08/20 12:55*	*02/10/20 16:37*	*1*

Default Detection Limits

Client: The Chemours Company FC, LLC
Project/Site: TO CPT Process Samples

Job ID: 140-18177-1

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

Prep: 5030B

Analyte	RL	MDL	Units
2-MTP as HFPO	1.2	1.2	mg/Kg
Carbonyl Difluoride	5.0	5.0	mg/Kg
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	1.2	1.2	mg/Kg
HFPO dimer, methyl ester as HFPO-DAF	1.2	1.2	mg/Kg

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: 3535

Analyte	RL	MDL	Units
HFPO-DA	4.0	1.5	ng/L

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
Z - 2790	QC/BT	Impinger Contents #1	603.4	602.8	0.6	
Z - 2791	QC/BT	Impinger Contents #2	609.4	608.8	0.6	
Z - 2792	QC/BT	Impinger Contents #3	605.4	604.9	0.5	
Z - 2793	QC/BT	Impinger Contents #4	605.0	604.5	0.5	
Z - 2794	QC/BT	Impinger Contents #5	604.9	604.5	0.4	
Z - 2795	QC/BT	Impinger Contents #6	629.7	629.6	0.1	
				Net Weight Gain (g):	2.7	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Abbreviations/Acronyms:
BT = Blank Train
QC = Quality Control

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
Z - 2334	1	Impinger Contents #1	716.9	604.8	112.1	0.0
Z - 2335	1	Impinger Contents #2	617.8	602.0	15.8	0.0
Z - 2336	1	Impinger Contents #3	603.0	595.4	7.6	2.0
Z - 2337	1	Impinger Contents #4	605.4	598.4	7.0	2.0
Z - 2338	1	Impinger Contents #5	605.0	598.0	7.0	3.0
Z - 2339	1	Impinger Contents #6	605.0	599.2	5.8	3.0
				Net Weight Gain (g):	**155.3**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
Z - 2340	2	Impinger Contents #1	746.3	621.9	124.4	0.0
Z - 2341	2	Impinger Contents #2	631.2	617.2	14.0	0.0
Z - 2342	2	Impinger Contents #3	620.4	605.9	14.5	1.0
Z - 2343	2	Impinger Contents #4	621.1	607.8	13.3	1.0
Z - 2344	2	Impinger Contents #5	622.1	610.2	11.9	1.0
Z - 2345	2	Impinger Contents #6	629.6	623.6	6.0	2.0
				Net Weight Gain (g):	**184.1**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
Z - 2346	3	Impinger Contents #1	710.2	599.9	110.3	0.0
Z - 2347	3	Impinger Contents #2	607.5	599.8	7.7	0.0
Z - 2348	3	Impinger Contents #3	607.5	603.5	4.0	1.0
Z - 2349	3	Impinger Contents #4	603.4	600.7	2.7	2.0
Z - 2350	3	Impinger Contents #5	608.6	606.1	2.5	2.0
Z - 2351	3	Impinger Contents #6	637.2	634.8	2.4	3.0
				Net Weight Gain (g):	**129.6**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
K - 2934	1	Impinger Contents #1	599.6	598.2	1.4	
K - 2935	1	Impinger Contents #2	599.9	598.9	1.0	
K - 2936	1	Impinger Contents #3	601.5	600.8	0.7	
K - 2937	1	Impinger Contents #4	604.6	606.3	-1.7	
K - 2938	1	Impinger Contents #5	604.9	604.3	0.6	
K - 2939	1	Impinger Contents #6	603.5	603.0	0.5	
				Net Weight Gain (g):	**2.5**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
K - 2940	2	Impinger Contents #1	608.9	608.4	0.5	
K - 2941	2	Impinger Contents #2	610.7	609.9	0.8	
K - 2942	2	Impinger Contents #3	608.3	607.8	0.5	
K - 2943	2	Impinger Contents #4	615.4	613.3	2.1	
K - 2944	2	Impinger Contents #5	620.0	605.6	14.4	
K - 2945	2	Impinger Contents #6	621.7	636.9	-15.2	
				Net Weight Gain (g):	**3.1**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
K - 2946	3	Impinger Contents #1	603.0	601.9	1.1	
K - 2947	3	Impinger Contents #2	601.6	600.8	0.8	
K - 2948	3	Impinger Contents #3	601.5	600.5	1.0	
K - 2949	3	Impinger Contents #4	604.0	603.3	0.7	
K - 2950	3	Impinger Contents #5	638.6	602.1	36.5	
K - 2951	3	Impinger Contents #6	596.0	630.8	-34.8	
				Net Weight Gain (g):	**5.3**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
Q - 1734	QC/BT	Impinger Contents #1	631.4	631.5	-0.1	5.0
Q - 1735	QC/BT	Impinger Contents #2	615.8	615.6	0.2	5.0
Q - 1736	QC/BT	Impinger Contents #3	608.7	608.5	0.2	5.0
Q - 1737	QC/BT	Impinger Contents #4	603.3	607.0	0.3	5.0
Q - 1738	QC/BT	Impinger Contents #5	607.0	607.0	0.0	5.0
Q - 1739	QC/BT	Impinger Contents #6	612.4	612.0	0.4	5.0
Q - 1741	QC/BT	Impinger Contents #7	584.0	584.0	0.0	6.0
				Net Weight Gain (g):	**1.0**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Abbreviations/Acronyms:

BT = Blank Train
QC = Quality Control

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
D - 2764	1	Impinger Contents #1	589.7	605.7	-16	5.0
D - 2765	1	Impinger Contents #2	623.0	610.0	13	5.0
D - 2766	1	Impinger Contents #3	610.8	607.0	3.8	5.0
D - 2767	1	Impinger Contents #4	607.5	605.5	2.0	5.0
D - 2768	1	Impinger Contents #5	606.7	605.5	1.2	5.0
D - 2769	1	Impinger Contents #6	607.4	605.8	1.6	5.0
D - 2782	1	Impinger Contents #7	607.2	605.8	1.4	5.0
				Net Weight Gain (g):	**7.0**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[(1)] (g)	Sample Weight (g)	pH[(2)]
D - 2770	2	Impinger Contents #1	615.4	632.7	-17.3	5.0
D - 2771	2	Impinger Contents #2	625.5	612.2	13.3	5.0
D - 2772	2	Impinger Contents #3	612.6	607.6	5.0	5.0
D - 2773	2	Impinger Contents #4	608.9	606.3	2.6	5.0
D - 2774	2	Impinger Contents #5	609.0	607.4	1.6	5.0
D - 2775	2	Impinger Contents #6	609.8	608.5	1.3	5.0
D - 2783	2	Impinger Contents #7	583.1	582.0	1.1	5.0
				Net Weight Gain (g):	**7.6**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Field Sample No.	Run No.	Sample Description	Final Weight (g)	Initial Weight[1] (g)	Sample Weight (g)	pH[2]
D - 2776	3	Impinger Contents #1	620.3	632.7	-12.4	5.0
D - 2777	3	Impinger Contents #2	628.5	614.8	13.7	5.0
D - 2778	3	Impinger Contents #3	612.7	608.7	4.0	5.0
D - 2779	3	Impinger Contents #4	609.8	607.1	2.7	5.0
D - 2780	3	Impinger Contents #5	608.9	608.1	0.8	5.0
D - 2781	3	Impinger Contents #6	609.2	608.1	1.1	5.0
D - 2784	3	Impinger Contents #7	584.3	583.1	1.2	5.0
				Net Weight Gain (g):	**11.1**	

Notes:

(1) *Please place 100 mLs of MeOH in each impinger to start the test run, add several boiling chips and record the weight. MeOH impingers are to be post-weighed prior to rinses being added.*

(2) *Note that pH strips should be wetted prior to pH tests, and post weights and train rinses should be performed before pH measurements are performed. Strips should not be directly dipped into MM-18 Train samples, but treated with drops of the impinger samples to prevent contamination of the samples with materials on the strips.*

The Target Analyte List (TAL) is as follows:

HFPO-DA
HFPO-DAF
Fluoroether E-1
HFPO
Carbonyl Di-fluoride
Perfluoroacetyl fluoride (PAF)
pH
Total Fluorine
HF

Abbreviations/Acronyms:
BT = Blank Train
QC = Quality Control

APPENDIX D
SAMPLE CALCULATIONS

TARGET PFAS COMPOUND CONTROL EFFICIENCY CALCULATIONS FOR TABLE 2-1

Inlet (Sum of Monomer and Polymer lines)

	R1	R2	R3	
EMISSION RESULTS, lb/hr.				
HFPO Dimer, Methyl Ester as HFPO-DAF	0.099341822	0.097624817	0.140066839	
HFPO Monomer	2.633485001	2.95849917	2.402727364	
Fluoroether E-1	0.001307985	0.000480793	0.000425323	
HFPO Dimer Acid	0.011287769	0.005404894	0.008994643	
Carbonyl Difluoride	100.8665699	99.47444393	122.51662	
	1.04E+02	**1.03E+02**	**1.25E+02**	1.10E+02

Stack

	R1	R2	R3	
EMISSION RESULTS, lb/hr.				
HFPO Dimer, Methyl Ester as HFPO-DAF	< 2.92919E-05	< 2.51963E-05	< 2.51667E-05	
HFPO Monomer	7.21979E-04	1.29693E-03	1.25438E-04	
HFPO Dimer Acid	4.02974E-06	1.60720E-05	4.99579E-06	
Carbonyl Difluoride	< 8.86906E-05	< 7.62645E-05	< 7.61751E-05	
Fluoroether E-1	< 1.51493E-06	< 1.30808E-06	< 1.30173E-06	
	8.46E-04	**1.42E-03**	**2.33E-04**	8.31E-04
CONTROL EFFICIENCY	99.99918	99.99862	99.99981	99.99921

Notes:

The Stack compounds denoted with < were not detected in the samples. Therefore, a value of zero (0) was used for the input values to calculate the total PFAS target compounds.

The following Inlet compounds were not detected in the samples and therefore, a value of zero (0) was used for the input values to calculate the total PFAS target compounds: Monomer Line - Fluoroether E-1 R1, R2 and R3; Polymer Line - HFPO Monomer R3, Carbonyl Difluoride R2 and R3

SAMPLE CALCULATIONS FOR
HFPO DIMER ACID (METHOD 0010)

Client: Chemours | **Plant: Fayetteville, NC**
Test Number: Run 3 | **Test Date: 2/5/2020**
Test Location: Thermal Oxidizer Stack | **Test Period: 0950-1306**

1. HFPO Dimer Acid concentration, lbs/dscf.

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

$$Conc1 = \frac{1.3 \times 2.2046 \times 10\text{-}9}{124.235}$$

Conc1 = 2.36E-11

Where:

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

Conc1 = Thermal Oxidizer Stack HFPO Dimer Acid concentration, lbs/dscf.

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

2. HFPO Dimer Acid concentration, ug/dscm.

Conc2 = W / (Vm(std) x 0.02832)

Conc2 = 1.3 / (124.235 x 0.02832)

Conc2 = 3.78E-01

Where:

Conc2 = Thermal Oxidizer Stack 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.

$MR1_{(Outlet)}$ = Conc1 x Qs(std) x 60 min/hr

$MR1_{(Outlet)}$ = 2.36E-11 x 3531 x 60

$MR1_{(Outlet)}$ = 5.00E-06

Where:

$MR1_{(Outlet)}$ = Thermal Oxidizer Stack HFPO Dimer Acid mass emission rate, lbs/hr.

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

$MR2_{(Outlet)}$ = PMR1 x 453.59 / 3600

$MR2_{(Outlet)}$ = 5.00E-06 x 453.59 /3600

$MR2_{(Outlet)}$ = 6.29E-07

Where:

$MR2_{(Outlet)}$ = Thermal Oxidizer Stack HFPO Dimer Acid mass emission rate, g/sec.

453.6 = Conversion factor from pounds to grams.

3600 = Conversion factor from hours to seconds.

EXAMPLE CALCULATIONS FOR
VOLUMETRIC FLOW AND MOISTURE AND ISOKINETICS

Client: Chemours	Facility: Fayetteville, NC
Test Number: Run 3	Test Date: 2/5/2020
Test Location: Thermal Oxidizer Stack	Test Period: 0950-1306

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

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

$$Vm(std) = \frac{17.64 \times 0.9834 \times 124.830 \times \left(29.92 + \frac{1.421}{13.6} \right)}{63.33 + 460} = 124.235$$

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, dcf.
Pb	=	Barometric Pressure, in Hg.
delt H	=	Average pressure drop across the orifice meter, in H_2O
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.

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

$$Vw(std) = (0.04707 \times 38.0) + (0.04715 \times 30.3) = 3.22$$

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) (ft^3)/lb-mole)(deg R); absolute temperature at standard conditions (528 deg R), absolute pressure at standard conditions (29.92 in. Hg), ft^3/ml.
0.04715	=	Factor which includes the molecular weight of water (18.0 lb/lb-mole), the ideal gas constant 21.85 (in. Hg) (ft^3)/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, ft^3/g.

3. Moisture content

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

$$bws = \frac{3.22}{3.22 + 124.235} = 0.025$$

Where:

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

4. Mole fraction of dry gas.

Md = 1 - bws

Md = 1 - 0.025 = 0.975

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 x 4.0) + (0.320 x 14.6) + (0.280 x (81.4 + 0.00))

MWd = 29.22

Where:

MWd = Dry molecular weight , lb/lb-mole.
% CO2 = 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 x Md) + (18 x (1 - Md))

MWs = (29.22 x 0.975) +(18 (1 - 0.975)) = 28.94

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.

$$Vs = 85.49 \times Cp \times ((\text{delt } p)^{1/2})avg \times \left(\frac{Ts\ (avg)}{Ps \times MWs} \right)^{1/2}$$

$$Vs = 85.49 \times 0.84 \times 0.61432 \times \left(\frac{536}{29.90 \times 28.94} \right)^{\wedge}1/2 = 34.7$$

Where:

Vs = Average gas stream velocity, ft/sec.

85.49 = Pitot tube constant, $\frac{ft/sec \times (lb/lb\text{-}mole)(in.\ Hg)^{1/2}}{(deg\ R)(in\ H_2O)}$

Cp = Pitot tube coefficient, dimensionless.

Ts = Absolute gas stream temperature, deg R = Ts, deg F + 460.

Ps = Absolute gas stack pressure, in. Hg. = $Pb + \frac{P(static)}{13.6}$

delt p = Velocity head of stack, in. H_2O.

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

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

$$Qs(act) = 60 \times 34.7 \times 1.77 = 3681$$

Where:

Qs(act) = Volumetric flow rate of wet stack gas at actual conditions, wacf/min.

As = Cross-sectional area of stack, ft^2.

60 = Conversion factor from seconds to minutes.

9. Average gas stream dry volumetric flow rate at standard conditions, dscf/min.

$$Qs(std) = 17.64 \times Md \times \frac{Ps}{Ts} \times Qs(act)$$

$$Qs(std) = 17.64 \times 0.975 \times \frac{29.90}{535.9} \times 3681$$

$$Qs(std) = 3531$$

Where:

Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min.

10. Isokinetic variation calculated from intermediate values, percent.

$$I = \frac{17.327 \times Ts \times Vm(std)}{Vs \times O \times Ps \times Md \times (Dn)^2}$$

$$I = \frac{17.327 \times 536 \times 124.235}{34.7 \times 180 \times 29.90 \times 0.975 \times (0.250)^{\wedge}2} = 101.4$$

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), $\frac{(\text{in. Hg})(\text{in}^2)(\text{min})}{(\text{deg R})(\text{ft}^2)(\text{sec})}$

SAMPLE CALCULATIONS FOR TOTAL TARGET COMPOUNDS

Client: Chemours | Plant: Fayetteville

Test Number: Run 1 | Test Date: 2/4/2020

Test Location: Thermal Oxidizer Inlet (Polymers) | Test Period: 1020-1337

INLET TARGET COMPOUND FEED RATE

The waste gas feed rates to the thermal oxidizer are measured by mass flow meters. To determine the target compound feed rates, the waste gas feed sampling and analysis data reduced to yield mass of target compound per total mass concentrations. From the modified Method 18 sampling train recovery data, the total mass of organic vapors condensed is determined from the sum of the changes in the impinger masses:

$$\Delta IM_{TOT} = \Delta IM_1 + \Delta IM_2 + \Delta IM_3 + \Delta IM_4 + \Delta IM_5 + \Delta IM_6$$

$$2.5 = 1.4 + 1.0 + 0.7 + -1.7 + 0.6 + 0.5$$

$$2.5\ g = 0.0025\ kg$$

Where: ΔIM_{TOT} = Total impinger mass change

ΔIM_N = Individual impinger mass changes (Impingers 1-6).

From the modified Method 18 sampling train fraction analysis, the total mass of all target compounds is determined from sum of the individual impinger analyses:

$$C_{TOT} = C_1 + C_2 + C_3 + C_4 + C_5 + C_6$$

$$390683 = 186926 + 114450 + 57525.6 + 23452.4 + 82452.4 + 45.9$$

$$390683\ ug = 0.00039\ kg$$

Where: C_{TOT} = Total mass of all target compounds

C_N = Individual mass analysis results (Impingers 1-6).

From the modified Method 18 sampling train dry gas metering system data, the mass of dry gas sampled is determined:

$$DG_M = V_{M(STP)} * MW_G / MV_{STP}$$

$$113 = 97.223 * 28 / 24.055$$

$$113\ g = 0.113\ kg$$

Where: DG_M = Dry gas mass

$V_{M(STP)}$ = Dry gas meter measured volume at STP

MW_G = Dry gas molecular weight (28)

MV = Molar volume (volume per mole of gas at STP) (24.055)

STP = Standard temperature and pressure (20º C and 1 ATM)

Because the carrier gas for the waste gas header system is nitrogen, a dry gas molecular weight of 28 may be reasonably assumed.

The total mass of organic vapor and dry gas sampled is:

$$M_{TOT} = DG_M + \Delta IM_{TOT}$$

$$0.1155 = 0.113 + 0.0025$$

Where: M_{TOT} = Total organic vapor and dry gas mass sampled (kg)

ΔIM_{TOT} = Total impinger mass change

DG_M = Dry gas mass.

The mass of target compound per total mass is:

$$FC_C = C_{TOT}/M_{TOT}$$

$$0.20848 = 0.02408/0.1155$$

Where: FC_C = Feed concentration of target compound in mass/total mass

C_{TOT} = Total mass of target compound

M_{TOT} = Total mass of organic vapor and dry gas mass sampled

The mass feed rate of the target compound is:

$$FR_C = FC_C * MF$$

$$118.48 \text{ (kg/hr)} = 0.20848*75.16$$

$$261.204 \text{ (lb/hr)} = 118.48 \text{ (kg/hr)}$$

Where: FR_C = Mass feed rate of target compound (lb/hr)

FC_C = Feed concentration of target compound in mass/total mass

MF = Mass feed rate measured by mass flow meter.

APPENDIX E
EQUIPMENT CALIBRATION RECORDS

INTERFERENCE CHECK

Date: 12/4/14-12/5/14
Analyzer Type: Servomex - O_2
Model No: 4900
Serial No: 49000-652921
Calibration Span: 21.09 %
Pollutant: 21.09% O_2 - CC418692

INTERFERENT GAS	ANALYZER RESPONSE		% OF CALIBRATION SPAN[(a)]
	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	
CO_2 (30.17% CC199689)	0.00	-0.01	0.00
NO (445 ppm CC346681)	0.00	0.02	0.11
NO_2 (23.78 ppm CC500749)	NA	NA	NA
N_2O (90.4 ppm CC352661)	0.00	0.05	0.24
CO (461.5 ppm XC006064B)	0.00	0.02	0.00
SO_2 (451.2 ppm CC409079)	0.00	0.05	0.23
CH_4 (453.1 ppm SG901795)	NA	NA	NA
H_2 (552 ppm ALM048043)	0.00	0.09	0.44
HCl (45.1 ppm CC17830)	0.00	0.03	0.14
NH_3 (9.69 ppm CC58181)	0.00	0.01	0.03
TOTAL INTERFERENCE RESPONSE			**1.20**
METHOD SPECIFICATION			**< 2.5%**

[(a)] The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker

INTERFERENCE CHECK

Date: 12/4/14-12/5/14
Analyzer Type: Servomex - CO_2
Model No: 4900
Serial No: 49000-652921
Calibration Span: 16.65%
Pollutant: 16.65% CO_2 - CC418692

INTERFERENT GAS	ANALYZER RESPONSE		% OF CALIBRATION SPAN[(a)]
	INTERFERENT GAS RESPONSE (%)	INTERFERENT GAS RESPONSE, WITH BACKGROUND POLLUTANT (%)	
CO_2 (30.17% CC199689)	NA .	NA	NA
NO (445 ppm CC346681)	0.00	0.02	0.10
NO_2 (23.78 ppm CC500749)	0.00	0.00	0.02
N_2O (90.4 ppm CC352661)	0.00	0.01	0.04
CO (461.5 ppm XC006064B)	0.00	0.01	0.00
SO_2 (451.2 ppm CC409079)	0.00	0.11	0.64
CH_4 (453.1 ppm SG901795)	0.00	0.07	0.44
H_2 (552 ppm ALM048043)	0.00	0.04	0.22
HCl (45.1 ppm CC17830)	0.10	0.06	0.60
NH_3 (9.69 ppm CC58181)	0.00	0.02	0.14
TOTAL INTERFERENCE RESPONSE			**2.19**
METHOD SPECIFICATION			**< 2.5%**

[(a)] The larger of the absolute values obtained for the interferent tested with and without the pollutant present was used in summing the interferences.

Chad Walker

Airgas Specialty Gases
Airgas USA, LLC
6141 Easton Road
Bldg 1
Plumsteadville, PA 18949
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI79E15A00E4	Reference Number:	160-401590223-1
Cylinder Number:	ALM056900	Cylinder Volume:	150.5 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2015 PSIG
PGVP Number:	A12019	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Sep 09, 2019

Expiration Date: Sep 09, 2027

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 mole/mole 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 %	8.921 %	G1	+/- 0.5% NIST Traceable	09/09/2019
OXYGEN	12.00 %	12.01 %	G1	+/- 0.4% NIST Traceable	09/09/2019
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	102505	K025852	7.016 % CARBON DIOXIDE/NITROGEN	+/- 0.5%	Jan 13, 2022
NTRM	102909	k021729	9.967 % OXYGEN/NITROGEN	0.30%	Apr 19, 2022

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
HORIBA VA5011 T5V6VU9P NDIR CO2	NDIR	Aug 19, 2019
SIEMENS OXYMAT 6 - W5951 - O2	PARAMAGNETIC	Aug 27, 2019

Triad Data Available Upon Request

Signature on file
Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
600 Union Landing Road
Cinnaminson, NJ 08077-0000
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI62E15A0224	Reference Number:	82-401288925-1
Cylinder Number:	ALM047628	Cylinder Volume:	157.2 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	17.00 %	17.05 %	G1	+/- 0.7% NIST Traceable	09/04/2018
OXYGEN	21.00 %	21.25 %	G1	+/- 0.5% NIST Traceable	09/04/2018
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060804	CC415400	24.04 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 16, 2019
NTRM	09061420	CC273671	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	Aug 09, 2018
Horiba MPA 510-O2-7TWMJ041	Paramagnetic	Aug 09, 2018

Triad Data Available Upon Request

Signature on file
Approved for Release

DRY GAS METER CALIBRATION REPORT
Box WC-32

Customer: Weston Solutions Date: March 27, 2019

Console Serial # 2381 Console Model # C-5000 SOL

DGM Model # S-275 DGM SN # 18100293 Reference Meter S/N 16300942

Barometric Pressure, P_b: 30.12 in. Hg Tested at: 0 in. Hg - Vacuum

Standard Pressure : 29.92 in. Hg Standard Temperature : 528 °R

	1	2	3	Units
Orifice Manometer Setting, ΔH	2.00	0.75	6.00	in. H_2O
Elapsed Time	14	22	8	min.
Reference Meter				
Final Volume Reading	069.903	081.075	092.929	ft^3
Initial Volume Reading	058.660	070.214	081.710	ft^3
Total Gas Volume, V_w	11.243	10.861	11.219	ft^3
Temperature, Initial	66.8	66.8	67.7	°F
Temperature, Final	66.8	67.5	67.8	°F
Avg Temperature, T_w	66.8	67.2	67.8	°F
Dry Gas Meter				
Final Volume Reading	082.220	093.515	105.476	ft^3
Initial Volume Reading	070.874	082.530	094.149	ft^3
Total Gas Volume, V_m	11.346	10.985	11.327	ft^3
Average Temperature, Initial	67.4	67.9	68.1	°F
Average Temperature, Final	67.9	68.1	68.4	°F
Avg Temperature, T_m	67.7	68.0	68.3	°F
ΔH (a)	1.7295	1.7174	1.7057	**Avg. ΔH(a)** **1.7175**
ΔH (a) Tolerance Check	OK	OK	OK	
Gamma, Y	0.9867	0.9875	0.9761	**Avg. Y** **0.9834**
Gamma Tolerance Check	OK	OK	OK	

Calibration Performed By:

$$\Delta H_{(a)} = \frac{0.0319\,\Delta H}{P_b\,(T_m + 460)} \left[\frac{(T_w + 460)\,\theta}{V_w} \right]^2$$

$$Y = \frac{V_w P_b (T_m + 460)}{V_m (P_b + \Delta H / 13.6)(T_w + 460)}$$

Y Factor Calibration Check Calculation

MODIFIED METHOD 0010 TEST TRAIN
THERMAL OXIDIZER STACK
METER BOX NO. 32
2/4/2020 & 2/5/2020

	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.	3.8	4.0	4.0
% O_2 = Percent oxygen by volume, dry basis.	14.9	14.6	14.6

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

$$MWd = (0.32 * 14.9) + (0.44 * 3.8) + (0.28 * (100 - (3.8 + 14.9)))$$

$$MWd = (4.77) + (1.67) + (22.76)$$

MWd =	29.20	29.22	29.22

Tma = Source Temperature, absolute(^oR)			
Tm = Average dry gas meter temperature , deg F.	66.8	69.8	63.3

$$Tma = Ts + 460$$

$$Tma = 66.81 + 460$$

Tma =	526.81	529.81	523.33

Ps = Absolute meter pressure, inches Hg.			
13.60 = Specific gravity of mercury.			
delta H = Avg pressure drop across the orifice meter during sampling, in H2O	1.11	1.40	1.42
Pb = Barometric Pressure, in Hg.	29.96	29.96	29.92

$$Pm = Pb + (delta\ H / 13.6)$$

$$Pm = 29.96 + (1.10638888888889 / 13.6)$$

Pm =	30.04	30.06	30.02

Yqa = dry gas meter calibration check value, dimensionless.			
0.03 = (29.92/528)(0.75)2 (in. Hg/°/R) cfm2.			
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.	109.072	124.940	124.830
Y = Dry gas meter calibration factor (based on full calibration)	0.9834	0.9834	0.9834
Delta H@ = Dry Gas meter orifice calibration coefficient, in. H2O.	1.7175	1.7175	1.7175
avg SQRT Delta H = Avg SQRT press. drop across the orifice meter during sampling , in. H_2O	1.0508	1.1827	1.1905
O = Total sampling time, minutes.	180	180	180

$$Yqa = (O / Vm) * SQRT (0.0319 * Tma * 29) / (Delta\ H@ * Pm * MWd) * avg\ SQRT\ Delta\ H$$

$$Yqa = (180.00 / 109.07) * SQRT (0.0319 * 526.81 * 29) / (1.72 * 30.04 * 29.20) * 1.05$$

$$Yqa = 1.650 * SQRT 487.348 / 1,506.742 * 1.05$$

Yqa =	0.9862	0.9711	0.9730

Diff = Absolute difference between Yqa and Y	0.28	1.25	1.06

$$Diff = ((Y - Yqa) / Y) * 100$$

$$Diff = ((0.9834 - 0.986) / 0.9834) * 100$$

Average Diff = 0.86

Allowable = 5.0

Long Cal and Temperature Cal Datasheet for VOST Dry Gas Meter Console

Calibrator MDW **VOST Box Number** VOST 5 **Ambient Temp** 72

Date 17-Nov-19 **Wet Test Meter Number** 10BB-1 **Temp Reference Source** Thermocouple Simulator (Accuracy +/- 1°F)

Dry Gas Meter Number 3605443

Setting			Gas Volume		Temperatures				Baro Press, in Hg (Pb)	30.7
			Wet Test Meter	Dry gas Meter	Wet Test Meter	Dry Gas Meter				Results
Liters per minute	Roto-meter	Orifice Manometer in H_20 (ΔH)	liters (Vw)	liters (Vd)	°F (Tw)	Outlet, °C (Td_o)	Inlet, °C (Td_i)	Average, °F (Td)	Time, min (O)	Y
0.50	0.70	0.45	10.0	0.000	68.0	20.00	20.00	68.0	10.2	1.0038
				9.951		20.00	20.00			
				9.951		20.00	20.00			
1.00	1.20	0.85	10.0	0.000	72.5	20.50	20.50	69.5	10.0	1.0000
				9.923		21.00	21.00			
				9.923		20.75	22.80			
1.5	1.7	1.2	15.0	0.000	72.5	22.20	22.20	72.0	11.0	0.9982
				14.970		22.20	22.20			
				14.970		22.20	22.20			
2.0	2.3	2.0	20.0	0.000	72.5	22.80	22.80	73.0	20.0	0.9962
				20.000		22.80	22.80			
				20.000		22.80	22.80			
									Average	**0.9996**

Vw - Gas Volume passing through the wet test meter
Vd - Gas Volume passing through the dry gas meter
Tw - Temp of gas in the wet test meter
Tdi - Temp of the inlet gas of the dry gas meter
Tdo - Temp of the outlet gas of the dry gas meter
Td - Average temp of the gas in the dry gas meter

0 - Time of calibration run
Pb - Barometric Pressure
ΔH - Pressure differential across orifice
Y - Ratio of accuracy of wet test meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6} \right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)} \right] * \left[\frac{(tw + 460) * O}{Vw} \right]^2$$

Reference Temperature	Temperature Reading from Individual Thermocouple Input [1]						Average Temperature Reading	Temp Difference [2] (%)
Select Temperature ◉ °C ○ °F	Channel Number							
	1	2	3	4	5	6		
0	0	0	0	0			0.0	0.0%
100	100	100	100	100			100.0	0.0%
500	500	500	500	500			500.0	0.0%
1000	1000	1000	1000	1000			1000.0	0.0%

1 - Channel Temps must agree with +/- 5°F or 3°C

2 - Acceptable Temperature Difference less than 1.5 %

$$\text{Temp Diff} = \left[\frac{(\text{Reference Temp}(^\circ F) + 460) - (\text{Test Temp}(^\circ F) + 460)}{\text{Reference Temp}(^\circ F) + 460} \right]$$

Post Test Wet Test Meter Calibration Datasheet for VOST Dry Gas Meter Console

Calibrator MDW | **VOST Box Number** 5 | **Client** Chemours

Date 17-Mar-20 | **Wet Test Meter Number** 10BB-1 | **Location/Plant** Fayetteville,NC

Dry Gas Meter Number 3605443 | **PreTest Y** 0.9996

Setting			Gas Volume		Temperatures				Baro Press, in Hg (Pb)	29.96
Liters per minute	Roto-meter	Orifice Manometer in H_20 (ΔH)	Wet Test Meter liters (Vw)	Dry gas Meter liters (Vd)	Wet Test Meter °F (Tw)	Dry Gas Meter Outlet, °F (Td_o)		Dry Gas Meter Average, °F (Td)	Time, min (O)	Results Y
0.50	0.50	1.20	5.0	0.000 5.100 5.100	72.0	70.00	70.00	70.0	9.0	0.9738
0.50	0.50	1.20	5.0	0.000 5.000 5.000	72.0	70.00	70.00	70.0	9.0	0.9933
0.50	0.50	1.20	5.0	0.000 4.950 4.950	72.0	72.00	71.00	71.5	9.0	1.0062
									Average	**0.9911**
									Difference[1]	**0.0085**

1 - Tolerance for Y is less than 0.0500

Vw - Gas Volume passing through the wet test meter
Vd - Gas Volume passing through the dry gas meter
Tw - Temp of gas in the wet test meter
Tdi - Temp of the inlet gas of the dry gas meter
Tdo - Temp of the outlet gas of the dry gas meter
Td - Average temp of the gas in the dry gas meter

0 - Time of calibration run
Pb - Barometric Pressure
ΔH - Pressure differential across orifice
Y - Ratio of accuracy of wet test meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6} \right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)} \right] * \left[\frac{(tw + 460) * O}{Vw} \right]^2$$

No Long Calibration Required

Long Cal and Temperature Cal Datasheet for VOST Dry Gas Meter Console

Calibrator MDW **VOST Box Number** VOST 7 **Ambient Temp** 72

Date 16-Dec-19 **Wet Test Meter Number** 10BB-1 **Temp Reference Source** Thermocouple Simulator (Accuracy +/- 1°F)

Dry Gas Meter Number 0000380

Setting			Gas Volume		Temperatures				Baro Press, in Hg (Pb)	30.02
			Wet Test Meter	Dry gas Meter	Wet Test Meter	Dry Gas Meter				Results
Liters per minute	Roto-meter	Orifice Manometer in H_20 (ΔH)	liters (Vw)	liters (Vd)	°F (Tw)	Outlet, °C (Td_o)	Inlet, °C (Td_i)	Average, °F (Td)	Time, min (O)	Y
0.30	0.40	0.80	5.0	0.000	68.0	20.00	20.00	68.9	15.8	1.0017
				4.990		21.00	21.00			
				4.990		20.50	20.50			
0.50	0.90	1.00	10.0	0.000	68.0	22.50	22.50	72.0	13.0	1.0031
				10.020		22.20	22.20			
				10.020		22.35	22.35			
1.0	1.80	1.6	10.2	0.000	68.0	22.50	22.50	72.0	9.8	1.0036
				10.200		22.75	22.75			
				10.200		22.63	22.63			
2.0	1.60	2.0	9.6	0.000	68.0	22.50	22.50	73.0	6.0	1.0098
				9.550		23.35	23.35			
				9.550		22.90	22.90			
									Average	1.0046

Vw - Gas Volume passing through the wet test meter
Vd - Gas Volume passing through the dry gas meter
Tw - Temp of gas in the wet test meter
Tdi - Temp of the inlet gas of the dry gas meter
Tdo - Temp of the outlet gas of the dry gas meter
Td - Average temp of the gas in the dry gas meter

0 - Time of calibration run
Pb - Barometric Pressure
ΔH - Pressure differential across orifice
Y - Ratio of accuracy of wet test meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6} \right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)} \right] * \left[\frac{(tw + 460) * O}{Vw} \right]^2$$

Reference Temperature	Temperature Reading from Individual Thermocouple Input [1]						Average Temperature Reading	Temp Difference [2] (%)
Select Temperature ○ °C ◉ °F	Channel Number							
	1	2	3	4	5	6		
32	32	32	32	32			32.0	0.0%
212	213	213	213	213			213.0	0.0%
932	932	932	932	932			932.0	0.0%
1832	1830	1830	1830	1830			1831.0	0.0%

1 - Channel Temps must agree with +/- 5°F or 3°C

2 - Acceptable Temperature Difference less than 1.5 %

$$\text{Temp Diff} = \left[\frac{(\text{Reference Temp}(^\circ F) + 460) - (\text{Test Temp}(^\circ F) + 460)}{\text{Reference Temp}(^\circ F) + 460} \right]$$

Post Test Wet Test Meter Calibration Datasheet for VOST Dry Gas Meter Console

Calibrator MDW | **VOST Box Number** 7 | **Client** Chemours

Date 16-Mar-20 | **Wet Test Meter Number** 10BB-1 | **Location/Plant** Fayetteville, NC

Dry Gas Meter Number 0000380' | **PreTest Y** 1.0046

Setting			Gas Volume		Temperatures				Baro Press, in Hg (Pb)	30.56
			Wet Test Meter	Dry gas Meter	Wet Test Meter	Dry Gas Meter				Results
Liters per minute	Roto-meter	Orifice Manometer in H_20 (ΔH)	liters (Vw)	liters (Vd)	°F (Tw)	Outlet, F° (Td_o)	Inlet, F° (Td_i)	Average, °F (Td)	Time, min (O)	Y
1.50	1.50	2.20	14.5	0.000 14.810 14.810	72.0	72.00	71.00	71.5	10.0	0.9730
1.50	1.50	2.20	14.5	0.000 14.600 14.600	73.0	72.00	71.00	71.5	10.0	0.9851
1.50	1.50	2.20	14.4	0.000 14.500 14.500	74.0	73.00	72.00	72.5	10.0	0.9851
									Average	**0.9811**
									Difference[1]	**0.0235**

1 - Tolerance for Y is less than 0.0500

Vw - Gas Volume passing through the wet test meter
Vd - Gas Volume passing through the dry gas meter
Tw - Temp of gas in the wet test meter
Tdi - Temp of the inlet gas of the dry gas meter
Tdo - Temp of the outlet gas of the dry gas meter
Td - Average temp of the gas in the dry gas meter

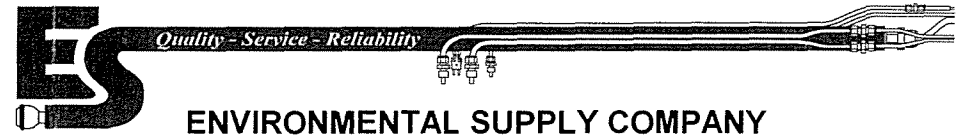
0 - Time of calibration run
Pb - Barometric Pressure
ΔH - Pressure differential across orifice
Y - Ratio of accuracy of wet test meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6} \right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)} \right] * \left[\frac{(tw + 460) * O}{Vw} \right]^2$$

No Long Calibration Required

UNI-VOS Console Calibration



ENVIRONMENTAL SUPPLY COMPANY
VOST 9

Console Model Number :	UNI-VOS-ACD
Console Serial Number :	1720-D

Calibration Date : March 26, 2019

DGM Model Number :	Actaris ACD G1.6
DGM Serial Number :	0000317

Digital Counter	
Model Number :	Red Lion Cub 5000
Scale Factor :	1.8709
CPL:	534.5

Standard Pressure (in Hg)	Standard Temperature (°K)
29.92	293

Reference Meter	
Model Number :	Shinagawa W-NK-1A
Serial Number :	538789
Y_c :	1.000

Flow Rate (lpm)	Digital Volume UNI-VOS Console							Reference Meter							
	DGM Counter	Volume (liters)	Volume (std liters)	DGM Temperatures Initial (°C)	Final (°C)	AVG (°C)	DGM Pressure (in H_2O)	Volume Initial (liters)	Volume Final (liters)	Volume Total (liters)	Temp (°C)	Bar. Pressure (in Hg)	Y_c	Y_c Avg	% deviation
2.00	4323	8.088	8.078	20.6	20.7	20.6	2.40	571.917	580.047	8.130	20.3	29.77	1.000	1.000	0.0
	4325	8.092	8.079	20.7	20.7	20.7	2.40	580.047	588.179	8.132	20.4	29.77	1.000		0.0
	4324	8.090	8.075	20.8	20.9	20.8	2.40	588.179	596.307	8.128	20.4	29.77	1.000		0.0
1.00	4490	8.400	8.366	20.9	21.0	20.9	1.20	596.724	605.183	8.459	20.4	29.80	1.006	1.003	-0.3
	4547	8.507	8.469	21.0	21.1	21.0	1.20	605.183	613.649	8.466	20.5	29.80	0.994		0.9
	4490	8.400	8.359	21.2	21.2	21.2	1.20	613.649	622.123	8.474	20.5	29.80	1.008		-0.5
0.50	4374	8.183	8.132	21.2	21.2	21.2	0.75	622.298	630.439	8.141	20.5	29.80	0.995	0.997	0.2
	4395	8.223	8.168	21.3	21.4	21.3	0.75	630.439	638.605	8.166	20.5	29.80	0.994		0.3
	4366	8.168	8.113	21.4	21.4	21.4	0.75	638.605	646.783	8.178	20.5	29.80	1.002		-0.5

Y_c Avg	1.000

signature

03/26/19
date

Post Test Calibration

Calibrator MDW | **Box Number** 9 | **Client** Chemours

Date 17-Mar-20 | **Wet Test Meter Number** 10BB-1 | **Location/Plant** Fayetteville, NC

Dry Gas Meter Number 317 | **PreTest Y** 1.0000

Setting			Gas Volume		Temperatures				Baro Press, in Hg (Pb)	29.76
Liters per minute	Roto-meter	Orifice Manometer in H_20 (ΔH)	Wet Test Meter liters (Vw)	Dry gas Meter liters (Vd)	Wet Test Meter °F (Tw)	Dry Gas Meter (Outlet) Start, °F (Td_o)	End, °F (Td_o)	Average, °F (Td)	Time, min (O)	Results Y
1.50	1.50	1.80	15.00	0.000 15.085 15.085	72.0	70.00	69.00	69.5	10.1	0.9853
1.50	1.50	1.80	15.00	0.000 15.070 15.070	72.0	68.00	69.00	68.5	10.0	0.9844
1.50	1.50	1.80	15.00	0.000 15.085 15.085	72.0	69.00	69.00	69.0	10.1	0.9844
									Average	**0.9847**
									Difference[1]	**0.0153**

1 - Tolerance for Y is less than 0.0500

Vw - Gas Volume passing through the wet test meter
Vd - Gas Volume passing through the dry gas meter
Tw - Temp of gas in the wet test meter
Tdo - Temp of the outlet gas of the dry gas meter
Td - Average temp of the gas in the dry gas meter

0 - Time of calibration run
Pb - Barometric Pressure
ΔH - Pressure differential across orifice
Y - Ratio of accuracy of wet test meter to dry gas meter

$$Y = \frac{Vw * Pb * (td + 460)}{Vd * \left[Pb + \frac{(\Delta H)}{13.6} \right] * (tw + 460)}$$

$$\Delta H = \left[\frac{0.0317 * \Delta H}{Pb * (td + 460)} \right] * \left[\frac{(tw + 460) * O}{Vw} \right]^2$$

Type S Pitot Tube Inspection Data Form

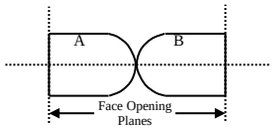
Pitot Tube Identification Number: **P-561**

Inspection Date 1/14/20 Individual Conducting Inspection NG

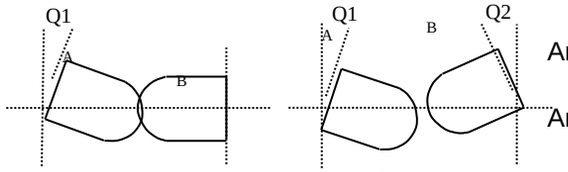
If all Criteria PASS
Cp is equal to 0.84

		PASS/FAIL
Distance to A Plane (PA) - inches	0.476	PASS
Distance to B Plane (PB) - inches	0.476	PASS
Pitot OD (D_t) - inches	0.375	

1.05 D_t < P < 1.5 D_t PA must Equal PB

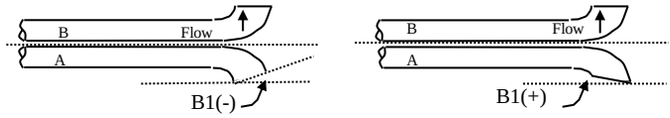


Are Open Faces Aligned Perpendicular to the Tube Axis: (●) YES ( ) NO — PASS

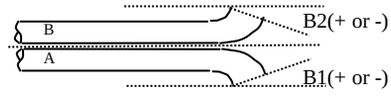


Angle of Q1 from vertical A Tube- degrees (absolute)	3	PASS
Angle of Q2 from vertical B Tube- degrees (absolute)	2	PASS

Q1 and Q2 must be ≤ 10°

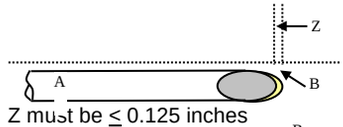


Angle of B1 from vertical A Tube- degrees (absolute): 1 — PASS



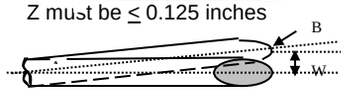
Angle of B1 from vertical B Tube- degrees (absolute): 2 — PASS

B1 or B2 must be ≤ 5°



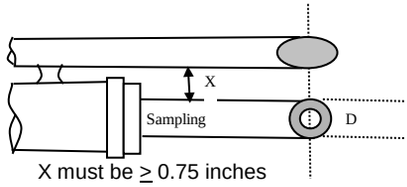
Z must be ≤ 0.125 inches

Horizontal offset between A and B Tubes (Z) - inches: 0.012 — PASS



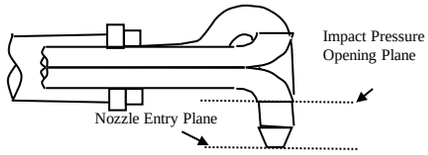
W must be ≤ 0.03125 inches

Vertical offset between A and B Tubes (W) - inches: 0.028 — PASS

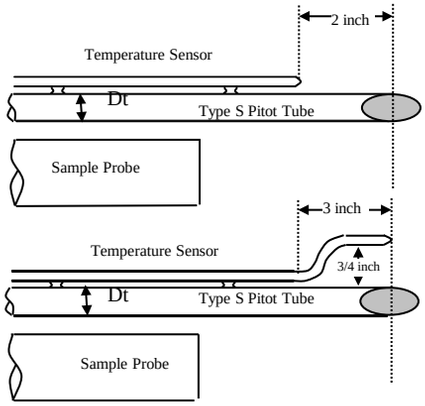


X must be ≥ 0.75 inches

Distance between Sample Nozzle and Pitot (X) - inches: 0.879 — 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

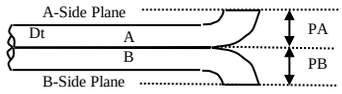
Thermocouple meets the Distance Criteria in the adjacent figure: ( ) YES ( ) NO (●) NA

Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: **P-562**

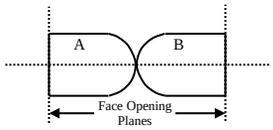
Inspection Date 1/14/20 Individual Conducting Inspection NG

If all Criteria PASS
Cp is equal to 0.84

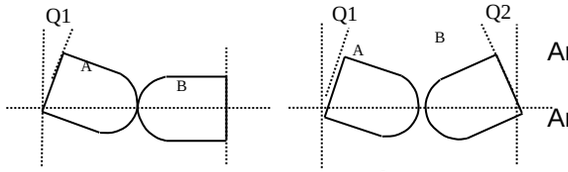


		PASS/FAIL
Distance to A Plane (PA) - inches	0.472	PASS
Distance to B Plane (PB) - inches	0.472	PASS
Pitot OD (D_t) - inches	0.375	

1.05 D_t < P < 1.5 D_t PA must Equal PB

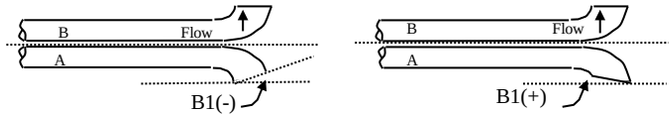


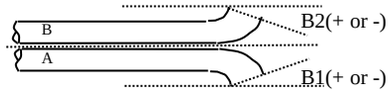
Are Open Faces Aligned Perpendicular to the Tube Axis — (●) YES ( ) NO — PASS



Angle of Q1 from vertical A Tube- degrees (absolute)	0	PASS
Angle of Q2 from vertical B Tube- degrees (absolute)	0	PASS

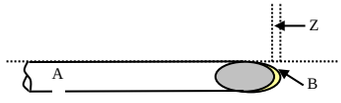
Q1 and Q2 must be ≤ 10°





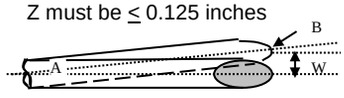
Angle of B1 from vertical A Tube- degrees (absolute)	0	PASS
Angle of B1 from vertical B Tube- degrees (absolute)	1	PASS

B1 or B2 must be ≤ 5°



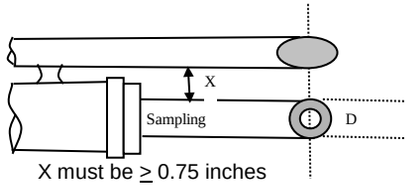
Z must be ≤ 0.125 inches

Horizontal offset between A and B Tubes (Z) - inches	0.012	PASS



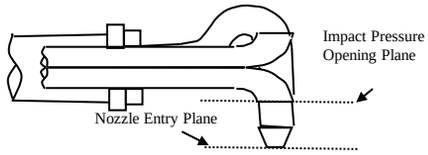
W must be ≤ 0.03125 inches

Vertical offset between A and B Tubes (W) - inches	0.016	PASS

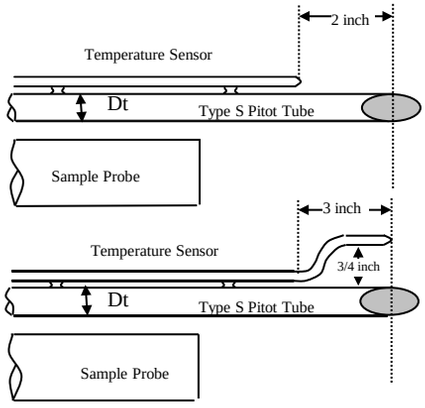


X must be ≥ 0.75 inches

Distance between Sample Nozzle and Pitot (X) - inches	0.945	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

APPENDIX F
LIST OF PROJECT PARTICIPANTS

The following WESTON employees participated in this project.

Paul Meeter	Senior Project Manager
Wes Fritz	Senior Project Manager
Jeff O'Neill	Senior Project Manager
Kyle Schweitzer	Team Member
Matt Winkeler	Team Member
Steve Rathfon	Team Member
Nick Guarino	Team Member
Jack Mills	Team Member
Chris Hartsky	Team Member
Austin Squires	Team Member