# FLUOROMONOMERS AND PPA MANUFACTURING PROCESSES EMISSIONS TEST REPORT TEST DATES: 26 FEBRUARY – 2 MARCH 2018

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# 1. INTRODUCTION

## 1.1 FACILITY AND BACKGROUND INFORMATION

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

Chemours contracted Weston Solutions, Inc. (WESTON) to perform HFPO Dimer Acid emission testing on two sources at the facility (Vinyl Ethers (VE) South Stack and the PPA Stack). Testing was performed on 26 February – 2 March 2018 and generally followed the "Emissions Test Protocol" reviewed and approved by the North Carolina Department of Environmental Quality (NCDEQ). This report provides the results from the emission test program.

## 1.2 TEST OBJECTIVES

The specific objectives for this test program were as follows:

- Measure the emissions concentrations and mass emissions rates of HFPO Dimer Acid from the VE South stack and PPA stack which are located in the Fluoromonomers and PPA processes.
- Monitor and record process and emissions control data in conjunction with the test program.
- Provide representative emissions data.

## 1.3 TEST PROGRAM OVERVIEW

During the emissions test program, the concentrations and mass emissions rates of HFPO Dimer Acid were measured on two sources (VE South and PPA Stacks).

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

## Table 1-1
## Sampling Plan for VE South Stack

| **Sampling Point & Location** | **VE South Stack** | | | | |
|---|---|---|---|---|---|
| Number of Tests: | 3 | | | | |
| Parameters To Be Tested: | HFPO Dimer Acid (HFPO-DA) | Volumetric Flow Rate and Gas Velocity | Carbon Dioxide | Oxygen | Water Content |
| Sampling or Monitoring Method | EPA M-0010 | EPA M1, M2, M3A, and M4 in conjunction with M-0010 tests | EPA M3A | | EPA M4 in conjunction with M-0010 tests |
| Sample Extraction/ Analysis Method(s): | LC/MS/MS | NA[6] | NA | | NA |
| Sample Size | > 1m$^3$ | NA | NA | NA | NA |
| Total Number of Samples Collected[1] | 3 | 3 | 3 | 3 | 3 |
| Reagent Blanks (Solvents, Resins)[1] | 1 set | 0 | 0 | 0 | 0 |
| Field Blank Trains[1] | 1 per source | 0 | 0 | 0 | 0 |
| Proof Blanks[1] | 1 per train | 0 | 0 | 0 | 0 |
| Trip Blanks[1,2] | 1 set | 0 | 0 | 0 | |
| Lab Blanks | 1 per fraction[3] | 0 | 0 | 0 | 0 |
| Laboratory or Batch Control Spike Samples (LCS) | 1 per fraction[3] | 0 | 0 | 0 | 0 |
| Laboratory or Batch Control Spike Sample Duplicate (LCSD) | 1 per fraction[3] | 0 | 0 | 0 | 0 |
| Media Blanks | 1 set[4] | 0 | 0 | 0 | 0 |
| Isotope Dilution Internal Standard Spikes | Each sample | 0 | 0 | 0 | 0 |
| Total No. of Samples | 7[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.

[6] Not applicable.

## Table 1-2
## Sampling Plan for PPA Stack

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

Key:

[1] Sample collected in field.

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

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

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

[5] Actual number of samples collected in field.

[6] Not applicable.

## 2. SUMMARY OF TEST RESULTS

A total of four test runs were performed on the PPA stack, two tests during the Hydrolysis portion of the process and two tests during Vaporization. Three tests were performed on the VE South stack. It should be noted that the initial test on the VE South stack performed on 26 February 2018 failed the post-test leak check; however, the samples were recovered, analyzed and reported. For test run one on the VE South stack, the process went down for the last eight minutes. Sampling continued during this period. Table 2-1 provides a summary of the HFPO Dimer Acid emission test results. Detailed test results summaries are provided in Section 6.

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

**Table 2-1**

**Summary of HFPO Dimer Acid Test Results**

| Source | Run No. | Emission Rates | |
|---|---|---|---|
| | | lb/hr | g/sec |
| PPA Stack | 1 – Vaporization | 2.79E-2 | 3.51E-3 |
| | 2 – Vaporization | 1.87E-2 | 2.36E-3 |
| | Average | 2.33E-2 | 2.94E-3 |
| | 1 - Hydrolysis | 1.31 | 1.65E-1 |
| | 2 - Hydrolysis | 1.84 | 2.31E-1 |
| | Average | 1.58 | 1.98E-1 |
| VE South Stack | 1 | 3.94E-4 | 4.96E-5 |
| | 2 | 1.48E-3 | 1.87E-4 |
| | Average[1] | 9.37E-4 | 1.18E-4 |
| | 1 Aborted Test | 1.32E-3 | 1.66E-4 |

1. Average of Run Nos. 1 and 2 only. Aborted test reported separately.

# 3. PROCESS DESCRIPTIONS

The Fluoromonomers and PPA areas are included in the scope of this test program.

## 3.1 POLYMER PROCESSING AID (PPA) AREA

The PPA facility produces surfactants used to produce fluoropolymer products at other Chemours facilities, such as Teflon®, as well as sales to outside producers of fluoropolymers.

Process streams are vented to a caustic wet scrubber (ACD-A1) and vented to a process stack (AEP-A1). The process inside the building is under negative pressure and the building air is vented to the process stack (AEP-A1).

## 3.2 FLUOROMONOMERS

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

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

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

## 3.3 PROCESS OPERATIONS AND PARAMETERS

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

| Source | Operation/Product | Batch or Continuous |
|---|---|---|
| PPA | AF Column Reboiler/Virgin | Continuous once it starts taking off to feed tank (Wed – Fri) |
| | Pressure Transfers/Virgin or Purified | Batch (pressure transfers from one vessel to another – every 2 hours) |
| VE South | VES/PMVE/PEVE | Semi-continuous – Condensation is continuous, Two Agitated Bed Reactors are batch for 30-40 mins at end of each run, Refining (ether column) is batch |

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

- PPA Process
  - Caustic Wet Scrubber (ACD-A1)
    - Caustic recirculation flow rate
    - Differential pressure across the packing
- Fluoromonomers Processes
  - VE South Waste Gas Scrubber
    - Caustic recirculation flow rate

# 4. DESCRIPTION OF TEST LOCATIONS

## 4.1 PPA PROCESS STACK

Two 4“ ID test ports are in place on the 30” ID fiberglass stack. The ports are 12’ (4.8 diameters) from the nearest downstream disturbance (waste gas scrubber demister duct) and 32’ (12.8 diameters) from the nearest upstream disturbance (stack exit.)

Per EPA Method 1, a total of 24 traverse points (12 per axis) were used for M0010 isokinetic sampling. See Figure 4-1 for a schematic of the test port and traverse point locations.

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

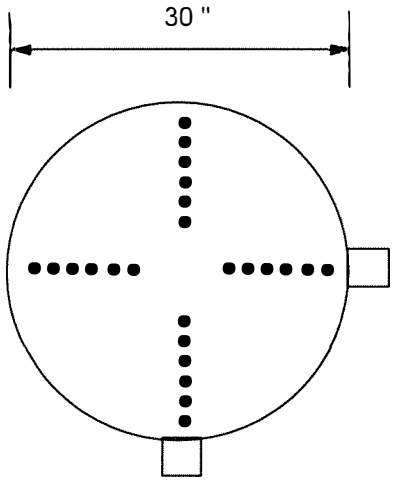
## 4.2 VE SOUTH SCRUBBER STACK

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

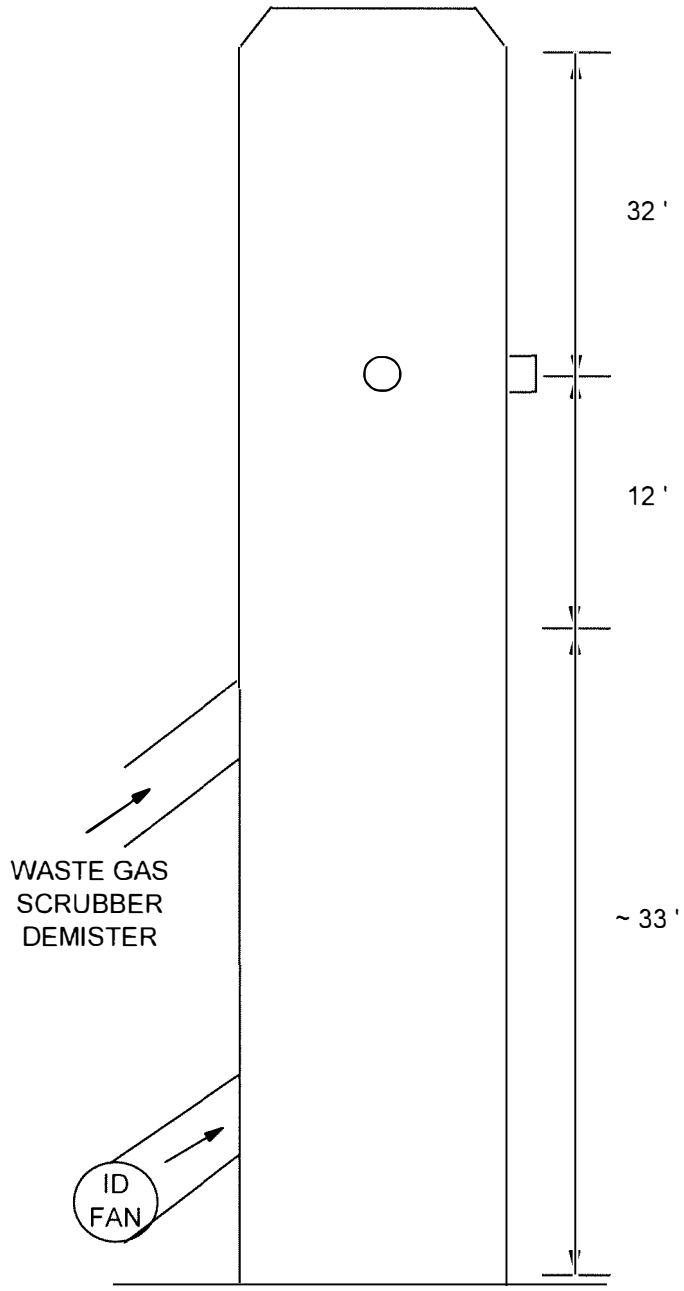
Per EPA Method 1, a total of 24 traverse points (12 per axis) were used for M0010 isokinetic sampling. It should be noted that near the port locations are a number of small ducts leading to the stack. These are catch pots which, under normal operation, do not discharge to the stack. They are used to vent process gas to the stack in the event of a process upset. For the purpose of test port location, and given the fact that there is no flow from these catch pots, they are not considered a flow contributor or a disturbance.

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

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

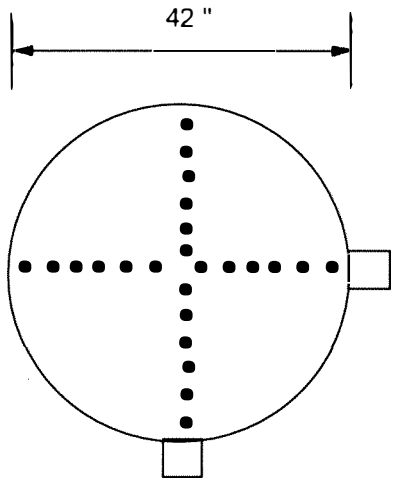


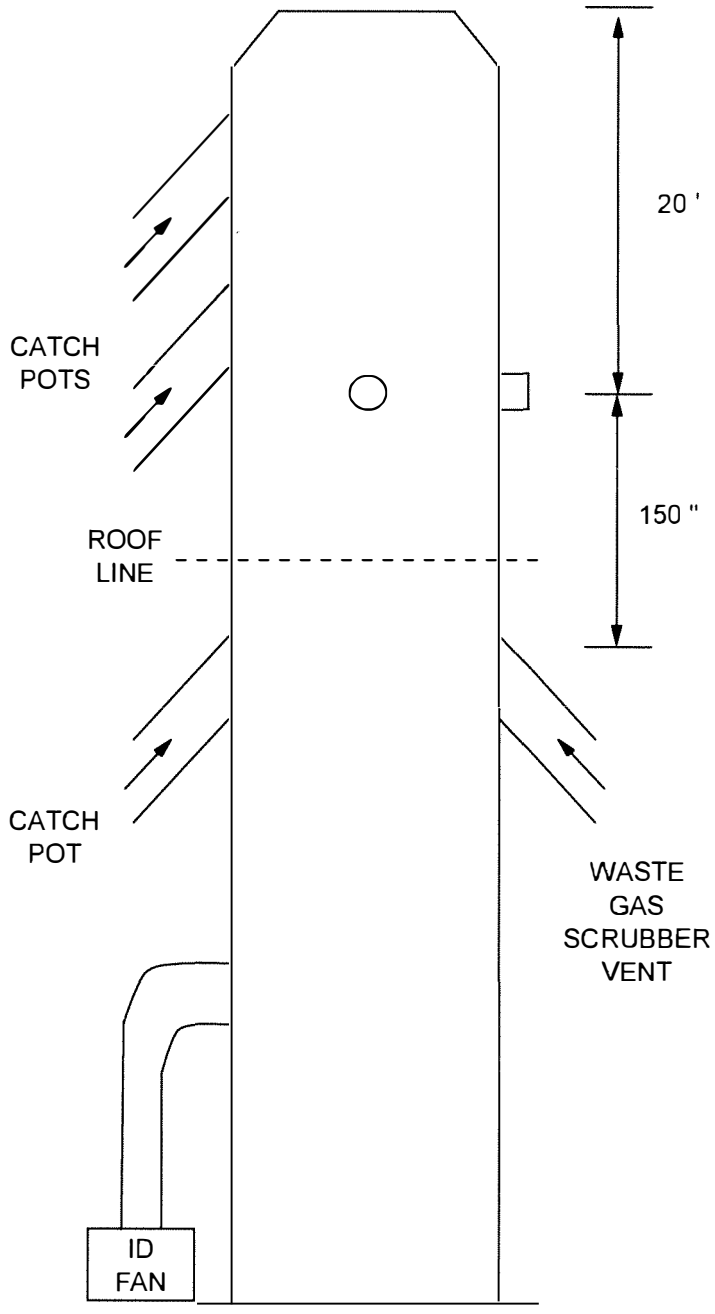

| TRAVERSE POINT NUMBER | DISTANCE FROM INSIDE NEAR WALL (INCHES) |
|---|---|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 1/2 |
| 4 | 5 3/8 |
| 5 | 7 1/2 |
| 6 | 10 3/4 |
| 7 | 19 3/8 |
| 8 | 22 1/2 |
| 9 | 24 3/4 |
| 10 | 26 1/2 |
| 11 | 28 |
| 12 | 29 |




DRAWING NOT TO SCALE

**FIGURE 4-1**
**PPA EXHAUST STACK TEST PORT**
**AND TRAVERSE POINT LOCATION**




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

DRAWING NOT TO SCALE

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

# 5. SAMPLING AND ANALYTICAL METHODS

## 5.1 STACK GAS SAMPLING PROCEDURES

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

### 5.1.1 Pre-Test Determinations

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

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

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

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

## 5.2 STACK PARAMETERS

### 5.2.1 EPA Method 0010

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

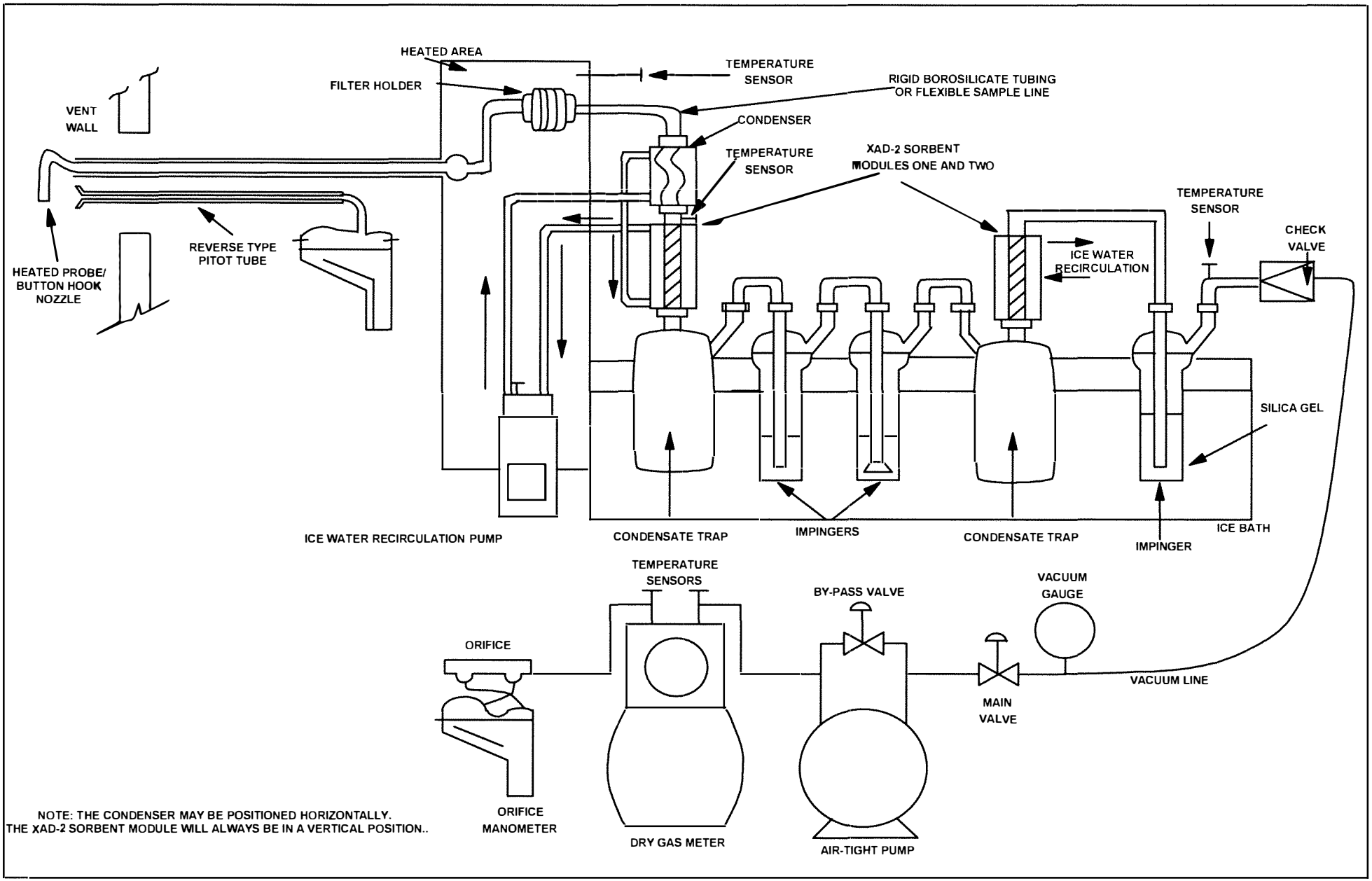



**FIGURE 5-1**
**EPA METHOD 0010 SAMPLING TRAIN**

A section of borosilicate glass (or flexible polyethylene tubing) connected the filter holder exit to a Grahm (spiral) type ice water-cooled condenser, an icewater-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-L 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 both XAD-2 modules to maintain method required temperature. A control console with a leakless vacuum pump, a calibrated orifice, and dual inclined manometers was connected to the final impinger via an umbilical cord to complete the sample train.

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

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

### 5.2.2 EPA Method 0010 Sample Recovery

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

A consistent procedure was employed for sample recovery:

1. The two XAD-2 covered (to minimize light degradation) sorbent modules (1 and 2) were sealed and labeled.

2. The glass fiber filter(s) were removed from the holder with tweezers and placed in a polyethylene container along with any loose particulate and filter fragments.

3. The particulate adhering to the internal surfaces of the nozzle, probe and front half of the filter holder were rinsed with a solution of methanol and ammonium hydroxide into a polyethylene container while brushing a minimum of three times until no visible particulate remains. Particulate adhering to the brush was rinsed with methanol/ ammonium hydroxide into the same container. The container was sealed.

4. The volume of liquid collected in the first condensate trap was measured, the value recorded, and the contents poured into a polyethylene container.

5. All train components between the filter exit and the first condensate trap were rinsed with methanol/ammonium hydroxide. The solvent rinse was placed in a separate polyethylene container and sealed.

6. The volume of liquid in the impingers one, two, and second condensate trap were measured, the values recorded, and sample was placed in the same container as step 4 above and sealed.

7. The two impingers, condensate trap, and connectors were rinsed with methanol/ ammonium hydroxide. The solvent sample was placed in a separate polyethylene container and sealed.

8. The silica gel in the final impinger was weighed and the weight gain value recorded.

9. Site (reagent) blank samples of the methanol/ammonium hydroxide, XAD resin, filter and distilled water were retained for analysis.

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

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

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

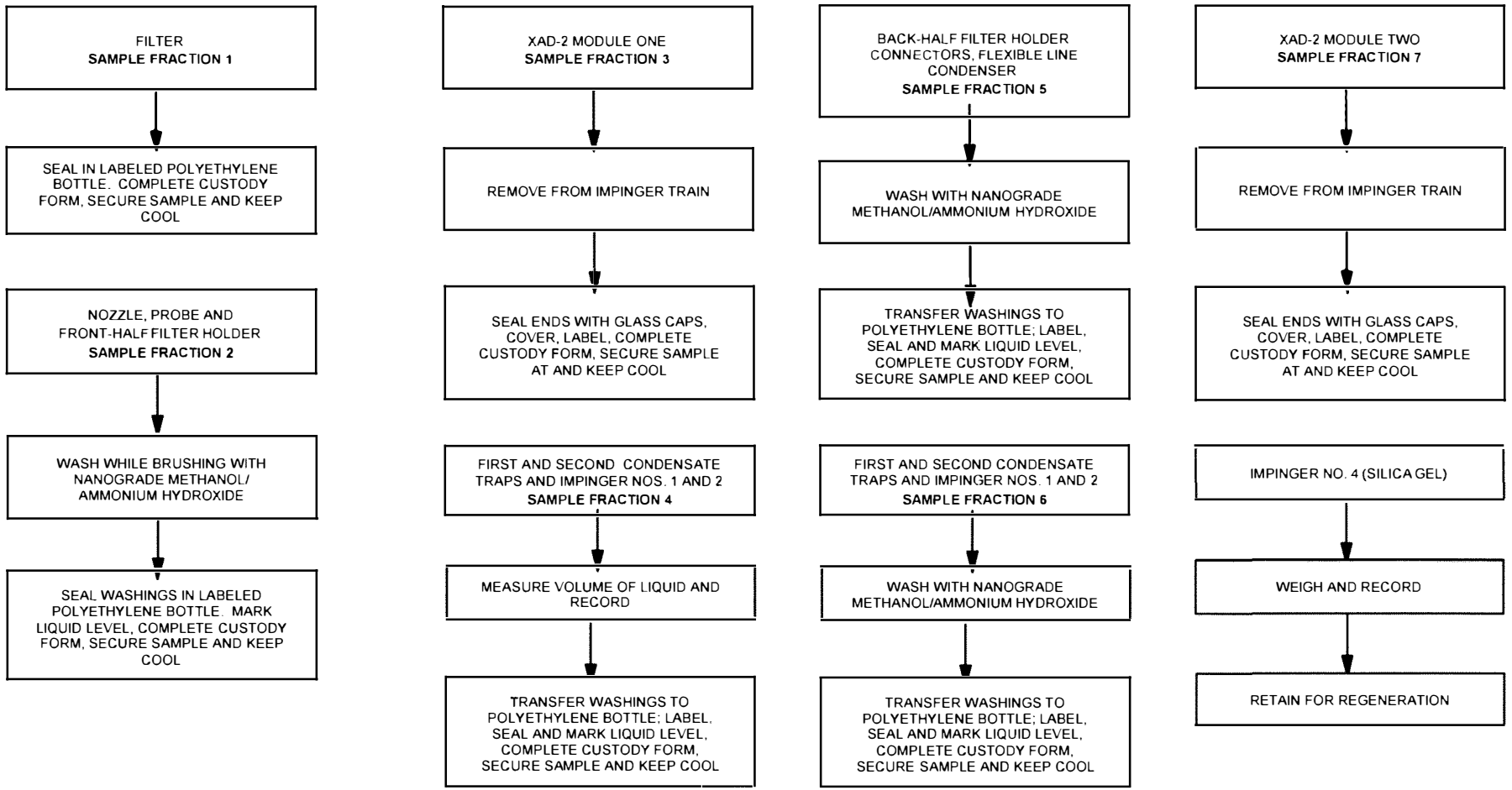



**FIGURE 5-2**
**HFPO DIMER ACID SAMPLE RECOVERY PROCEDURES FOR METHOD 0010**

IASDATA\CHEMOURS\15418 002 002\FIGURE 5-2 EPA 0010

### 5.2.3 EPA Method 0010 – Sample Analysis

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

- Front-Half Composite—comprised of the Particulate Filter, and the probe, nozzle, and front-half of the filter holder solvent rinses,
- Back-half Composite—comprised of the first XAD-2 resin material and the back-half of the filter holder with connecting glassware solvent rinses,
- Condensate Composite—comprised of the aqueous condensates and the contents of Impingers #1 and 2 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 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 duel mass spectroscopy (HPLC/MS/MS). The Condensate composite was concentrated onto a solid phase extraction (SPE) cartridge followed by desorption from the cartridge using methanol. Portions of those extracts were also processed analytically by HPLC/MS/MS.

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

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

## 5.3 GAS COMPOSITION

The WESTON mobile laboratory equipped with instrumental analyzers was used to measure carbon dioxide ($CO_2$) and oxygen ($O_2$) concentrations. A diagram of the WESTON sampling system is presented in Figure 5-3.

The sample was collected at the exhaust of the Method 0010 sampling system. The sample was drawn through the heated probe, filter and impingers which acted as a sample conditioner. At the end of the line, a tee permitted the introduction of calibration gas. The output from the sampling system was recorded electronically, and one-minute averages were recorded and displayed on a data logger.

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

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

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

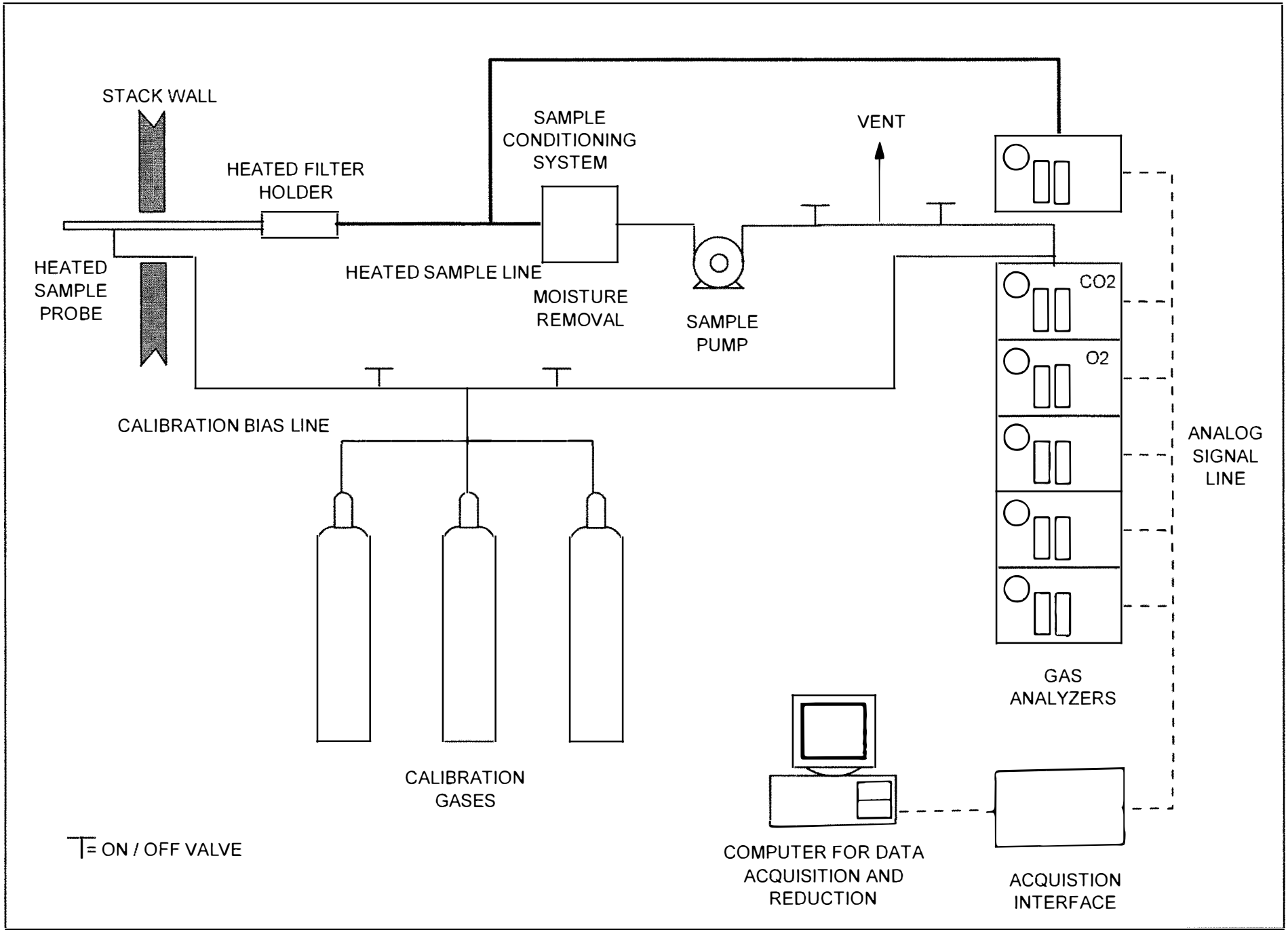



**FIGURE 5-3**
**WESTON SAMPLING SYSTEM**

IASDATA\CHEMOURS\15418 002 002\FIGURE 5-3 WESTON SAMPLING SYSTEM

# 6. DETAILED TEST RESULTS AND DISCUSSION

Preliminary testing and the associated analytical results required significant sample dilution to bring the HFPO Dimer Acid concentration within instrument calibration, therefore, sample times and sample volumes were reduced for the formal test program. This was approved by the North Carolina Department of Environmental Quality (NCDEQ).

Each test was a minimum of 96 minutes in duration. A total of three test runs were performed on the VE South stack and four tests (two per process condition) were performed on the PPA stack.

Tables 6-1, 6-2 and 6-3 provide detailed test data and test results for the PPA and VE South stack, respectively.

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

For the four tests performed on the PPA stack, two were performed during the Vaporization portion of the process and two during Hydrolysis.

The initial test run one on the VE South stack failed the final leak test; however, the samples were recovered, analyzed and reported. For test run one on the VE South stack, the process went down with eight minutes left in the test. The test continued to its endpoint.

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

| **Test Data** | | |
|---|---|---|
| Process Mode | Vaporization | Vaporization |
| Run number | 1 | 2 |
| Location | PPA | PPA |
| Date | 3/1/2018 | 3/1/2018 |
| Time period | 1158-1353 | 1422-1618 |
| **SAMPLING DATA:** | | |
| Sampling duration, min. | 96.0 | 96.0 |
| Nozzle diameter, in. | 0.189 | 0.189 |
| Cross sectional nozzle area, sq.ft. | 0.000195 | 0.000195 |
| Barometric pressure, in. Hg | 29.84 | 29.66 |
| Avg. orifice press. diff., in $H_2O$ | 0.83 | 0.86 |
| Avg. dry gas meter temp., deg F | 76.5 | 79.5 |
| Avg. abs. dry gas meter temp., deg. R | 537 | 540 |
| Total liquid collected by train, ml | 34.3 | 17.4 |
| Std. vol. of $H_2O$ vapor coll., cu.ft. | 1.6 | 0.8 |
| Dry gas meter calibration factor | 0.9916 | 0.9916 |
| Sample vol. at meter cond., dcf | 46.050 | 47.520 |
| Sample vol. at std. cond., dscf [1] | 44.893 | 45.791 |
| Percent of isokinetic sampling | 102.3 | 101.1 |
| **GAS STREAM COMPOSITION DATA:** | | |
| $CO_2$, % by volume, dry basis | 0.0 | 0.0 |
| $O_2$, % by volume, dry basis | 20.9 | 20.9 |
| $N_2$, % by volume, dry basis | 79.1 | 79.1 |
| Molecular wt. of dry gas, lb/lb mole | 28.84 | 28.84 |
| $H_20$ vapor in gas stream, prop. by vol. | 0.035 | 0.018 |
| Mole fraction of dry gas | 0.965 | 0.982 |
| Molecular wt. of wet gas, lb/lb mole | 28.46 | 28.65 |
| **GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:** | | |
| Static pressure, in. $H_2O$ | -2.80 | -2.80 |
| Absolute pressure, in. Hg | 29.63 | 29.45 |
| Avg. temperature, deg. F | 79 | 81 |
| Avg. absolute temperature, deg.R | 539 | 541 |
| Pitot tube coefficient | 0.84 | 0.84 |
| Total number of traverse points | 24 | 24 |
| Avg. gas stream velocity, ft./sec. | 41.8 | 42.8 |
| Stack/duct cross sectional area, sq.ft. | 4.90 | 4.90 |
| Avg. gas stream volumetric flow, wacf/min. | 12289 | 12587 |
| Avg. gas stream volumetric flow, dscf/min. | 11499 | 11873 |

[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**

| TEST DATA | | |
|---|---|---|
| Process Mode | Vaporization | Vaporization |
| Run number | 1 | 2 |
| Location | PPA | PPA |
| Date | 3/1/2018 | 3/1/2018 |
| Time period | 1158-1353 | 1422-1618 |
| **LABORATORY REPORT DATA, ug.** | | |
| HFPO Dimer Acid | 823.127 | 545.9 |
| **EMISSION RESULTS, ug/dscm.** | | |
| HFPO Dimer Acid | 647.4 | 420.9 |
| **EMISSION RESULTS, lb/dscf.** | | |
| HFPO Dimer Acid | 4.04E-08 | 2.63E-08 |
| **EMISSION RESULTS, lb/hr.** | | |
| HFPO Dimer Acid | 2.79E-02 | 1.87E-02 |
| **EMISSION RESULTS, g/sec.** | | |
| HFPO Dimer Acid | 3.51E-03 | 2.36E-03 |

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

| **Test Data** | | |
|---|---|---|
| Process Mode | Hydrolysis | Hydrolysis |
| Run number | 1 | 2 |
| Location | PPA | PPA |
| Date | 3/1/2018 | 3/2/2018 |
| Time period | 0920-1114 | 0815-1011 |
| **SAMPLING DATA:** | | |
| Sampling duration, min. | 96.0 | 96.0 |
| Nozzle diameter, in. | 0.189 | 0.189 |
| Cross sectional nozzle area, sq.ft. | 0.000195 | 0.000195 |
| Barometric pressure, in. Hg | 29.84 | 29.89 |
| Avg. orifice press. diff., in $H_2O$ | 0.86 | 0.87 |
| Avg. dry gas meter temp., deg F | 65.9 | 53.5 |
| Avg. abs. dry gas meter temp., deg. R | 526 | 513 |
| Total liquid collected by train, ml | 24.4 | 32.3 |
| Std. vol. of $H_2O$ vapor coll., cu.ft. | 1.1 | 1.5 |
| Dry gas meter calibration factor | 0.9916 | 0.9916 |
| Sample vol. at meter cond., dcf | 46.050 | 45.605 |
| Sample vol. at std. cond., dscf [1] | 45.801 | 46.537 |
| Percent of isokinetic sampling | 101.1 | 101.4 |
| **GAS STREAM COMPOSITION DATA:** | | |
| $CO_2$, % by volume, dry basis | 0.0 | 0.0 |
| $O_2$, % by volume, dry basis | 20.9 | 20.9 |
| $N_2$, % by volume, dry basis | 79.1 | 79.1 |
| Molecular wt. of dry gas, lb/lb mole | 28.84 | 28.84 |
| $H_20$ vapor in gas stream, prop. by vol. | 0.024 | 0.032 |
| Mole fraction of dry gas | 0.976 | 0.968 |
| Molecular wt. of wet gas, lb/lb mole | 28.57 | 28.49 |
| **GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:** | | |
| Static pressure, in. $H_2O$ | -2.80 | -2.80 |
| Absolute pressure, in. Hg | 29.63 | 29.68 |
| Avg. temperature, deg. F | 78 | 71 |
| Avg. absolute temperature, deg.R | 538 | 531 |
| Pitot tube coefficient | 0.84 | 0.84 |
| Total number of traverse points | 24 | 24 |
| Avg. gas stream velocity, ft./sec. | 42.6 | 42.8 |
| Stack/duct cross sectional area, sq.ft. | 4.90 | 4.90 |
| Avg. gas stream volumetric flow, wacf/min. | 12516 | 12593 |
| Avg. gas stream volumetric flow, dscf/min. | 11872 | 12024 |

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

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

| TEST DATA | | |
|---|---|---|
| Process Mode | Hydrolysis | Hydrolysis |
| Run number | 1 | 2 |
| Location | PPA | PPA |
| Date | 3/1/2018 | 3/2/2018 |
| Time period | 0920-1114 | 0815-1011 |
| **LABORATORY REPORT DATA, ug.** | | |
| HFPO Dimer Acid | 38316.118 | 53757.399 |
| **EMISSION RESULTS, ug/dscm.** | | |
| HFPO Dimer Acid | 29537.4 | 40785.3 |
| **EMISSION RESULTS, lb/dscf.** | | |
| HFPO Dimer Acid | 1.84E-06 | 2.55E-06 |
| **EMISSION RESULTS, lb/hr.** | | |
| HFPO Dimer Acid | 1.31E+00 | 1.84E+00 |
| **EMISSION RESULTS, g/sec.** | | |
| HFPO Dimer Acid | 1.65E-01 | 2.31E-01 |

**TABLE 6-3**
**CHEMOURS - FAYETTEVILLE, NC**
**SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS**

| **Test Data** | | | |
|---|---|---|---|
| Run number | 1[1] | 2 | 1 Aborted Test[2] |
| Location | VE South | VE South | VE South |
| Date | 2/27/2018 | 2/27/2018 | 2/26/2018 |
| Time period | 1018-1208 | 1446-1630 | 1552-1735 |
| **SAMPLING DATA:** | | | |
| Sampling duration, min. | 96.0 | 96.0 | 96.0 |
| Nozzle diameter, in. | 0.300 | 0.300 | 0.300 |
| Cross sectional nozzle area, sq.ft. | 0.000491 | 0.000491 | 0.000491 |
| Barometric pressure, in. Hg | 30.38 | 30.34 | 30.10 |
| Avg. orifice press. diff., in $H_2O$ | 1.81 | 1.64 | 1.76 |
| Avg. dry gas meter temp., deg F | 60.8 | 66.0 | 69.3 |
| Avg. abs. dry gas meter temp., deg. R | 521 | 526 | 529 |
| Total liquid collected by train, ml | 29.9 | 34.6 | 33.0 |
| Std. vol. of $H_2O$ vapor coll., cu.ft. | 1.4 | 1.6 | 1.6 |
| Dry gas meter calibration factor | 0.9934 | 0.9934 | 0.9934 |
| Sample vol. at meter cond., dcf | 70.630 | 67.794 | 68.938 |
| Sample vol. at std. cond., dscf[3] | 72.511 | 68.796 | 68.995 |
| Percent of isokinetic sampling | 103.7 | 105.3 | 103.0 |
| **GAS STREAM COMPOSITION DATA:** | | | |
| $CO_2$, % by volume, dry basis | 0.0 | 0.0 | 0.0 |
| $O_2$, % by volume, dry basis | 20.9 | 20.9 | 20.9 |
| $N_2$, % by volume, dry basis | 79.1 | 79.1 | 79.1 |
| Molecular wt. of dry gas, lb/lb mole | 28.84 | 28.84 | 28.84 |
| $H_20$ vapor in gas stream, prop. by vol. | 0.019 | 0.023 | 0.022 |
| Mole fraction of dry gas | 0.981 | 0.977 | 0.978 |
| Molecular wt. of wet gas, lb/lb mole | 28.63 | 28.58 | 28.60 |
| **GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:** | | | |
| Static pressure, in. $H_2O$ | -0.75 | -0.75 | -0.75 |
| Absolute pressure, in. Hg | 30.32 | 30.28 | 30.04 |
| Avg. temperature, deg. F | 62 | 66 | 71 |
| Avg. absolute temperature, deg.R | 522 | 526 | 531 |
| Pitot tube coefficient | 0.84 | 0.84 | 0.84 |
| Total number of traverse points | 24 | 24 | 12 |
| Avg. gas stream velocity, ft./sec. | 24.6 | 23.3 | 24.3 |
| Stack/duct cross sectional area, sq.ft. | 9.62 | 9.62 | 9.62 |
| Avg. gas stream volumetric flow, wacf/min. | 14207 | 13440 | 14006 |
| Avg. gas stream volumetric flow, dscf/min. | 14275 | 13339 | 13674 |

[1] Unit was down for approximately the last 8 minutes of the test

[2] Failed post test leak check

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

**TABLE 6-3(cont.)**
**CHEMOURS - FAYETTEVILLE, NC**
**SUMMARY OF HFPO DIMER ACID TEST DATA AND TEST RESULTS**

| | | | |
|---|---|---|---|
| **TEST DATA** | | | |
| Run number | 1[1] | 2 | 1 Aborted Test[2] |
| Location | VE South | VE South | VE South |
| Date | 2/27/2018 | 2/27/2018 | 2/26/2018 |
| Time period | 1018-1208 | 1446-1630 | 1552-1735 |
| **LABORATORY REPORT DATA, ug.** | | | |
| HFPO Dimer Acid | 15.1383 | 57.8013 | 50.1664 |
| **EMISSION RESULTS, ug/dscm.** | | | |
| HFPO Dimer Acid | 7.4 | 29.7 | 25.7 |
| **EMISSION RESULTS, lb/dscf.** | | | |
| HFPO Dimer Acid | 4.60E-10 | 1.85E-09 | 1.60E-09 |
| **EMISSION RESULTS, lb/hr.** | | | |
| HFPO Dimer Acid | 3.94E-04 | 1.48E-03 | 1.32E-03 |
| **EMISSION RESULTS, g/sec.** | | | |
| HFPO Dimer Acid | 4.96E-05 | 1.87E-04 | 1.66E-04 |

[1] Unit was down for approximately the last 8 minutes of the test
[2] Results are approximate due to failed post test leak check

# APPENDIX A
# PROCESS OPERATIONS DATA

**VES**

| Date | 2/26/2018 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | 1400 | | | | 1500 | | | 1600 | | 1700 | | | 1800 | | | | 1900 | | | |
| Stack Testing | | | | | | | | 1552-1735 (1st run aborted, but included in report as Run 3) | | | | | | | | | | | | |
| VES Product | PMVE/PEVE | | | | | | | | | | | | | | | | | | | |
| VES Precursor | 44 kg/h | | | | | | | | | | | | | | | | | | | |
| VES Condensation (HFPO) | 83 kg/h | | | | | | | | | | | | | | | | | | | |
| VES ABR | 135 kg/h | | | | | | 135 kg/h | | | | | | | | | | | | | |
| VES Refining | 98 kg/h | | | | | | | | | | | | | | | | | | | |
| VES WGS Recirculation Flow | 18500 kg/h | | | | | | | | | | | | | | | | | | | |

| Date | 2/27/2018 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | 800 | | | | 900 | | | | 1000 | 1100 | | | 1200 | | | 1300 | | | | 1400 | | | 1500 | | 1600 | | 1700 | | | |
| Stack Testing | | | | | | | | | 1018-1208 (Run 1) | | | | | | | | | | | | | | 1446-1630 (Run 2) | | | | | | | |
| VES Product | PMVE/PEVE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VES Precursor | 44 kg/h | | | | | | | | | | | | | | | | | | | | | | 43 kg/h | | | | | | | |
| VES Condensation (HFPO) | 83 kg/h | | | | | | | | | | | | | | | | | | | | | | 83 kg/h | | | | | | | |
| VES ABR | 135 kg/h | | | | | | | | | | | | | | | | | | | | | | 135 kg/h | | | | | | | |
| VES Refining | 98 kg/h | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VES WGS Recirculation Flow | 18500 kg/h | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**PPA**

| Date | 3/1/2018 |
|---|---|
| Time | 900 1000 1100 1200 1300 1400 1500 1600 |
| Stack Testing | RUN 1 - HYD - 920-1114 RUN 1 - VAP -1158-1353 RUN 2 VAP - 1422-1618 |
| A/F column Feed Rate | 125lb /hr 150 lb/hr |
| Charging water to Hyd - venting | |
| charging Sulfuric acid - venting | |
| Hydrolysis - Wash Tank pressure Transfer to Hydrolysis | |
| Hydrolysis - Phase Settle | |
| Vap heels pressure transfer | |
| vap cycle | 1119-1643 |
| venting after press tran from North/South Acid tank to Hyd | |
| DAF tran to Hyd - venting during transfer | 923-1031 |
| Hydrolysis - transfer to Waste Acid Trailer | |
| Scrubber Recirculation Flow | 37 gpm |
| Scrubber dP | -0.14 |

| Date | 3/2/2018 |
|---|---|
| Time | 800 900 1000 1100 1200 |
| Stack Testing | RUN 2 HYD - 815-1011 |
| A/F column Feed Rate | 150 lb/hr |
| Charging water to Hyd - venting | |
| charging Sulfuric acid - venting | |
| Hydrolysis - Wash Tank pressure Transfer to Hydrolysis | |
| Hydrolysis - Phase Settle | |
| Vap heels pressure transfer | |
| vap cycle | started at 10:40:00 AM |
| venting after press tran from North Acid tank to Hyd | |
| DAF tran to Hyd - venting during transfer | 819-932 |
| Hydrolysis - transfer to Waste Acid Trailer | |
| Scrubber Recirculation Flow | 37 gpm |
| Scrubber dP | -0.2 |

# APPENDIX B
# RAW AND REDUCED TEST DATA

# Sample and Velocity Traverse Point Data Sheet - Method 1

Client: Chemours
Location/Plant: Fayetteville NC
Source: P&A Stack

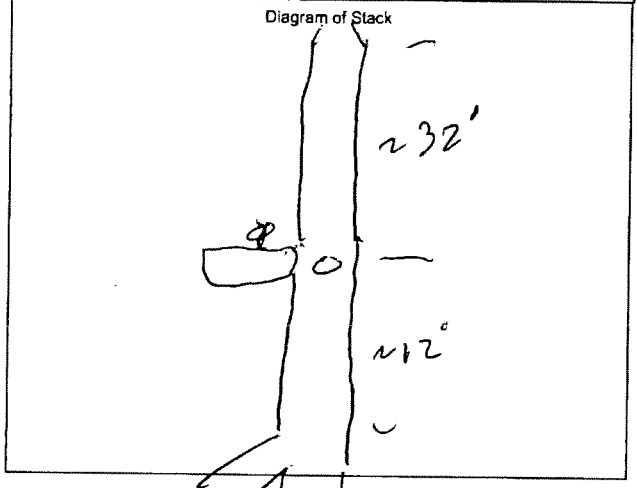
Operator: Paul
Date: 11/8/18
W.O. Number: 1,9418.002.007

| | | | | | |
|---|---|---|---|---|---|
| **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 | 45 |
| Port Depth (in.) = D | 15 |
| Depth of Duct, diameter (in.) = C-D | 30 |
| Area of Duct (ft²) | 4.90 |
| Total Traverse Points | 24 |
| Total Traverse Points per Port | 12 |
| Port Diameter (in.) —(Flange-Threaded-Hole) | 4" |
| Monorail Length | — |
| **Rectangular Ducts Only** | |
| Width of Duct, rectangular duct only (in.) | N/A |
| Total Ports (rectangular duct only) | |
| Equivalent Diameter = (2*L*W)/(L+W) | |

| Flow Disturbances | |
|---|---|
| Upstream - A (ft) | ~32 |
| Downstream - B (ft) | ~12 |
| Upstream - A (duct diameters) | ~12.8 |
| Downstream - B (duct diameters) | ~4.8 |

Diagram of Stack



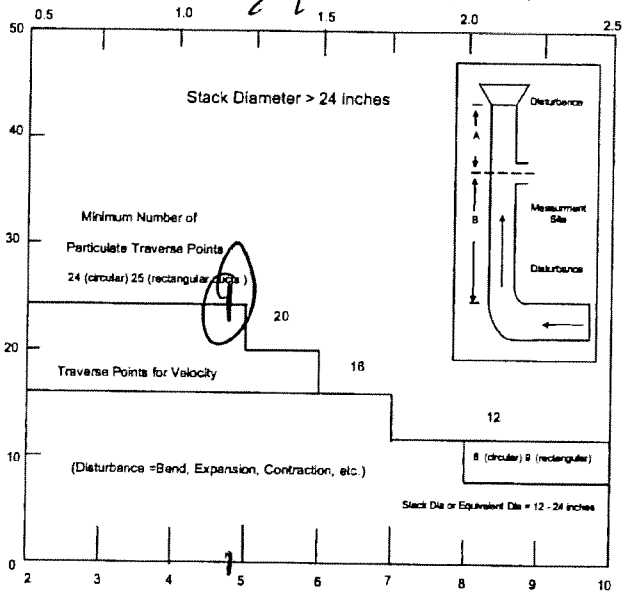

**Traverse Point Locations**

| Traverse Point | % of Duct | Distance from Inside Duct Wall (in) | Distance from Outside of Port (in) |
|---|---|---|---|
| 1 | 2.1 | 0.6 | 16 |
| 2 | 6.7 | 2.0 | 17 |
| 3 | 10.9 | 3.5 | 18 1/2 |
| 4 | 17.7 | 5.3 | 20 3/8 |
| 5 | 25 | 7.5 | 22 1/2 |
| 6 | 35.6 | 10.7 | 25 3/4 |
| 7 | 64.4 | 19.3 | 34 3/8 |
| 8 | 75 | 22.5 | 37 1/2 |
| 9 | 82.3 | 24.7 | 39 3/4 |
| 10 | 89.2 | 26.8 | 41 1/2 |
| 11 | 93.3 | 28.0 | 43 |
| 12 | 97.9 | 29.4 | 44 |

**CEM 3 Point(Long Measurment Line) Stratificaton Point Locations**

| | | | |
|---|---|---|---|
| 1 | 0.167 | | |
| 2 | 0.50 | | |
| 3 | 0.833 | | |

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




**Traverse Point Location Percent of Stack -Circular**

| Traverse Point | 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 | 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 |

WESTON

# Determination of Stack Gas Velocity - Method 2

Client: Chanors
Location/Plant: Fayetteville
Source: PPA

Operator: KS/MW
Date: 1/08/2018
W.O. Number: 1[illegible]

Pitot Coeff (Cp): ~~0.89~~ .8
Stack Area, ft² (As): 4.90
Pitot Tube/Thermo ID: P696

| | | | |
|---|---|---|---|
| Run Number | Pre 1 | | |
| Time | 1727 - 1740 | | |
| Barometric Press, in Hg (Pb) | | | |
| Static Press, in $H_2O$ (Pstatic) | | | |
| Source Moisture, % (BWS) | | | |
| $O_2$, % | | | |
| $CO_2$, % | | | |

| Cyclonic Flow Determination | | Traverse Location | | Leak Check good ? Y / N | | Leak Check good ? Y / N | | Leak Check good ? Y / N | |
|---|---|---|---|---|---|---|---|---|---|
| Delta P at 0° | Angle yeilding zero Delta P | Port | Point | Delta P | Source Temp, F° (Ts) | Delta P | Source Temp, F° (Ts) | Delta P | Source Temp, F° (Ts) |
| 0.07 | 5 | A | 1 | 0.14 | 65 | | | | |
| 0.07 | 5 | | 2 | 0.14 | 65 | | | | |
| 0.08 | 5 | | 3 | 0.44 | 67 | | | | |
| 0.08 | 5 | | 4 | 0.49 | 68 | | | | |
| 0.07 | 5 | | 5 | 0.54 | 69 | | | | |
| 0.08 | 5 | | 6 | 0.70 | 70 | | | | |
| 0.08 | 5 | | 7 | 0.73 | 70 | | | | |
| 0.10 | 5 | | 8 | 0.76 | 70 | | | | |
| 0.08 | 5 | | 9 | 0.76 | 71 | | | | |
| 0.09 | 5 | | 10 | 0.76 | 71 | | | | |
| 0.08 | 5 | | 11 | 0.77 | 71 | | | | |
| 0.08 | 5 | | 12 | 0.72 | 71 | | | | |
| – | – | – | – | – | – | | | | |
| 0 | 0 | B | 1 | 0.17 | 67 | | | | |
| 0 | 0 | | 2 | 0.17 | 67 | | | | |
| 0 | 0 | | 3 | 0.17 | 67 | | | | |
| 0 | 0 | | 4 | 0.38 | 68 | | | | |
| 0 | 0 | | 5 | 0.51 | 68 | | | | |
| 0 | 0 | | 6 | 0.59 | 69 | | | | |
| 0 | 0 | | 7 | 0.73 | 69 | | | | |
| 0 | 0 | | 8 | 0.79 | 68 | | | | |
| 0 | 0 | | 9 | 0.78 | 70 | | | | |
| 0.08 | 5 | | 10 | 0.77 | 70 | | | | |
| 0.07 | 5 | | 11 | 0.77 | 70 | | | | |
| 0.07 | 5 | | 12 | 0.74 | 70 | | | | |
| Avg Angle | | Avg Delta P & Temp | | 0.5633 | 69 | | | | |
| | | avg $\sqrt{DeltaP}$ | | 0.7273 | | | | | |
| | | Average gas stream velocity, ft/sec. | | | | | | | |
| | | Vol. flow rate @ actual conditions, wacf/min | | | | | | | |
| | | Vol. flow rate at standard conditions, dscf/min | | | | | | | |

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

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

$Tsa = Ts + 460$

$Ps = Pb + (Pstatic/13.6)$

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

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

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

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

Comments
method2.xls

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# CHEMOURS - FAYETTEVILLE, NC
# INPUTS FOR HFPO DIMER ACID CALCULATIONS

**Test Data**

| | | |
|---|---|---|
| Run number | 1 | 2 |
| Location | PPA | PPA |
| Date | 3/1/2018 | 3/1/2018 |
| Time period | 1158-1353 | 1422-1618 |
| Operator | MW | MW |

**Inputs For Calcs.**

| | | |
|---|---|---|
| Sq. rt. delta P | 0.72793 | 0.74444 |
| Delta H | 0.8317 | 0.8583 |
| Stack temp. (deg.F) | 79.3 | 81.1 |
| Meter temp. (deg.F) | 76.5 | 79.5 |
| Sample volume (act.) | 46.050 | 47.520 |
| Barometric press. (in.Hg) | 29.84 | 29.66 |
| Volume $H_2O$ imp. (ml) | 20.0 | 4.0 |
| Weight change sil. gel (g) | 14.3 | 13.4 |
| % $CO_2$ | 0.0 | 0.0 |
| % $O_2$ | 20.9 | 20.9 |
| % $N_2$ | 79.1 | 79.1 |
| Area of stack (sq.ft.) | 4.900 | 4.900 |
| Sample time (min.) | 96.0 | 96.0 |
| Static pressure (in.$H_2O$) | -2.80 | -2.80 |
| Nozzle dia. (in.) | 0.189 | 0.189 |
| Meter box cal. | 0.9916 | 0.9916 |
| Cp of pitot tube | 0.84 | 0.84 |
| Traverse points | 24 | 24 |

**RUN 1**

| Port | Point | Delta P | Sqrt Dp | Delta H | Sqrt Dh | Volume | Stack | dgm Out |
|---|---|---|---|---|---|---|---|---|
| C | 1 | 0.73 | 0.85 | 1.10 | 1.05 | 537.820 | 78 | 72 |
| | 2 | 0.73 | 0.85 | 1.10 | 1.05 | 561.000 | 78 | 72 |
| | 3 | 0.75 | 0.87 | 1.14 | 1.07 | 561.180 | 78 | 72 |
| | 4 | 0.73 | 0.85 | 1.10 | 1.05 | 584.050 | 78 | 72 |
| | 5 | 0.70 | 0.84 | 1.06 | 1.03 | | 79 | 72 |
| | 6 | 0.68 | 0.82 | 1.03 | 1.01 | | 79 | 72 |
| D | 1 | 0.58 | 0.76 | 0.88 | 0.94 | | 79 | 74 |
| | 2 | 0.47 | 0.69 | 0.71 | 0.84 | | 79 | 76 |
| | 3 | 0.39 | 0.62 | 0.59 | 0.77 | | 79 | 77 |
| | 4 | 0.31 | 0.56 | 0.47 | 0.69 | | 78 | 77 |
| | 5 | 0.28 | 0.53 | 0.43 | 0.66 | | 78 | 77 |
| | 6 | 0.26 | 0.51 | 0.40 | 0.63 | | 78 | 77 |
| A | 1 | 0.75 | 0.87 | 1.14 | 1.07 | | 79 | 77 |
| | 2 | 0.75 | 0.87 | 1.14 | 1.07 | | 79 | 77 |
| | 3 | 0.73 | 0.85 | 1.10 | 1.05 | | 79 | 78 |
| | 4 | 0.73 | 0.85 | 1.10 | 1.05 | | 80 | 78 |
| | 5 | 0.73 | 0.85 | 1.10 | 1.05 | | 80 | 78 |
| | 6 | 0.70 | 0.84 | 1.06 | 1.03 | | 80 | 79 |
| B | 1 | 0.60 | 0.77 | 0.91 | 0.95 | | 80 | 79 |
| | 2 | 0.46 | 0.68 | 0.69 | 0.83 | | 81 | 80 |
| | 3 | 0.36 | 0.60 | 0.54 | 0.73 | | 81 | 80 |
| | 4 | 0.30 | 0.55 | 0.45 | 0.67 | | 81 | 80 |
| | 5 | 0.24 | 0.49 | 0.36 | 0.60 | | 81 | 80 |
| | 6 | 0.24 | 0.49 | 0.36 | 0.60 | | 81 | 80 |
| AVG | | 0.55000 | 0.72793 | 0.83167 | 0.89512 | 46.050 | 79.29 | 76.50 |

**RUN 2**

| Port | Point | Delta P | Sqrt Dp | Delta H | Sqrt Dh | Volume | Stack | dgm Out |
|---|---|---|---|---|---|---|---|---|
| C | 1 | 0.73 | 0.85 | 1.10 | 1.05 | 584.271 | 80 | 78 |
| | 2 | 0.73 | 0.85 | 1.10 | 1.05 | 608.100 | 80 | 78 |
| | 3 | 0.75 | 0.87 | 1.14 | 1.07 | 608.199 | 80 | 78 |
| | 4 | 0.73 | 0.85 | 1.10 | 1.05 | 631.890 | 81 | 78 |
| | 5 | 0.70 | 0.84 | 1.06 | 1.03 | | 81 | 78 |
| | 6 | 0.65 | 0.81 | 0.98 | 0.99 | | 81 | 79 |
| D | 1 | 0.55 | 0.74 | 0.83 | 0.91 | | 81 | 79 |
| | 2 | 0.55 | 0.74 | 0.83 | 0.91 | | 82 | 79 |
| | 3 | 0.45 | 0.67 | 0.68 | 0.82 | | 81 | 79 |
| | 4 | 0.39 | 0.62 | 0.59 | 0.77 | | 82 | 81 |
| | 5 | 0.30 | 0.55 | 0.45 | 0.67 | | 82 | 81 |
| | 6 | 0.26 | 0.51 | 0.39 | 0.62 | | 82 | 81 |
| A | 1 | 0.75 | 0.87 | 1.14 | 1.07 | | 81 | 80 |
| | 2 | 0.73 | 0.85 | 1.10 | 1.05 | | 81 | 80 |
| | 3 | 0.73 | 0.85 | 1.10 | 1.05 | | 81 | 80 |
| | 4 | 0.73 | 0.85 | 1.10 | 1.05 | | 81 | 80 |
| | 5 | 0.69 | 0.83 | 1.04 | 1.02 | | 81 | 80 |
| | 6 | 0.65 | 0.81 | 0.98 | 0.99 | | 81 | 80 |
| B | 1 | 0.56 | 0.75 | 0.85 | 0.92 | | 82 | 81 |
| | 2 | 0.55 | 0.74 | 0.83 | 0.91 | | 82 | 81 |
| | 3 | 0.46 | 0.68 | 0.69 | 0.83 | | 81 | 80 |
| | 4 | 0.40 | 0.63 | 0.61 | 0.78 | | 81 | 80 |
| | 5 | 0.35 | 0.59 | 0.53 | 0.73 | | 81 | 79 |
| | 6 | 0.25 | 0.50 | 0.38 | 0.62 | | 81 | 79 |
| AVG | | 0.56833 | 0.74444 | 0.85833 | 0.91487 | 47.520 | 81.1 | 79.5 |

# ISOKINETIC FIELD DATA SHEET

# EPA Method 0010 - Semi-Volatiles



| | | Stack Conditions | Assumed | Actual |
|---|---|---|---|---|
| Client | Chemours | % Moisture | 1.5 | |
| W.O.# | 15418.002.002.0001 | Impinger Vol (ml) | | |
| Project ID | Chemours | Silica gel (g) | | |
| Mode/Source ID | PPA | CO2, % by Vol | 0.1 | |
| Samp. Loc. ID | STK | O2, % by Vol | 20.8 | |
| Run No.ID | 4 | Temperature (°F) | ≈77 | |
| Test Method ID | M0010 | Meter Temp (°F) | ≈66 | |
| Date ID | 26FEB2018 | Static Press (in $H_2O$) | -2.8 | -2.4 |
| Source/Location | PPA Stack | Ambient Temp (°F) | ≈70 | |
| Sample Date | 3/01/18 | | | |
| Baro. Press (in Hg) | 29.84 | | | |
| Operator | MPW MAS WJC | | | |

VAPORIZATION

| | | | |
|---|---|---|---|
| Meter Box ID | 31 | | |
| Meter Box Y | 0.9916 | | |
| Meter Box Del H | 2.0587 | | |
| Probe ID / Length | P697 | 7' | Sample Train ($ft^3$) |
| Probe Material | Boro | | Leak Check @ (in Hg) |
| Pitot / Thermocouple ID | P697 | | Pitot leak check good |
| Pitot Coefficient | 0.84 | | Pitot Inspection good |
| Nozzle ID | W189 | | Method 3 System good |
| Nozzle Measurements | 0.189 / 0.189 / 0.189 | | **Temp Check** |
| Avg Nozzle Dia (in) | 0.189 | | Meter Box Temp |
| Area of Stack ($ft^2$) | 4.90 | | Reference Temp |
| Sample Time | 96 | | Pass/Fail (+/- 2°) |
| Total Traverse Pts | 24 | | Temp Change Response ? |

K Factor 1.52

| | Initial | Mid-Point | Final |
|---|---|---|---|
| Leak Check @ (in Hg) | 0.001 / ≤5 | 0.001 / ≤5 | 0.001 / ≤5 |
| 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 | 68 | | 70 |
| Reference Temp | 68 | | 70 |
| 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 (°F) | PROBE TEMP (°F) | FILTER BOX TEMP (F) | IMPINGER EXIT TEMP (oF) | SAMPLE TRAIN VAC (in Hg) | XAD EXIT TEMP (F) | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1136 | | | 537.820 | | | | | | | | | |
| B 1 | 4 | | 0.73 | 1.10 | 540.00 | 78 | 72 | 101 | 100 | 63 | 3 | 58 | | 23.18 |
| 2 | 8 | | 0.73 | 1.10 | 542.31 | 78 | 72 | 101 | 100 | 60 | 3 | 57 | | |
| 3 | 12 | | 0.75 | 1.14 | 544.64 | 78 | 72 | 100 | 100 | 59 | 3 | 47 | | |
| 4 | 16 | | 0.73 | 1.10 | 546.90 | 78 | 72 | 100 | 100 | 59 | 3 | 47 | | |
| 5 | 20 | | 0.70 | 1.06 | 549.10 | 79 | 72 | 100 | 99 | 59 | 3 | 47 | | |
| 6 | 24 | | 0.64 | 1.03 | 551.26 | 79 | 72 | 101 | 100 | 58 | 3 | 48 | | |
| 7 | 28 | | 0.58 | 0.88 | 553.28 | 79 | 74 | 100 | 101 | 57 | 3 | 49 | | |
| 8 | 32 | | 0.47 | 0.71 | 555.04 | 79 | 76 | 100 | 100 | 57 | 3 | 50 | | |
| 9 | 36 | | 0.39 | 0.59 | 556.85 | 79 | 77 | 101 | 99 | 59 | 3 | 52 | | |
| 10 | 40 | | 0.31 | 0.47 | 558.26 | 78 | 77 | 100 | 100 | 60 | 3 | 49 | | |
| 11 | 44 | | 0.28 | 0.43 | 559.60 | 78 | 77 | 101 | 99 | 60 | 3 | 50 | | |
| 12 | 48 | 1246 | 0.26 | 0.40 | 561.000 | 78 | 77 | 100 | 99 | 61 | 3 | 51 | | |
| | | 1305 | | | 561.180 | | | | | | | | | |
| A 1 | 4 | | 0.75 | 1.14 | 563.31 | 79 | 77 | 100 | 99 | 67 | 3 | 53 | | 22.87 |
| 2 | 8 | | 0.75 | 1.14 | 565.60 | 79 | 77 | 100 | 99 | 60 | 3 | 49 | | |
| 3 | 12 | | 0.73 | 1.10 | 567.86 | 79 | 78 | 101 | 101 | 56 | 3 | 49 | | |
| 4 | 16 | | 0.73 | 1.10 | 570.11 | 80 | 78 | 100 | 99 | 56 | 3 | 49 | | |
| 5 | 20 | | 0.73 | 1.10 | 572.32 | 80 | 78 | 100 | 99 | 56 | 3 | 48 | | |
| 6 | 24 | | 0.70 | 1.06 | 574.63 | 80 | 79 | 100 | 99 | 57 | 3 | 48 | | |
| 7 | 28 | | 0.60 | 0.91 | 576.60 | 80 | 79 | 100 | 100 | 58 | 3 | 49 | | |
| 8 | 32 | | 0.46 | 0.69 | 578.33 | 81 | 80 | 100 | 100 | 58 | 3 | 49 | | |
| 9 | 36 | | 0.36 | 0.54 | 579.92 | 81 | 80 | 99 | 99 | 57 | 3 | 49 | | |
| 10 | 40 | | 0.30 | 0.45 | 581.54 | 81 | 80 | 100 | 99 | 57 | 2 | 51 | | |
| 11 | 44 | | 0.24 | 0.36 | 582.82 | 81 | 80 | 100 | 99 | 57 | 2 | 51 | | |
| 12 | 48 | 1353 | 0.24 | 0.36 | 584.050 | 81 | 80 | 100 | 99 | 57 | 2 | 51 | | |
| | | | Avg Delta P | Avg Delta H | Total Volume | Avg Ts | Avg Tm | Min/Max | Min/Max | Max | Max Vac | Min/Max | | |
| | | | 0.55000 | 0.83167 | 46.050 | 79.3 | 76.5 | 101 | 101 | 67 | 3 | 56 | | |
| | | | Avg Sqrt Delta P | Avg Sqrt Delh | Comments: | | | 100/101 | 99/101 | | | | | |
| | | | 0.72792 | 0.89512 | | | | | | | | | | |

WESTON SOLUTIONS

EPA Method 0010 from EPA SW-846

SAV

# ISOKINETIC FIELD DATA SHEET

# EPA Method 0010 - Semi-Volatiles



| | |
|---|---|
| Client | Chemours |
| W.O.# | 15418.002.002.0001 |
| Project ID | Chemours |
| Mode/Source ID | PPA |
| Samp. Loc. ID | STK |
| Run No.ID | 5 |
| Test Method ID | M0010 |
| Date ID | 26FEB2018 |
| Source/Location | PPA Stack |
| Sample Date | 3/01/18 |
| Baro. Press (in Hg) | 29.66 |
| Operator | MD MAIS WINCEL/M |

| Stack Conditions | Assumed | Actual |
|---|---|---|
| % Moisture | 1.5 | |
| Impinger Vol (ml) | | |
| Silica gel (g) | | |
| CO2, % by Vol | 0.1 | |
| O2, % by Vol | 20.8 | |
| Temperature (°F) | ≈77 | |
| Meter Temp (°F) | ≈78 | |
| Static Press (in $H_2O$) | -2.8 | -2.9 |
| Ambient Temp (°F) | ≈75 | |

VAPORIZATION

| | |
|---|---|
| Meter Box ID | 31 |
| Meter Box Y | 0.9916 |
| Meter Box Del H | 2.0587 |
| Probe ID / Length | P563 / 7' |
| Probe Material | Boro |
| Pitot / Thermocouple ID | P563 |
| Pitot Coefficient | 0.84 |
| Nozzle ID | W189 |
| Nozzle Measurements | 0.189 / 0.189 / 0.189 |
| Avg Nozzle Dia (in) | 0.189 |
| Area of Stack ($ft^2$) | 4.90 |
| Sample Time | 96 |
| Total Traverse Pts | 24 |

| | |
|---|---|
| Sample Train ($ft^3$) | |
| Leak Check @ (in Hg) | |
| Pitot leak check good | yes / no |
| Pitot Inspection good | yes / no |
| Method 3 System good | yes / no |
| **Temp Check** | |
| Meter Box Temp | |
| Reference Temp | |
| Pass/Fail (+/- 2°) | |
| Temp Change Response ? | yes / no |

K Factor 1.52

| | Initial | Mid-Point | Final |
|---|---|---|---|
| Sample Train ($ft^3$) | 0.001 | 0.001 | 0.001 |
| Leak Check @ (in Hg) | ✓6 | ✓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 | 75 | | 74 |
| Reference Temp | 75 | | 74 |
| 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 | 1420 | | | 584.271 | | | | | 67 | | | | |
| A 1 | 4 | | 0.73 | 1.10 | 587.10 | 80 | 78 | 101 | 100 | 67 | 3 | 59 | | 23.83 |
| 2 | 8 | | 0.73 | 1.10 | 588.78 | 80 | 78 | 101 | 101 | 66 | 3 | 59 | | |
| 3 | 12 | | 0.75 | 1.14 | 591.10 | 80 | 78 | 101 | 101 | 65 | 3 | 45 | | |
| 4 | 16 | | 0.73 | 1.10 | 593.42 | 81 | 78 | 100 | 101 | 60 | 3 | 45 | | |
| 5 | 20 | | 0.70 | 1.06 | 595.63 | 81 | 78 | 100 | 100 | 54 | 3 | 46 | | |
| 6 | 24 | | 0.65 | 0.98 | 597.86 | 81 | 79 | 100 | 100 | 53 | 3 | 44 | | |
| 7 | 28 | | 0.55 | 0.83 | 599.76 | 81 | 79 | 100 | 100 | 53 | 3 | 44 | | |
| 8 | 32 | | 0.55 | 0.83 | 601.72 | 82 | 79 | 102 | 101 | 52 | 3 | 47 | | |
| 9 | 36 | | 0.45 | 0.68 | 603.71 | 81 | 79 | 100 | 100 | 52 | 3 | 47 | | |
| 10 | 40 | | 0.39 | 0.59 | 605.08 | 82 | 81 | 99 | 100 | 52 | 3 | 47 | | |
| 11 | 44 | | 0.30 | 0.45 | 606.70 | 82 | 81 | 99 | 100 | 52 | 3 | 48 | | |
| 12 | 48 | 1510 | 0.26 | 0.39 | 608.100 | 82 | 81 | 101 | 100 | 53 | 3 | 48 | | |
| | | 1530 | | | 608.199 | | | | | | | | | |
| B 1 | 4 | | 0.75 | 1.14 | 610.27 | 81 | 80 | 101 | 100 | 66 | 3 | 48 | | 223.69 |
| 2 | 8 | | 0.73 | 1.10 | 612.53 | 81 | 80 | 100 | 100 | 64 | 3 | 47 | | |
| 3 | 12 | | 0.73 | 1.10 | 614.80 | 81 | 80 | 100 | 100 | 57 | 3 | 48 | | |
| 4 | 16 | | 0.73 | 1.10 | 617.06 | 81 | 80 | 99 | 99 | 57 | 3 | 48 | | |
| 5 | 20 | | 0.69 | 1.04 | 619.28 | 81 | 80 | 99 | 97 | 56 | 3 | 48 | | |
| 6 | 24 | | 0.65 | 0.98 | 621.47 | 81 | 80 | 101 | 101 | 57 | 3 | 49 | | |
| 7 | 28 | | 0.56 | 0.85 | 623.41 | 82 | 81 | 99 | 100 | 57 | 3 | 50 | | |
| 8 | 32 | | 0.55 | 0.83 | 625.47 | 82 | 81 | 102 | 102 | 58 | 3 | 48 | | |
| 9 | 36 | | 0.46 | 0.69 | 627.20 | 81 | 80 | 100 | 100 | 58 | 3 | 49 | | |
| 10 | 40 | | 0.40 | 0.61 | 628.98 | 81 | 80 | 100 | 100 | 58 | 3 | 49 | | |
| 11 | 44 | | 0.35 | 0.53 | 630.41 | 81 | 79 | 100 | 101 | 59 | 3 | 49 | | |
| 12 | 48 | 1618 | 0.25 | 0.38 | 631.89 | 81 | 79 | 99 | 98 | 59 | 2 | 50 | | |
| | | | Avg Delta P | Avg Delta H | Total Volume | Avg Ts | Avg Tm | Min/Max | Min/Max | Max | Max Vac | Min/Max | | |
| | | | 0.56833 | 0.85833 | 47.52 | 81.1 | 79.5 | 102 | 102 | 67 | 3 | 50 | | |
| | | | Avg Sqrt Delta P | Avg Sqrt Delta H | Comments: | | | 99/102 | 94/102 | | | | | |
| | | | 0.74444 | 0.91487 | | | | | | | | | | |

EPA Method 0010 from EPA SW-846

20
+14.3
343

# SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - Semi-Volatiles

| | | | |
|---|---|---|---|
| Client | Chemours | W.O. # | 15418.002.002.0001 |
| Location/Plant | Fayetteville, NC | Source & Location | PPA Stack |

**Run No.** 4 Vaporizer | Sample Date 3/1/18 | Recovery Date 3/2/18

Sample I.D. Chemours - PPA - STK - 4 - M0010 - | Analyst PMM | Filter Number —

| | Impinger | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Imp.Total | 8 | Total |
| **Contents** | Empty | HPLC H20 | HPLC H20 | | | | | | Silica Gel | |
| **Final** | 12 | 97 | 109 | 2 | | | | | 314.3 | |
| **Initial** | 0 | 100 | 100 | 0 | | | | | 300 | |
| **Gain** | 12 | -3 | 9 | 2 | | | | 20 | 14.3 | ~~37.3~~ 34.3 |

Impinger Color clear | Labeled? ✓

Silica Gel Condition Good | Sealed? ✓

**Run No.** 5 Vaporizer | Sample Date 3/1/18 | Recovery Date 3/1/18

Sample I.D. Chemours - PPA - STK - 5 - M0010 - | Analyst PMM | Filter Number —

| | Impinger | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Imp.Total | 8 | Total |
| **Contents** | Empty | HPLC H20 | HPLC H20 | | | | | | Silica Gel | |
| **Final** | 5 | 98 | 99 | 2 | | | | | 313.4 | |
| **Initial** | 0 | 100 | 100 | 0 | | | | | 300 | |
| **Gain** | 5 | -2 | -1 | 2 | | | | 4 | 13.4 | 17.4 |

Impinger Color clear | Labeled? ✓

Silica Gel Condition Good | Sealed? ✓

**Run No.** 6 | Sample Date | Recovery Date

Sample I.D. Chemours - PPA - STK - 6 - M0010 - | Analyst | Filter Number

| | Impinger | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Imp.Total | 8 | Total |
| **Contents** | Empty | HPLC H20 | HPLC H20 | | | | | | Silica Gel | |
| **Final** | | | | | | | | | | |
| **Initial** | | 100 | 100 | | | | | | 300 | |
| **Gain** | | | | | | | | | | |

Impinger Color | Labeled?

Silica Gel Condition | Sealed?

Check COC for Sample IDs of Media Blanks

## CHEMOURS - FAYETTEVILLE, NC
## INPUTS FOR HFPO DIMER ACID CALCULATIONS

| **Test Data** | | |
|---|---|---|
| Run number | 1 | 2 |
| Location | PPA | PPA |
| Date | 3-1-2018 | 3-2-2018 |
| Time period | 0920-1114 | 0815-1011 |
| Operator | MW | MW |
| | | |
| **Inputs For Calcs.** | | |
| Sq. rt. delta P | 0.74394 | 0.75277 |
| Delta H | 0.8642 | 0.8692 |
| Stack temp. (deg.F) | 77.6 | 71.0 |
| Meter temp. (deg.F) | 65.9 | 53.5 |
| Sample volume (act.) | 46.050 | 45.605 |
| Barometric press. (in.Hg) | 29.84 | 29.89 |
| Volume $H_2O$ imp. (ml) | 11.0 | 15.0 |
| Weight change sil. gel (g) | 13.4 | 17.3 |
| % $CO_2$ | 0.0 | 0.0 |
| % $O_2$ | 20.9 | 20.9 |
| % $N_2$ | 79.1 | 79.1 |
| Area of stack (sq.ft.) | 4.900 | 4.900 |
| Sample time (min.) | 96.0 | 96.0 |
| Static pressure (in.$H_2O$) | -2.80 | -2.80 |
| Nozzle dia. (in.) | 0.189 | 0.189 |
| Meter box cal. | 0.9916 | 0.9916 |
| Cp of pitot tube | 0.84 | 0.84 |
| Traverse points | 24 | 24 |

**RUN 1**

| Port | Point | Delta P | Sqrt Dp | Delta H | Sqrt Dh | Volume | Stack | dgm Out |
|---|---|---|---|---|---|---|---|---|
| C | 1 | 0.75 | 0.87 | 1.14 | 1.07 | 490.009 | 77 | 62 |
| | 2 | 0.73 | 0.85 | 1.10 | 1.05 | 513.660 | 77 | 62 |
| | 3 | 0.75 | 0.87 | 1.14 | 1.07 | 514.000 | 77 | 62 |
| | 4 | 0.73 | 0.85 | 1.10 | 1.05 | 536.399 | 77 | 63 |
| | 5 | 0.75 | 0.87 | 1.14 | 1.07 | | 77 | 63 |
| | 6 | 0.70 | 0.84 | 1.06 | 1.03 | | 77 | 64 |
| D | 1 | 0.65 | 0.81 | 0.98 | 0.99 | | 77 | 64 |
| | 2 | 0.55 | 0.74 | 0.83 | 0.91 | | 79 | 64 |
| | 3 | 0.40 | 0.63 | 0.60 | 0.77 | | 78 | 64 |
| | 4 | 0.35 | 0.59 | 0.53 | 0.73 | | 79 | 64 |
| | 5 | 0.33 | 0.57 | 0.50 | 0.71 | | 77 | 66 |
| | 6 | 0.30 | 0.55 | 0.46 | 0.68 | | 76 | 66 |
| A | 1 | 0.73 | 0.85 | 1.10 | 1.05 | | 77 | 66 |
| | 2 | 0.73 | 0.85 | 1.10 | 1.05 | | 78 | 67 |
| | 3 | 0.72 | 0.85 | 1.09 | 1.04 | | 78 | 67 |
| | 4 | 0.73 | 0.85 | 1.10 | 1.05 | | 78 | 67 |
| | 5 | 0.72 | 0.85 | 1.09 | 1.04 | | 78 | 67 |
| | 6 | 0.70 | 0.84 | 1.06 | 1.03 | | 78 | 69 |
| B | 1 | 0.65 | 0.81 | 0.98 | 0.99 | | 78 | 69 |
| | 2 | 0.55 | 0.74 | 0.83 | 0.91 | | 78 | 69 |
| | 3 | 0.39 | 0.62 | 0.59 | 0.77 | | 78 | 69 |
| | 4 | 0.30 | 0.55 | 0.46 | 0.68 | | 78 | 69 |
| | 5 | 0.25 | 0.50 | 0.38 | 0.62 | | 78 | 69 |
| | 6 | 0.25 | 0.50 | 0.38 | 0.62 | | 78 | 70 |
| AVG | | 0.57125 | 0.74394 | 0.86417 | 0.91515 | 46.050 | 77.63 | 65.92 |

**RUN 2**

23.18
23.28

| Port | Point | Delta P | Sqrt Dp | Delta H | Sqrt Dh | Volume | Stack | dgm Out |
|---|---|---|---|---|---|---|---|---|
| C | 1 | 0.75 | 0.87 | 1.14 | 1.07 | 641.225 | 72 | 52 |
| | 2 | 0.75 | 0.87 | 1.14 | 1.07 | 664.410 | 72 | 52 |
| | 3 | 0.75 | 0.87 | 1.14 | 1.07 | 664.501 | 72 | 53 |
| | 4 | 0.75 | 0.87 | 1.14 | 1.07 | 686.921 | 71 | 52 |
| | 5 | 0.75 | 0.87 | 1.14 | 1.07 | | 71 | 53 |
| | 6 | 0.72 | 0.85 | 1.09 | 1.04 | | 71 | 53 |
| D | 1 | 0.63 | 0.79 | 0.95 | 0.97 | | 72 | 53 |
| | 2 | 0.55 | 0.74 | 0.83 | 0.91 | | 73 | 54 |
| | 3 | 0.45 | 0.67 | 0.68 | 0.82 | | 72 | 54 |
| | 4 | 0.40 | 0.63 | 0.60 | 0.77 | | 72 | 54 |
| | 5 | 0.32 | 0.57 | 0.48 | 0.69 | | 72 | 54 |
| | 6 | 0.25 | 0.50 | 0.38 | 0.62 | | 71 | 54 |
| A | 1 | 0.73 | 0.85 | 1.10 | 1.05 | | 71 | 54 |
| | 2 | 0.75 | 0.87 | 1.10 | 1.05 | | 71 | 54 |
| | 3 | 0.75 | 0.87 | 1.10 | 1.05 | | 71 | 54 |
| | 4 | 0.73 | 0.85 | 1.07 | 1.03 | | 70 | 54 |
| | 5 | 0.73 | 0.85 | 1.07 | 1.03 | | 70 | 54 |
| | 6 | 0.65 | 0.81 | 0.95 | 0.97 | | 71 | 54 |
| B | 1 | 0.65 | 0.81 | 0.95 | 0.97 | | 71 | 54 |
| | 2 | 0.56 | 0.75 | 0.82 | 0.91 | | 71 | 54 |
| | 3 | 0.44 | 0.66 | 0.64 | 0.80 | | 71 | 54 |
| | 4 | 0.38 | 0.62 | 0.55 | 0.74 | | 70 | 53 |
| | 5 | 0.30 | 0.55 | 0.44 | 0.66 | | 69 | 53 |
| | 6 | 0.25 | 0.50 | 0.36 | 0.60 | | 68 | 53 |
| AVG | | 0.58292 | 0.75277 | 0.86917 | 0.91883 | 45.605 | 71.0 | 53.5 |

# ISOKINETIC FIELD DATA SHEET

# EPA Method 0010 - Semi-Volatiles



| | | Stack Conditions | Assumed | Actual |
|---|---|---|---|---|
| Client | Chemours | % Moisture | 1.5 | |
| W.O.# | 15418.002.002.0001 | Impinger Vol (ml) | | |
| Project ID | Chemours | Silica gel (g) | | |
| Mode/Source ID | PPA | CO2, % by Vol | 0.1 | |
| Samp. Loc. ID | STK | O2, % by Vol | 20.8 | |
| Run No.ID | 1 | Temperature (°F) | =60 | |
| Test Method ID | M0010 | Meter Temp (°F) | 60 | |
| Date ID | 26FEB2018 | Static Press (in $H_2O$) | -2.6 | -2.8 |
| Source/Location | PPA Stack | Ambient Temp (°F) | 65 | |
| Sample Date | 3/01/18 | | | |
| Baro. Press (in Hg) | 29.64 | | | |
| Operator | ~~MAS~~ MAS W | | | |

~~HA 0010 SES~~ Run 1 Hydrolysis

| | | | | |
|---|---|---|---|---|
| Meter Box ID | 31 | | | |
| Meter Box Y | 0.9916 | | | |
| Meter Box Del H | 2.0587 | | | |
| Probe ID / Length | P563 | 7' | Sample Train ($ft^3$) | 0.001 / 0.001 / 0.001 |
| Probe Material | Boro | | Leak Check @ (in Hg) | 6 / 6 / 6 |
| Pitot / Thermocouple ID | P563 | | Pitot leak check good | yes / yes / yes |
| Pitot Coefficient | 0.84 | | Pitot Inspection good | yes / yes / yes |
| Nozzle ID | G189 | | Method 3 System good | yes / yes / yes |
| Nozzle Measurements | 0.189 / 0.189 / 0.189 | | **Temp Check** | Pre-Test Set / Post-Test Set |
| Avg Nozzle Dia (in) | 0.189 | | Meter Box Temp | 60 / 69 |
| Area of Stack ($ft^2$) | 1.90 | | Reference Temp | 68 / 67 |
| Sample Time | 96 | | Pass/Fail (+/- 2°) | Pass / Pass |
| Total Traverse Pts | 24 | | Temp Change Response ? | yes / yes |

K Factor 1.52

| 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 | 0920 | | | 490.009 | | | | | | | | | |
| A 1 | 4 | | 0.75 | 1.14 | 492.21 | 77 | 62 | 101 | 101 | 57 | 3 | 42 | | 23.65 |
| 2 | 8 | | 0.73 | 1.10 | 494.50 | 77 | 62 | 99 | 99 | 55 | 3 | 41 | | |
| 3 | 12 | | 0.75 | 1.14 | 496.96 | 77 | 62 | 99 | 99 | 54 | 3 | 40 | | |
| 4 | 16 | | 0.73 | 1.10 | 499.02 | 77 | 63 | 100 | 102 | 49 | 3 | 38 | | |
| 5 | 20 | | 0.75 | 1.14 | 501.72 | 77 | 63 | 100 | 102 | 49 | 3 | 38 | | |
| 6 | 24 | | 0.70 | 1.06 | 503.43 | 77 | 64 | 99 | 100 | 49 | 3 | 39 | | |
| 7 | 28 | | 0.65 | 0.98 | 505.48 | 77 | 64 | 99 | 100 | 49 | 3 | 39 | | |
| 8 | 32 | | 0.55 | 0.83 | 507.43 | 79 | 64 | 100 | 100 | 49 | 3 | 39 | | |
| 9 | 36 | | 0.40 | 0.60 | 509.16 | 78 | 64 | 101 | 101 | 49 | 3 | 40 | | |
| 10 | 40 | | 0.35 | 0.53 | 510.70 | 79 | 64 | 101 | 101 | 49 | 3 | 40 | | |
| 11 | 44 | | 0.33 | 0.50 | 512.31 | 77 | 66 | 100 | 99 | 50 | 2 | 40 | | |
| 12 | 48 | 1008 | 0.30 | 0.46 | 513.660 | 76 | 66 | 100 | 99 | 50 | 2 | 40 | | |
| | | 1026 | | | 514.004 | | | | | | | | | |
| B 1 | 4 | | 0.73 | 1.10 | 516.11 | 77 | 66 | 100 | 99 | 57 | 3 | 40 | | 22.39 |
| 2 | 8 | | 0.73 | 1.10 | 518.40 | 78 | 67 | 100 | 100 | 54 | 3 | 41 | | |
| 3 | 12 | | 0.72 | 1.09 | 520.54 | 78 | 67 | 100 | 100 | 54 | 3 | 43 | | |
| 4 | 16 | | 0.73 | 1.10 | 522.83 | 78 | 67 | 100 | 101 | 54 | 3 | 43 | | |
| 5 | 20 | | 0.72 | 1.09 | 524.96 | 78 | 67 | 100 | 101 | 54 | 3 | 44 | | |
| 6 | 24 | | 0.70 | 1.06 | 527.08 | 79 | 69 | 99 | 100 | 53 | 3 | 45 | | |
| 7 | 28 | | 0.65 | 0.98 | 529.13 | 78 | 69 | 100 | 101 | 54 | 3 | 45 | | |
| 8 | 32 | | 0.55 | 0.83 | 530.97 | 78 | 69 | 100 | 101 | 55 | 3 | 47 | | |
| 9 | 36 | | 0.39 | 0.59 | 532.77 | 78 | 69 | 102 | 101 | 55 | 3 | 47 | | |
| 10 | 40 | | 0.30 | 0.46 | 534.10 | 78 | 69 | 101 | 101 | 55 | 3 | 47 | | |
| 11 | 44 | | 0.25 | 0.38 | 535.21 | 78 | 69 | 100 | 100 | 55 | B2 | 48 | | |
| 12 | 48 | 1114 | 0.25 | 0.38 | 536.349 | 78 | 70 | 99 | 99 | 56 | 2 | 48 | | |
| | | | Avg Delta P | Avg Delta H | Total Volume | Avg Ts | Avg Tm | Min/Max | Min/Max | Max | Max Vac | Min/Max | | |
| | | | 0.57125 | 0.86416 | 46.04 | 77.6 | 65.9 | 102 | 102 | 57 | 3 | 48 | | |
| | | | Avg Sqrt Delta P | Avg Sqrt Del H | Comments: | | | | | | | | | |
| | | | 0.74394 | 0.91514 | 46.050 | | | | | | | | | |

99/102 99/102

WESTON SOLUTIONS

EPA Method 0010 from EPA SW-846

# ISOKINETIC FIELD DATA SHEET

# EPA Method 0010 - Semi-Volatiles



| | | Stack Conditions | Assumed | Actual |
|---|---|---|---|---|
| Client | Chemours | % Moisture | 1.5 | |
| W.O.# | 15418.002.002.0001 | Impinger Vol (ml) | | |
| Project ID | Chemours | Silica gel (g) | | |
| Mode/Source ID | PPA | CO2, % by Vol | 0.1 | |
| Samp. Loc. ID | STK | O2, % by Vol | 20.8 | |
| Run No.ID | 2 | Temperature (°F) | 277 | |
| Test Method ID | M0010 | Meter Temp (°F) | ≈50 | |
| Date ID | 26FEB2018 | Static Press (in $H_2O$) | -2.8 | -2.8 |
| Source/Location | PPA Stack | Ambient Temp (°F) | ≈ 50 | |
| Sample Date | 3/02/18 | | | |
| Baro. Press (in Hg) | 29.89 | | | |
| Operator | MR, MAT, Winkler, HV Analysts | | | |

| | | | |
|---|---|---|---|
| Meter Box ID | 31 | | |
| Meter Box Y | 0.9916 | | |
| Meter Box Del H | 2.0587 | | |
| Probe ID / Length | P563 | 7' | Sample Train (ft³) |
| Probe Material | Boro | | Leak Check @ (in Hg) |
| Pitot / Thermocouple ID | P563 | | Pitot leak check good |
| Pitot Coefficient | 0.84 | | Pitot Inspection good |
| Nozzle ID | W189 | | Method 3 System good |
| Nozzle Measurements | 0.189 / 0.189 / 0.189 | | **Temp Check** |
| Avg Nozzle Dia (in) | 0.189 | | Meter Box Temp |
| Area of Stack (ft²) | 4.95 | | Reference Temp |
| Sample Time | 96 | | Pass/Fail (+/- 2°) |
| Total Traverse Pts | 24 | | Temp Change Response ? |

K Factor 1,52

| | Initial | Mid-Point | Final |
|---|---|---|---|
| Sample Train (ft³) | 0.001 | 0.001 | 0.001 |
| Leak Check @ (in Hg) | 15 | 5 | 5 |
| 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 | 50 | | 50 |
| Reference Temp | 50 | | 50 |
| Pass/Fail (+/- 2°) | Pass / Fail | | Pass / Fail |
| Temp Change Response ? | yes / no | | yes / no |

| TRAVERSE POINT NO. | SAMPLE TIME (min) | CLOCK TIME (plant time) | VELOCITY PRESSURE Delta P (in H2O) | ORIFICE PRESSURE Delta H (in H2O) | DRY GAS METER READING (ft³) | STACK TEMP (°F) | DGM OUTLET TEMP (oF) | PROBE TEMP (oF) | FILTER BOX TEMP (F) | IMPINGER EXIT TEMP (oF) | SAMPLE TRAIN VAC (in Hg) | XAD EXIT TEMP (F) | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0815 | | | 641.225 | | | | | | | | | |
| A 1 | 4 | | 0.75 | 1.14 | 643.56 | 72 | 52 | 104 | 100 | 50 | 3 | 45 | | 23.27 |
| 2 | 8 | | 0.75 | 1.14 | 645.63 | 72 | 52 | 99 | 98 | 49 | 3 | 44 | | |
| 3 | 12 | | 0.75 | 1.14 | 647.83 | 72 | 53 | 99 | 99 | 49 | 3 | 43 | | |
| 4 | 16 | | 0.75 | 1.14 | 650.01 | 71 | 52 | 99 | 99 | 47 | 3 | 41 | | |
| 5 | 20 | | 0.75 | 1.14 | 652.32 | 71 | 53 | 99 | 102 | 49 | 3 | 44 | | |
| 6 | 24 | | 0.72 | 1.09 | 654.46 | 71 | 53 | 102 | 103 | 50 | 3 | 43 | | |
| 7 | 28 | | 0.63 | 0.95 | 656.46 | 72 | 53 | 102 | 101 | 50 | 3 | 44 | | |
| 8 | 32 | | 0.55 | 0.83 | 658.36 | 73 | 54 | 101 | 100 | 50 | 3 | 44 | | |
| 9 | 36 | | 0.45 | 0.68 | 660.05 | 72 | 54 | 100 | 100 | 51 | 3 | 44 | | |
| 10 | 40 | | 0.40 | 0.60 | 662.60 | 72 | 54 | 100 | 100 | 51 | 3 | 44 | | |
| 11 | 44 | | 0.32 | 0.48 | 663.09 | 72 | 54 | 100 | 100 | 52 | 3 | 44 | | |
| 12 | 48 | 0903 | 0.25 | 0.38 | 664.410 | 71 | 54 | 102 | 95 | 52 | 3 | 44 | | |
| | | 0923 | | | 664.501 | | | | | | | | | |
| 1 | 4 | | 0.73 | 1.10 | 666.62 | 71 | 54 | 102 | 98 | 50 | 3 | 44 | | K Factor Change 1.47 |
| 2 | 8 | | 0.75 | 1.10 | 668.85 | 71 | 54 | 100 | 98 | 50 | 3 | 44 | ← | |
| 3 | 12 | | 0.75 | 1.10 | 670.95 | 71 | 54 | 102 | 100 | 51 | 3 | 45 | | |
| 4 | 16 | | 0.73 | 1.07 | 673.10 | 70 | 54 | 100 | 94 | 49 | 3 | 43 | | 22.30 |
| 5 | 20 | | 0.73 | 1.07 | 675.15 | 70 | 54 | 100 | 94 | 48 | 3 | 43 | | |
| 6 | 24 | | 0.65 | 0.95 | 677.21 | 71 | 54 | 100 | 98 | 48 | 3 | 43 | | |
| 7 | 28 | | 0.65 | 0.95 | 679.21 | 71 | 54 | 98 | 98 | 48 | 3 | 44 | | |
| 8 | 32 | | 0.56 | 0.82 | 681.19 | 71 | 54 | 98 | 98 | 48 | 3 | 44 | | |
| 9 | 36 | | 0.44 | 0.64 | 682.83 | 71 | 54 | 98 | 98 | 48 | 3 | 44 | | |
| 10 | 40 | | 0.38 | 0.55 | 684.32 | 70 | 53 | 98 | 98 | 49 | 3 | 43 | | |
| 11 | 44 | | 0.30 | 0.44 | 685.64 | 69 | 53 | 102 | 102 | 49 | 2 | 43 | | |
| 12 | 48 | 1011 | 0.25 | 0.36 | 686.921 | 68 | 53 | 102 | 102 | 49 | 1 | 43 | | |
| | | | Avg Delta P | Avg Delta H | Total Volume | Avg Ts | Avg Tm | Min/Max | Min/Max | Max | Max Vac | Min/Max | | |
| | | | 0.58297 | 0.86916 | ~~45.57~~ | ~~71.0~~ | ~~53.4~~ | 104 | 103 | 52 54 | 3 | 45 | | |
| | | | Avg Sqrt Delta P | Avg Sqrt Del H | Comments: | | | | | | | | | |
| | | | 0.75277 | 0.91882 | 45.605 | 3/9/18 | 53.5 3/9/18 | 98/104 | 45/103 | | | | | |

EPA Method 0010 from EPA SW-846

# SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - Semi-Volatiles

Client: Chemours
W.O. #: 15418.002.002.0001
Location/Plant: Fayetteville, NC
Source & Location: PPA Stack

**Run No.** 1 Hydrolysis
Sample Date: 3/1/18
Recovery Date: 3/1/18
Sample I.D.: Chemours - PPA - STK - 1 - M0010 -
Analyst: PMM
Filter Number: —

| | Impinger | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Imp.Total | 8 | Total |
| **Contents** | Empty | HPLC H20 | HPLC H20 | | | | | | Silica Gel | |
| **Final** | 3 | 104 | 100 | 2 | | | | | 317.4 | |
| **Initial** | 0 | 100 | 100 | 0 | | | | | 300 | |
| **Gain** | 3 | 6 | — | 2 | | | | 11 | 13.4 | 24.4 |

Impinger Color: Clear
Labeled? ✓
Silica Gel Condition: Good
Sealed? ✓

**Run No.** 2
Sample Date: 3/2/18
Recovery Date: 3/2/18
Sample I.D.: Chemours - PPA - STK - 2 - M0010 -
Analyst: [illegible]
Filter Number: [illegible]

| | Impinger | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Imp.Total | 8 | Total |
| **Contents** | Empty | HPLC H20 | HPLC H20 | | | | | | Silica Gel | |
| **Final** | 2 | 112 | 98 | 3 | | | | | 317.3 | |
| **Initial** | 0 | 100 | 100 | 0 | | | | | 300 | |
| **Gain** | 2 | 12 | -2 | 3 | | | | 15 | 17.3 | 32.3 |

Impinger Color: Clear
Labeled? ✓
Silica Gel Condition: Good
Sealed? ✓

**Run No.** 3
Sample Date: _____
Recovery Date: _____
Sample I.D.: Chemours - PPA - STK - 3 - M0010 -
Analyst: _____
Filter Number: _____

| | Impinger | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Imp.Total | 8 | Total |
| **Contents** | Empty | HPLC H20 | HPLC H20 | | | | | | Silica Gel | |
| **Final** | | | | | | | | | | |
| **Initial** | | 100 | 100 | | | | | | 300 | |
| **Gain** | | | | | | | | | | |

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

Check COC for Sample IDs of Media Blanks

WESTON SOLUTIONS

# Sample and Velocity Traverse Point Data Sheet - Method 1

Client: Chemours
Location/Plant: Fayetteville, NC
Source: WE Scrubber

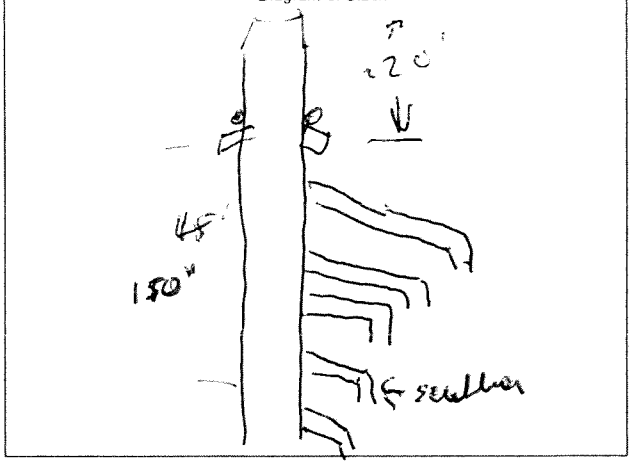
Operator: Pam
Date: 1/10/18
W.O. Number: 15913.002.002.0001

| | | | | | Indicate appropriate type |
|---|---|---|---|---|---|
| **Duct Type** | ☒ Circular | ☐ Rectangular Duct | | | |
| **Traverse Type** | ☒ Particulate Traverse | ☐ Velocity Traverse | + | ☒ CEM Traverse | |

| | |
|---|---|
| Distance from far wall to outside of port (in.) = C | 10 |
| Port Depth (in.) = D | 4 9/16 |
| Depth of Duct, diameter (in.) = C-D | 49 |
| Area of Duct (ft²) | 9.62 |
| Total Traverse Points | 24 |
| Total Traverse Points per Port | 12 |
| Port Diameter (in.) ---(Flange-Threaded-Hole) | 4" |
| Monorail Length | |
| **Rectangular Ducts Only** | |
| Width of Duct, rectangular duct only (in.) | |
| Total Ports (rectangular duct only) | |
| Equivalent Diameter = (2*L*W)/(L+W) | |

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

Diagram of Stack




**Traverse Point Locations**

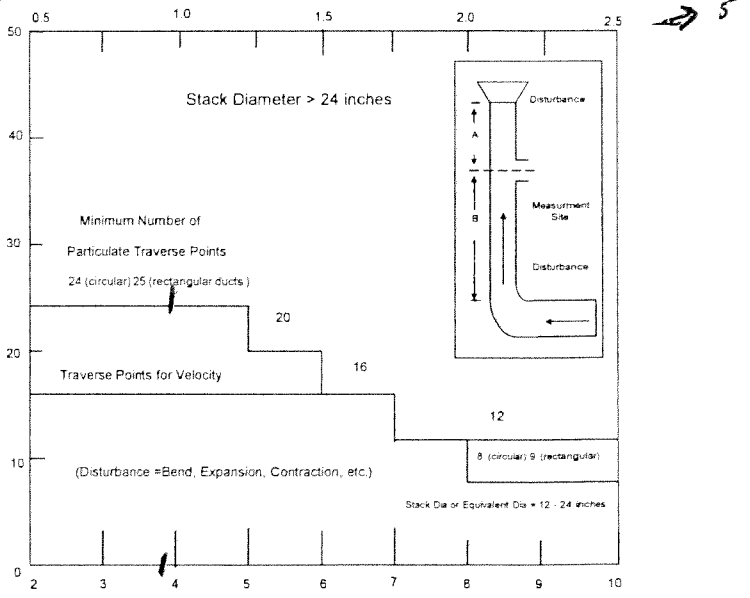
| Traverse Point | % of Duct | Distance from Inside Duct Wall (in) | Distance from Outside of Port (in) |
|---|---|---|---|
| 1 | 2.1 | 0.88 | 19.9 20.0 |
| 2 | 6.7 | 2.81 | 21.0 |
| 3 | 11.8 | 4.96 | 23.9 3/8 |
| 4 | 17.7 | 7.4 | 26.1 |
| 5 | 25.0 | 10.5 | 29.1/2 |
| 6 | 35.6 | 14.95 | 33.3/4 34 |
| 7 | 64.4 | 27.0 | 46.0 |
| 8 | 75 | 31.5 | 50.5 |
| 9 | 82.3 | 34.57 | 53 5/8 |
| 10 | 88.2 | 37.0 | 56.0 |
| 11 | 93.3 | 39.2 | 58.1/8 |
| 12 | 97.9 | 41.1 | 60.0 |

**CEM 3 Point(Long Measurment Line) Stratificaton Point Locations**

| | | | |
|---|---|---|---|
| 1 | 0.167 | | |
| 2 | 0.50 | | |
| 3 | 0.833 | | |

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

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 | 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 | 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 |

WESTON MANAGERS DESIGNERS/CONSULTANTS

# Determination of Stack Gas Velocity - Method 2

Client: Clean | Operator: ICS/MW | Pitot Coeff (Cp): .84
Location/Plant: Fayetteville, NC | Date: 1/10/18 | Stack Area, ft² (As): 9.62
Source: South VE | W.O. Number: 15418.002.002.0001 | Pitot Tube/Thermo ID: P567

| | | | |
|---|---|---|---|
| Run Number | 1 | | |
| Time | ~1100 | | |
| Barometric Press, in Hg (Pb) | 29.94 | | |
| Static Press, in $H_20$ (Pstatic) | 0.52 | | |
| Source Moisture, % (BWS) | 2 | | |
| $O_2$, % | 20.9 | | |
| $CO_2$, % | 0.1 | | |

| Cyclonic Flow Determination | | Traverse Location | | Leak Check good ? (Y) N | | Leak Check good ? Y / N | | Leak Check good ? Y / N | |
|---|---|---|---|---|---|---|---|---|---|
| Delta P at 0° | Angle yeilding zero Delta P | Port | Point | Delta P | Source Temp, F° (Ts) | Delta P | Source Temp, F° (Ts) | Delta P | Source Temp, F° (Ts) |
| 0 | | A | 1 | 0.10 | 70 | | | | |
| 0 | | 2 | 2 | 0.10 | 70 | | | | |
| 0 | | 3 | 3 | 0.11 | 71 | | | | |
| 0 | | | 4 | 0.13 | 71 | | | | |
| 0 | | | 5 | 0.15 | 72 | | | | |
| 0 | | | 6 | 0.16 | 72 | | | | |
| 0 | | | 7 | 0.16 | 72 | | | | |
| 0 | | | 8 | 0.18 | 73 | | | | |
| 0 | | | 9 | 0.16 | 73 | | | | |
| 0 | | | 10 | 0.15 | 73 | | | | |
| 0 | | | 11 | 0.15 | 74 | | | | |
| 0 | | | 12 | 0.15 | 75 | | | | |
| | | | | | | | | | |
| 0 | | B | 1 | 0.09 | 72 | | | | |
| 0 | | | 2 | 0.10 | 72 | | | | |
| 0 | | | 3 | 0.10 | 72 | | | | |
| 0 | | | 4 | 0.13 | 73 | | | | |
| 0 | | | 5 | 0.15 | 73 | | | | |
| 0 | | | 6 | 0.15 | 73 | | | | |
| 0 | | | 7 | 0.16 | 73 | | | | |
| 0 | | | 8 | 0.16 | 74 | | | | |
| 0 | | | 9 | 0.16 | 74 | | | | |
| 0 | | | 10 | 0.16 | 74 | | | | |
| 0 | | | 11 | 0.15 | 75 | | | | |
| 0 | | | 12 | 0.15 | 75 | | | | |
| Avg Angle | | Avg Delta P & Temp | | 0.14000 | 73.0 | | | | |
| | | avg $\sqrt{Delta P}$ | | 0.37251 | | | | | |
| Average gas stream velocity, ft/sec. | | | | | | | | | |
| Vol. flow rate @ actual conditions, wacf/min | | | | | | | | | |
| Vol. flow rate at standard conditions, dscf/min | | | | | | | | | |

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

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

$Tsa = Ts + 460$

$Ps = Pb + (Pstatic/13.6)$

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

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

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

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

Comments
method2.xls

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# CHEMOURS - FAYETTEVILLE, NC
# INPUTS FOR HFPO DIMER ACID CALCULATIONS

| | | | |
|---|---|---|---|
| **Test Data** | | | |
| Run number | 1 | 2 | 1 Aborted Test |
| Location | VE South | VE South | VE South |
| Date | 2.27.2018 | 2.27.2018 | 2.26.2018 |
| Time period | 1018-1208 | 1446-1630 | 1552-1735 |
| Operator | MW | MW | MW |
| **Inputs For Calcs.** | | | |
| Sq. rt. delta P | 0.44193 | 0.41607 | 0.42987 |
| Delta H | 1.8146 | 1.6367 | 1.7642 |
| Stack temp. (deg.F) | 62.2 | 65.8 | 70.9 |
| Meter temp. (deg.F) | 60.8 | 66.0 | 69.3 |
| Sample volume (act.) | 70.630 | 67.794 | 68.938 |
| Barometric press. (in.Hg) | 30.38 | 30.34 | 30.10 |
| Volume $H_2O$ imp. (ml) | 8.0 | -6.0 | 3.0 |
| Weight change sil. gel (g) | 21.9 | 40.6 | 30.0 |
| % $CO_2$ | 0.0 | 0.0 | 0.0 |
| % $O_2$ | 20.9 | 20.9 | 20.9 |
| % $N_2$ | 79.1 | 79.1 | 79.1 |
| Area of stack (sq.ft.) | 9.620 | 9.620 | 9.620 |
| Sample time (min.) | 96.0 | 96.0 | 96.0 |
| Static pressure (in.$H_2O$) | -0.75 | -0.75 | -0.75 |
| Nozzle dia. (in.) | 0.300 | 0.300 | 0.300 |
| Meter box cal. | 0.9934 | 0.9934 | 0.9934 |
| Cp of pitot tube | 0.84 | 0.84 | 0.84 |
| Traverse points | 24 | 24 | 12 |

**RUN 1**

| Port | Point | Delta P | Sqrt Dp | Delta H | Sqrt Dh | Volume | Stack | dgm Out |
|---|---|---|---|---|---|---|---|---|
| C | 1 | 0.18 | 0.42 | 1.60 | 1.26 | 331.275 | 61 | 61 |
| | 2 | 0.26 | 0.51 | 2.37 | 1.54 | 367.870 | 62 | 61 |
| | 3 | 0.26 | 0.51 | 2.37 | 1.54 | 368.020 | 62 | 62 |
| | 4 | 0.21 | 0.46 | 1.91 | 1.38 | 402.055 | 63 | 62 |
| | 5 | 0.22 | 0.47 | 2.00 | 1.41 | | 63 | 62 |
| | 6 | 0.22 | 0.47 | 2.00 | 1.41 | | 63 | 62 |
| D | 1 | 0.23 | 0.48 | 2.09 | 1.45 | | 62 | 62 |
| | 2 | 0.20 | 0.45 | 1.86 | 1.36 | | 62 | 61 |
| | 3 | 0.20 | 0.45 | 1.86 | 1.36 | | 62 | 61 |
| | 4 | 0.20 | 0.45 | 1.86 | 1.36 | | 62 | 61 |
| | 5 | 0.18 | 0.42 | 1.67 | 1.29 | | 62 | 61 |
| | 6 | 0.18 | 0.42 | 1.67 | 1.29 | | 62 | 61 |
| A | 1 | 0.18 | 0.42 | 1.67 | 1.29 | | 62 | 61 |
| | 2 | 0.24 | 0.49 | 2.22 | 1.49 | | 62 | 61 |
| | 3 | 0.24 | 0.49 | 2.22 | 1.49 | | 62 | 61 |
| | 4 | 0.20 | 0.45 | 1.86 | 1.36 | | 62 | 60 |
| | 5 | 0.21 | 0.46 | 1.93 | 1.39 | | 62 | 60 |
| | 6 | 0.20 | 0.45 | 1.86 | 1.36 | | 62 | 60 |
| B | 1 | 0.18 | 0.42 | 1.67 | 1.29 | | 62 | 60 |
| | 2 | 0.18 | 0.42 | 1.67 | 1.29 | | 62 | 60 |
| | 3 | 0.16 | 0.40 | 1.48 | 1.22 | | 62 | 60 |
| | 4 | 0.15 | 0.39 | 1.39 | 1.18 | | 63 | 60 |
| | 5 | 0.15 | 0.39 | 1.39 | 1.18 | | 63 | 60 |
| | 6 | 0.10 | 0.32 | 0.93 | 0.96 | | 63 | 60 |
| AVG | | 0.19708 | 0.44193 | 1.81458 | 1.34119 | 70.630 | 62.21 | 60.83 |

**RUN 2**

| Port | Point | Delta P | Sqrt Dp | Delta H | Sqrt Dh | Volume | Stack | dgm Out |
|---|---|---|---|---|---|---|---|---|
| C | 1 | 0.16 | 0.40 | 1.48 | 1.22 | 402.356 | 66 | 64 |
| | 2 | 0.18 | 0.42 | 1.67 | 1.29 | 436.227 | 66 | 63 |
| | 3 | 0.18 | 0.42 | 1.67 | 1.29 | 436.337 | 66 | 65 |
| | 4 | 0.20 | 0.45 | 1.88 | 1.37 | 470.260 | 66 | 65 |
| | 5 | 0.20 | 0.45 | 1.88 | 1.37 | | 66 | 65 |
| | 6 | 0.22 | 0.47 | 2.06 | 1.44 | | 67 | 65 |
| D | 1 | 0.20 | 0.45 | 1.88 | 1.37 | | 65 | 63 |
| | 2 | 0.18 | 0.42 | 1.69 | 1.30 | | 65 | 64 |
| | 3 | 0.18 | 0.42 | 1.69 | 1.30 | | 65 | 65 |
| | 4 | 0.16 | 0.40 | 1.50 | 1.22 | | 65 | 65 |
| | 5 | 0.15 | 0.39 | 1.41 | 1.19 | | 65 | 66 |
| | 6 | 0.10 | 0.32 | 0.94 | 0.97 | | 65 | 66 |
| A | 1 | 0.18 | 0.42 | 1.69 | 1.30 | | 67 | 67 |
| | 2 | 0.16 | 0.40 | 1.50 | 1.22 | | 67 | 67 |
| | 3 | 0.18 | 0.42 | 1.69 | 1.30 | | 67 | 67 |
| | 4 | 0.20 | 0.45 | 1.88 | 1.37 | | 66 | 67 |
| | 5 | 0.20 | 0.45 | 1.88 | 1.37 | | 66 | 67 |
| | 6 | 0.22 | 0.47 | 2.06 | 1.44 | | 66 | 68 |
| B | 1 | 0.20 | 0.45 | 1.88 | 1.37 | | 66 | 68 |
| | 2 | 0.18 | 0.42 | 1.69 | 1.30 | | 66 | 68 |
| | 3 | 0.16 | 0.40 | 1.50 | 1.22 | | 66 | 68 |
| | 4 | 0.15 | 0.39 | 1.41 | 1.19 | | 65 | 68 |
| | 5 | 0.15 | 0.39 | 1.41 | 1.19 | | 65 | 67 |
| | 6 | 0.10 | 0.32 | 0.94 | 0.97 | | 65 | 66 |
| AVG | | 0.17458 | 0.41607 | 1.63667 | 1.27392 | 67.794 | 65.8 | 66.0 |

**RUN 1 ABORT**

| Port | Point | Delta P | Sqrt Dp | Delta H | Sqrt Dh | Volume | Stack | dgm Out |
|---|---|---|---|---|---|---|---|---|
| C | 1 | 0.20 | 0.45 | 1.90 | 1.38 | 259.225 | 71 | 68 |
| | 2 | 0.21 | 0.46 | 2.00 | 1.41 | 293.585 | 71 | 69 |
| | 3 | 0.22 | 0.47 | 2.09 | 1.45 | 293.680 | 71 | 69 |
| | 4 | 0.22 | 0.47 | 2.09 | 1.45 | 328.258 | 71 | 69 |
| | 5 | 0.20 | 0.45 | 1.90 | 1.38 | | 71 | 69 |
| | 6 | 0.22 | 0.47 | 2.09 | 1.45 | | 71 | 69 |
| D | 7 | 0.20 | 0.45 | 1.90 | 1.38 | | 71 | 70 |
| | 8 | 0.18 | 0.42 | 1.71 | 1.31 | | 71 | 70 |
| | 9 | 0.18 | 0.42 | 1.71 | 1.31 | | 71 | 70 |
| | 10 | 0.15 | 0.39 | 1.43 | 1.20 | | 71 | 70 |
| | 11 | 0.14 | 0.37 | 1.35 | 1.16 | | 71 | 70 |
| | 12 | 0.12 | 0.35 | 1.14 | 1.07 | | 71 | 70 |
| A | 1 | 0.20 | 0.45 | 1.90 | 1.38 | | 71 | 70 |
| | 2 | 0.20 | 0.45 | 1.90 | 1.38 | | 71 | 70 |
| | 3 | 0.21 | 0.46 | 2.00 | 1.41 | | 71 | 69 |
| | 4 | 0.21 | 0.46 | 2.00 | 1.41 | | 71 | 69 |
| | 5 | 0.22 | 0.47 | 2.09 | 1.45 | | 71 | 69 |
| | 6 | 0.22 | 0.47 | 2.09 | 1.45 | | 71 | 69 |
| | 7 | 0.20 | 0.45 | 1.90 | 1.38 | | 71 | 69 |
| | 8 | 0.18 | 0.42 | 1.71 | 1.31 | | 71 | 69 |
| | 9 | 0.17 | 0.41 | 1.62 | 1.27 | | 71 | 69 |
| | 10 | 0.16 | 0.40 | 1.53 | 1.24 | | 70 | 69 |
| | 11 | 0.14 | 0.37 | 1.15 | 1.07 | | 70 | 69 |
| | 12 | 0.12 | 0.35 | 1.14 | 1.07 | | 70 | 69 |
| AVG | | 0.18625 | 0.42987 | 1.76417 | 1.32249 | 68.938 | 70.9 | 69.2917 |

# ISOKINETIC FIELD DATA SHEET



| | | Stack Conditions | | | | | |
|---|---|---|---|---|---|---|---|
| Client | Chemours | | Assumed | Actual | Meter Box ID | 29 | |
| W.O.# | | | | | Meter Box Y | 0.9934 | |
| Project ID | Chemours | % Moisture | 1 | | Meter Box Del H | 1.9750 | **Leak Checks** |
| Mode/Source ID | SSK | Impinger Vol (ml) | | | Probe ID / Length | P694 7' | Sample Train ($ft^3$) |
| Samp. Loc. ID | South Vie | Silica gel (g) | | | Probe Material | Boro | Leak Check @ (in Hg) |
| Run No.ID | 1 | CO2, % by Vol | 0.1 | | Pitot / Thermocouple ID | P694 P694 | Pitot good |
| Test Method ID | M0010 | O2, % by Vol | 20.8 | | Pitot Coefficient | 0.84 | Orsat good |
| Date ID | 27FEB 2018 | Temperature (°F) | 71 | | Nozzle ID | G300 | **Temp Check** |
| Source/Location | SOUTH VIESTK | Meter Temp (°F) | 55 | | Avg Nozzle Dia (in) | 0.300 | Meter Box Temp |
| Sample Date | 2/27/18 | Static Press (in $H_2O$) | -0.75 | -0.75 | Area of Stack ($ft^2$) | 9.62 | Reference Temp |
| Baro. Press (in Hg) | 30.38 | | | | Sample Time | 96 | Pass/Fail (+/- 2°) |
| Operator | MRN | Ambient Temp (°F) | 55 | | Total Traverse Pts | 24 | Temp Change Response ? |

| K Factor 9.13 | Initial | Mid-Point | Final |
|---|---|---|---|
| | 0.001 | 0.001 | 0.001 |
| | 15 | 7 | 7 |
| | yes / no | yes / no | yes / no |
| | yes / no | yes / no | yes / no |
| | Pre-Test Set | | Post-Test Set |
| | 55 | | 60 |
| | 56 | | 60 |
| | Pass / Fail | | Pass / Fail |
| | yes / no | | yes / no |

| TRAVERSE POINT NO. | | SAMPLE TIME (min) | CLOCK TIME (plant time) | VELOCITY PRESSURE Delta P (in H2O) | ORIFICE PRESSURE Delta H (in H2O) | DRY GAS METER READING ($ft^3$) | STACK TEMP (°F) | DGM INLET TEMP (°F) | DGM OUTLET TEMP (°F) | PROBE TEMP (°F) | FILTER BOX TEMP (F) | IMPINGER EXIT TEMP (°F) | SAMPLE TRAIN VAC (in Hg) | XAD Temp | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1018 | | | 331.275 | | | | | | | | | |
| A | 1 | 4 | | 0.17 | 1.60 | 334.00 | 61 | NA | 61 | 106 | 98 | 48 | 5 | 33 | |
| | 2 | 8 | | 0.26 | 2.37 | 337.41 | 62 | | 61 | 103 | 100 | 45 | 6 | 40 | |
| | 3 | 12 | | 0.26 | 2.37 | 340.75 | 62 | | 62 | 100 | 100 | 45 | 6 | 40 | |
| | 4 | 16 | | 0.21 | 1.91 | 344.00 | 63 | | 62 | 100 | 105 | 46 | 5 | 37 | |
| | 5 | 20 | | 0.22 | 2.00 | 346.96 | 63 | | 62 | 100 | 100 | 46 | 5 | 37 | |
| | 6 | 24 | | 0.22 | 2.00 | 350.10 | 63 | | 62 | 100 | 100 | 47 | 6 | 37 | |
| | 7 | 28 | | 0.23 | 2.09 | 353.28 | 62 | | 62 | 100 | 98 | 43 | 6 | 40 | |
| | 8 | 32 | | 0.20 | 1.86 | 356.16 | 62 | | 61 | 100 | 98 | 49 | 6 | 40 | K-factor |
| | 9 | 36 | | 0.20 | 1.86 | 359.20 | 62 | | 61 | 100 | 100 | 49 | 5 | 43 | change |
| | 10 | 40 | | 0.20 | 1.86 | 362.62 | 62 | | 61 | 100 | 100 | 49 | 5 | 44 | 9.30 |
| | 11 | 44 | | 0.18 | 1.67 | 365.07 | 62 | | 61 | 100 | 100 | 49 | 5 | 44 | |
| | 12 | 48 | 1106 | 0.18 | 1.67 | 367.870 | 62 | | 61 | 100 | 100 | 49 | 5 | 44 | |
| | | | 1120 | | | 368.820 | | | | | | | | | 9.30 |
| B | 1 | 4 | | 0.18 | 1.67 | 370.82 | 62 | NA | 61 | 101 | 98 | 56 | 5 | 46 | |
| | 2 | 8 | | 0.24 | 2.22 | 373.93 | 62 | | 61 | 101 | 98 | 56 | 5 | 46 | |
| | 3 | 12 | | 0.24 | 2.22 | 377.08 | 62 | | 61 | 100 | 100 | 56 | 5 | 46 | |
| | 4 | 16 | | 0.20 | 1.86 | 380.11 | 62 | | 61 | 100 | 100 | 57 | 5 | 46 | |
| | 5 | 20 | | 0.21 | 1.93 | 383.20 | 62 | | 60 | 100 | 101 | 57 | 5 | 46 | |
| | 6 | 24 | | 0.20 | 1.86 | 386.30 | 62 | | 60 | 100 | 101 | 57 | 5 | 46 | |
| | 7 | 28 | | 0.18 | 1.67 | 389.39 | 62 | | 60 | 100 | 104 | 55 | 5 | 47 | |
| * | 8 | 32 | | 0.18 | 1.67 | 391.95 | 62 | | 60 | 100 | 103 | 55 | 5 | 47 | |
| | 9 | 36 | | 0.16 | 1.49 | 394.68 | 62 | | 60 | 100 | 104 | 55 | 5 | 47 | |
| | 10 | 40 | | 0.15 | 1.39 | 397.31 | 63 | | 60 | 100 | 98 | 56 | 5 | 48 | |
| | 11 | 44 | | 0.15 | 1.39 | 399.90 | 63 | | 60 | 100 | 98 | 56 | 4 | 48 | |
| | 12 | 48 | 1208 | 0.10 | 0.93 | 402.055 | 63 | | 60 | 100 | 98 | 57 | 4 | 49 | |
| | | | | Avg Delta P | Avg Delta H | Total Volume | Avg Ts | | Avg Tm | Min/Max | Min/Max | Max Temp | Max Vac | Max Temp | |
| | | | | 0.197083 | 1.831458 | 70.625 | 62.2 | | 60.8 | 106 | 105 | 57 | 6 | 49 | |
| | | | | Avg Sqrt Delta P | Avg Sqrt Del H | Comments: | | | | | | | | | |
| | | | | 0.441923 | 1.341119 | 70.630 MRN 2/27/18 | | | | | | | | | |

EPA 5 from 40CFR Part 60 App A

WESTON SOLUTIONS

* process lowered @ 1200 MRN

34.035

36

50

# ISOKINETIC FIELD DATA SHEET

# EPA Method 0010 - Semi-Volatiles



| | |
|---|---|
| Client | Chemours |
| W.O.# | 15418.002.002.0001 |
| Project ID | Chemours |
| Mode/Source ID | South VE |
| Samp. Loc. ID | STK |
| Run No.ID | 2 |
| Test Method ID | M0010 |
| Date ID | 26FEB2018 |
| Source/Location | South VE Stack |
| Sample Date | 2/27/18 |
| Baro. Press (in Hg) | 30.34 |
| Operator | MD MAIR WINKELER |

| Stack Conditions | Assumed | Actual |
|---|---|---|
| % Moisture | 1 | |
| Impinger Vol (ml) | | |
| Silica gel (g) | | |
| CO2, % by Vol | 0.1 | |
| O2, % by Vol | 20.8 | |
| Temperature (°F) | 63 | |
| Meter Temp (°F) | 65 | |
| Static Press (in $H_2O$) | -0.15 | -0.75 |
| Ambient Temp (°F) | ≈ 73 | |

| | | | |
|---|---|---|---|
| Meter Box ID | 29 | | |
| Meter Box Y | 0.9934 | | |
| Meter Box Del H | 1.9750 | | |
| Probe ID / Length | P695 | 7' | Sample Train ($ft^3$) |
| Probe Material | Boro | | Leak Check @ (in Hg) |
| Pitot / Thermocouple ID | P695 | | Pitot leak check good |
| Pitot Coefficient | 0.84 | | Pitot Inspection good |
| Nozzle ID | G300 | | Method 3 System good |
| Nozzle Measurements | 0.300 | 0.300 / 0.300 | **Temp Check** |
| Avg Nozzle Dia (in) | 0.300 | | Meter Box Temp |
| Area of Stack ($ft^2$) | 9.62 | | Reference Temp |
| Sample Time | 96 | | Pass/Fail (+/- 2°) |
| Total Traverse Pts | 24 | | Temp Change Response? |

K Factor 9.410

| | Initial | Mid-Point | Final |
|---|---|---|---|
| | 0.001 | 0.001 | 0.001 |
| | 15 | @8 | 8 |
| | yes / no | yes / no | yes / no |
| | yes / no | yes / no | yes / no |
| | yes / no | yes / no | yes / no |
| | Pre-Test Set | | Post-Test Set |
| | 63 | | 67 |
| | 63 | | 67 |
| | Pass / Fail | | Pass / Fail |
| | yes / no | | yes / no |

| TRAVERSE POINT NO. | SAMPLE TIME (min) | CLOCK TIME (plant time) | VELOCITY PRESSURE Delta P (in H2O) | ORIFICE PRESSURE Delta H (in H2O) | DRY GAS METER READING ($ft^3$) | STACK TEMP (°F) | DGM OUTLET TEMP (oF) | PROBE TEMP (oF) | FILTER BOX TEMP (F) | IMPINGER EXIT TEMP (oF) | SAMPLE TRAIN VAC (in Hg) | XAD EXIT TEMP (F) | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1446 | | | 402.356 | | | | | | | | | |
| B 1 | 4 | | 0.16 | 1.48 | 404.75 | 66 | 64 | 100 | 100 | 62 | 5 | 55 | | 33.871 |
| 2 | 8 | | 0.18 | 1.67 | 407.55 | 66 | 63 | 100 | 100 | 66 | 5 | 55 | | |
| 3 | 12 | | 0.18 | 1.67 | 410.45 | 66 | 65 | 100 | 98 | 64 | 5 | 50 | | |
| 4 | 16 | | 0.20 | 1.88 | 413.86 | 66 | 65 | 100 | 97 | 60 | 6 | 50 | | |
| 5 | 20 | | 0.20 | 1.88 | 416.56 | 66 | 65 | 101 | 101 | 59 | 6 | 50 | | |
| 6 | 24 | | 0.22 | 2.06 | 419.80 | 67 | 65 | 100 | 104 | 58 | 6 | 51 | | |
| 7 | 28 | | 0.20 | 1.88 | 422.75 | 65 | 63 | 100 | 103 | 57 | 6 | 51 | | |
| 8 | 32 | | 0.18 | 1.69 | 425.74 | 65 | 64 | 100 | 99 | 57 | 6 | 51 | | |
| 9 | 36 | | 0.18 | 1.69 | 428.66 | 65 | 65 | 100 | 100 | 58 | 5 | 51 | | |
| 10 | 40 | | 0.16 | 1.50 | 431.67 | 65 | 65 | 100 | 100 | 58 | 5 | 52 | | |
| 11 | 44 | | 0.15 | 1.41 | 434.05 | 65 | 66 | 100 | 100 | 59 | 4 | 54 | | |
| 12 | 48 | 1534 | 0.10 | 0.94 | 436.227 | 65 | 66 | 100 | 99 | 59 | 4 | 55 | | |
| | | 1542 | | | 436.337 | | | | | | | | | |
| A 1 | 4 | | 0.18 | 1.69 | 439.10 | 67 | 67 | 100 | 100 | 61 | 5 | 51 | | |
| 2 | 8 | | 0.16 | 1.50 | 441.86 | 67 | 67 | 100 | 98 | 60 | 5 | 51 | | |
| 3 | 12 | | 0.18 | 1.69 | 444.96 | 67 | 67 | 100 | 99 | 58 | 5 | 48 | | |
| 4 | 16 | | 0.20 | 1.88 | 448.31 | 66 | 67 | 100 | 102 | 58 | 6 | 48 | | 33.923 |
| 5 | 20 | | 0.20 | 1.88 | 450.90 | 66 | 67 | 100 | 102 | 59 | 6 | 48 | | |
| 6 | 24 | | 0.22 | 2.06 | 454.03 | 66 | 68 | 101 | 101 | 61 | 6 | 52 | | |
| 7 | 28 | | 0.20 | 1.88 | 457.27 | 66 | 68 | 101 | 101 | 61 | 5 | 51 | | |
| 8 | 32 | | 0.18 | 1.69 | 460.00 | 66 | 68 | 101 | 101 | 62 | 5 | 52 | | |
| 9 | 36 | | 0.16 | 1.50 | 463.02 | 66 | 68 | 100 | 101 | 62 | 5 | 53 | | |
| 10 | 40 | | 0.15 | 1.41 | 465.37 | 65 | 68 | 100 | 102 | 59 | 4 | 50 | | |
| 11 | 44 | | 0.15 | 1.41 | 468.03 | 65 | 67 | 98 | 100 | 55 | 4 | 51 | | |
| 12 | 48 | 1630 | 0.10 | 0.94 | 470.260 | 65 | 66 | 98 | 100 | 56 | 4 | 52 | | |
| | | | Avg Delta P | Avg Delta H | Total Volume | Avg Ts | Avg Tm | Min/Max | Min/Max | Max | Max Vac | Min/Max | | |
| | | | 0.17458 | 1.63666 | 67.194 | 65.8 | 66 | 101 | 103 | 69 | 6 | 55 | | |
| | | | Avg Sqrt Delta P | Avg Sqrt Del H | Comments: | | | | | | | | | |
| | | | 0.416067 | 1.27392 | | | | | | | | | | |

WESTON SOLUTIONS

EPA Method 0010 from EPA SW-846

# ISOKINETIC FIELD DATA SHEET

# EPA Method 0010 - Semi-Volatiles

Page 1 of 1

| | | Stack Conditions | | | | | |
|---|---|---|---|---|---|---|---|
| Client | Chemours | | Assumed | Actual | Meter Box ID | 29 | |
| W.O.# | 15418.002.002.0001 | % Moisture | 1 | | Meter Box Y | 0.9934 | |
| Project ID | Chemours | Impinger Vol (ml) | | | Meter Box Del H | 1.9750 | |
| Mode/Source ID | South VE | Silica gel (g) | | | Probe ID / Length | Pb44 7' | |
| Samp. Loc. ID | STK | CO2, % by Vol | 0.8 | | Probe Material | Boro | |
| Run No.ID | 1 | O2, % by Vol | 20.9 | | Pitot / Thermocouple ID | Pb44 | |
| Test Method ID | M0010 | Temperature (°F) | 73 | | Pitot Coefficient | 0.84 | |
| Date ID | 26FEB2018 | Meter Temp (°F) | 64 | | Nozzle ID | MW G.302 G300 | |
| Source/Location | South VE Stack | Static Press (in $H_2O$) | 0.52 | -0.75 | Nozzle Measurements | 0.302 0.321 0.302 | |
| Sample Date | 2/26/18 | | | | Avg Nozzle Dia (in) | 0.302 | |
| Baro. Press (in Hg) | 30.10 | | | | Area of Stack ($ft^2$) | 9.62 | |
| Operator | MATT WINKELER MW | Ambient Temp (°F) | 65 | | Sample Time | 90 | |
| | | | | | Total Traverse Pts | 24 | |

| | Initial | Mid-Point | Final |
|---|---|---|---|
| Sample Train ($ft^3$) | 0.001 | 0.001 | 0.1 |
| Leak Check @ (in Hg) | 15 | 17 | 15 |
| 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 | 65 | | 60 |
| Pass/Fail (+/- 2°) | Pass / Fail | | Pass / Fail |
| Temp Change Response ? | yes / no | | yes / no |

K Factor 9.54

| 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 | 1552 | | | 259.225 | | | | | | | | | |
| A | 1 | 4 | | 0.20 | 1.90 | 262.12 | 71 | 68 | 99 | 102 | 64 | 6 | 46 | | |
| | 2 | 8 | | 0.21 | 2.00 | 265.30 | 71 | 69 | 100 | 102 | 63 | 6 | 43 | | |
| | 3 | 12 | | 0.22 | 2.09 | 268.30 | 71 | 69 | 100 | 102 | 60 | 6 | 43 | | |
| | 4 | 16 | | 0.22 | 2.09 | 271.37 | 71 | 69 | 100 | 99 | 58 | 6 | 42 | | |
| | 5 | 20 | | 0.20 | 1.90 | 274.40 | 71 | 69 | 100 | 101 | 58 | 6 | 42 | | |
| | 6 | 24 | | 0.22 | 2.09 | 277.47 | 71 | 69 | 100 | 100 | 57 | 6 | 43 | | |
| | 7 | 28 | | 0.20 | 1.90 | 280.61 | 71 | 70 | 100 | 98 | 56 | 6 | 44 | | |
| | 8 | 32 | | 0.18 | 1.71 | 283.35 | 71 | 70 | 100 | 102 | 56 | 5 | 44 | | |
| | 9 | 36 | | 0.18 | 1.71 | 286.21 | 71 | 70 | 100 | 98 | 56 | 5 | 44 | | |
| | 10 | 40 | | 0.15 | 1.43 | 288.71 | 71 | 70 | 100 | 98 | 56 | 5 | 44 | | |
| | 11 | 44 | | 0.14 | 1.35 | 291.929 | 71 | 70 | 100 | 97 | 56 | 4 | 44 | | |
| | 12 | 48 | 1640 | 0.12 | 1.14 | 293.585 | 71 | 70 | 100 | 99 | 58 | 3 | 46 | | |
| | | | 1647 | | | 293.680 | | | | | | | | | |
| B | 1 | 4 | | 0.20 | 1.90 | 296.550 | 71 | 70 | 99 | 99 | 59 | 6 | 54 | | |
| | 2 | 8 | | 0.20 | 1.90 | 300.00 | 71 | 70 | 100 | 99 | 59 | 6 | 53 | | |
| | 3 | 12 | | 0.21 | 2.00 | 302.86 | 71 | 69 | 100 | 99 | 59 | 6 | 53 | | |
| | 4 | 16 | | 0.21 | 2.00 | 305.82 | 71 | 69 | 100 | 99 | 63 | 6 | 54 | | |
| | 5 | 20 | | 0.22 | 2.09 | 308.83 | 71 | 69 | 100 | 101 | 61 | 6 | 55 | | |
| | 6 | 24 | | 0.22 | 2.09 | 312.00 | 71 | 69 | 100 | 100 | 61 | 6 | 55 | | |
| | 7 | 28 | | 0.20 | 1.90 | 315.01 | 71 | 69 | 100 | 100 | 61 | 6 | 55 | | |
| | 8 | 32 | | 0.18 | 1.71 | 318.15 | 71 | 69 | 100 | 98 | 56 | 5 | 55 | | |
| | 9 | 36 | | 0.17 | 1.62 | 320.71 | 71 | 69 | 100 | 100 | 55 | 5 | 50 | | |
| | 10 | 40 | | 0.16 | 1.53 | 323.15 | 70 | 69 | 100 | 98 | 54 | 5 | 43 | | |
| | 11 | 44 | | 0.14 | 1.15 | 325.1 | 70 | 69 | 100 | 98 | 54 | 5 | 45 | | |
| | 12 | 48 | 1735 | 0.12 | 1.14 | 328.258 | 70 | 69 | 100 | 98 | 53 | 4 | 43 | | |
| | | | | Avg Delta P | Avg Delta H | Total Volume | Avg Ts | Avg Tm | Min/Max | Min/Max | Max | Max Vac | Min/Max | | |
| | | | | 0.17625 | 1.7646 | 69.033 | 70.9 | 69.3 | 99/100 | 98/102 | 64 | 6 | 55 | | |
| | | | | Avg Sqrt Delta P | Avg Sqrt Del H | Comments: | | | | | | | | | |
| | | | | 0.42968 | 1.32248 | 2.934 | | | | | | | | | |

EPA Method 0010 from EPA SW-846

52

3/19/19

# SAMPLE RECOVERY FIELD DATA

EPA Method 0010 - Semi-Volatiles

Client: Chemours | W.O. #: 15418.002.002.0001

Location/Plant: Fayetteville, NC | Source & Location: South VE Stack

**Run No.** 1 | Sample Date 2/27/18 | Recovery Date 2/27/18

Sample I.D. Chemours - South VE - STK - 1 - M0010 - | Analyst PMA | Filter Number —

| | Impinger | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Imp.Total | 8 | Total |
| **Contents** | Empty | HPLC H20 | HPLC H20 | | | | | | Silica Gel | |
| **Final** | 2 | 98 | 106 | 2 | | | | | 3219 | |
| **Initial** | 0 | 100 | 100 | 0 | | | | | 300 | |
| **Gain** | 2 | -2 | 6 | 2 | | | | | 2.9 | |

Impinger Color: clear | Labeled? ✓

Silica Gel Condition: Good | Sealed? ✓

**Run No.** 2 | Sample Date 2/27/18 | Recovery Date 2/27/18

Sample I.D. Chemours - South VE - STK - 2 - M0010 - | Analyst PMA | Filter Number —

| | Impinger | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Imp.Total | 8 | Total |
| **Contents** | Empty | HPLC H20 | HPLC H20 | | | | | | Silica Gel | |
| **Final** | 2 | 89 | 103 | | | | | | 3406 | |
| **Initial** | 0 | 100 | 100 | | | | | | 300 | |
| **Gain** | 2 | -11 | 3 | | | | | -6 | 40.6 | 34.6 |

Impinger Color: Clear | Labeled? 406

Silica Gel Condition: Good | Sealed?

**Run No.** 3 | Sample Date _____ | Recovery Date _____

Sample I.D. Chemours - South VE - STK - 3 - M0010 - | Analyst _____ | Filter Number _____

| | Impinger | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Imp.Total | 8 | Total |
| **Contents** | Empty | HPLC H20 | HPLC H20 | | | | | | Silica Gel | |
| **Final** | | | | | | | | | | |
| **Initial** | | 100 | 100 | | | | | | 300 | |
| **Gain** | | | | | | | | | | |

Impinger Color _____ | Labeled? _____

Silica Gel Condition _____ | Sealed? _____

Check COC for Sample IDs of Media Blanks

# METHODS AND ANALYZERS

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

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **1 Mar 2018**

**File:** C:\DATA\Chemours\fayetteville\february\030118 PPA day 1.cem
**Program Version:** 2.0, built 21 Feb 2015 **File Version:** 2.02
**Computer:** WSWCAIRSERVICES **Trailer:** 27
**Analog Input Device:** Keithley KUSB-3108

**Channel 1**

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

**Channel 2**

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

# CALIBRATION DATA

Number 1

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

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **1 Mar 2018**

Start Time: 07:42

**$O_2$**
Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

| **%** | **Cylinder ID** |
|---|---|
| 12.0 | CC62094 |
| 21.0 | SG9169108 |

Calibration Results

| | |
|---|---|
| **Zero** | 10 mv |
| **Span, 21.0 %** | 8011 mv |

Curve Coefficients

| **Slope** | **Intercept** |
|---|---|
| 381.0 | 10 |

**$CO_2$**
Method: EPA 3A
Calibration Type: Linear Zero and High Span

Calibration Standards

| **%** | **Cylinder ID** |
|---|---|
| 8.9 | CC62094 |
| 16.6 | SG9169108 |

Calibration Results

| | |
|---|---|
| **Zero** | 1 mv |
| **Span, 16.6 %** | 8293 mv |

Curve Coefficients

| **Slope** | **Intercept** |
|---|---|
| 500.1 | 1 |

# CALIBRATION ERROR DATA

Number 1

Client: **Chemours** | Project Number: **15418.002.002.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **PPA** | Calibration **1** | Date: **1 Mar 2018**

Start Time: 07:42

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %
**Slope** 381.0 **Intercept** 10.0

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

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %
**Slope** 500.1 **Intercept** 1.0

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

# BIAS

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **1 Mar 2018**

Start Time: 07:52

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.0 | 0.2 | 0.2 | 1.0 | Pass |
| **Span** | 12.0 | 12.1 | 0.1 | 0.5 | Pass |

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.0 | 0.1 | 0.1 | 0.6 | Pass |
| **Span** | 8.6 | 8.5 | -0.1 | -0.6 | Pass |

# RUN SUMMARY

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **1 Mar 2018**

| | $O_2$ | $CO_2$ |
|---|---|---|
| **Method** | EPA 3A | EPA 3A |
| **Conc. Units** | % | % |

Time: 09:20 to 11:14

**Run Averages**

| | |
|---|---|
| 20.8 | 0.0 |

**Pre-run Bias at 07:52**

| | | |
|---|---|---|
| **Zero Bias** | 0.2 | 0.1 |
| **Span Bias** | 12.1 | 8.5 |
| **Span Gas** | 12.0 | 8.9 |

**Post-run Bias at 11:52**

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

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

| | |
|---|---|
| 20.9 | 0.0 |

Ambient Air 0.0 $CO_2$
20.9 $O_2$

# BIAS AND CALIBRATION DRIFT

Number 2

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **1 Mar 2018**

Start Time: 11:52

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

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

**Calibration Drift**

| Standard Gas | Initial* % | Final % | Difference % | Drift % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.2 | 0.1 | -0.1 | -0.5 | Pass |
| **Span** | 12.1 | 11.9 | -0.2 | -1.0 | Pass |

*Bias No. 1

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

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

**Calibration Drift**

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

*Bias No. 1

# RUN SUMMARY

Number 4

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **1 Mar 2018**

| | $O_2$ | $CO_2$ |
|---|---|---|
| **Method** | EPA 3A | EPA 3A |
| **Conc. Units** | % | % |

Time: 11:57 to 13:53

**Run Averages**

| | |
|---|---|
| 20.8 | 0.0 |

**Pre-run Bias at 11:52**

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

**Post-run Bias at 11:52**

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

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

| | |
|---|---|
| 21.1 | 0.0 |

Ambient Air
20.9 % $O_2$
0.0 % $CO_2$

# BIAS AND CALIBRATION DRIFT

Number 3

Client: **Chemours** | Project Number: **15418.002.002.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **PPA** | Calibration **1** | Date: **1 Mar 2018**

Start Time: 11:52

## $O_2$

Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

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

**Calibration Drift**

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

*Bias No. 2

## $CO_2$

Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

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

**Calibration Drift**

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

*Bias No. 2

# RUN SUMMARY

Number 5

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **1 Mar 2018**

| | $O_2$ | $CO_2$ |
|---|---|---|
| **Method** | EPA 3A | EPA 3A |
| **Conc. Units** | % | % |

Time: 14:21 to 16:18

**Run Averages**

| | |
|---|---|
| 20.8 | 0.0 |

**Pre-run Bias at 11:52**

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

**Post-run Bias at 16:32**

| | | |
|---|---|---|
| **Zero Bias** | 0.1 | 0.1 |
| **Span Bias** | 11.9 | 8.3 |
| **Span Gas** | 12.0 | 8.9 |

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

| | |
|---|---|
| 21.0 | 0.0 |

Ambient Air
20.9 % $O_2$
0.0 % $CO_2$

# BIAS AND CALIBRATION DRIFT

Number 4

Client: **Chemours** | Project Number: **15418.002.002.0001**
Location: **Fayetteville, NC** | Operator: **SR**
Source: **PPA** | Calibration **1** | Date: **1 Mar 2018**

Start Time: 16:32

## $O_2$

Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

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

**Calibration Drift**

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

*Bias No. 3

## $CO_2$

Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

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

**Calibration Drift**

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

*Bias No. 3

# METHODS AND ANALYZERS

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

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **2 Mar 2018**

**File:** C:\DATA\Chemours\fayetteville\february\030218 ppa.cem
**Program Version:** 2.0, built 21 Feb 2015 **File Version:** 2.02
**Computer:** WSWCAIRSERVICES **Trailer:** 27
**Analog Input Device:** Keithley KUSB-3108

**Channel 1**

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

**Channel 2**

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

# CALIBRATION DATA

Number 1

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

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **2 Mar 2018**

Start Time: 07:19

**$O_2$**

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

Calibration Standards

| **%** | **Cylinder ID** |
|---|---|
| 12.0 | CC62094 |
| 21.0 | SG9169108 |

Calibration Results

| | |
|---|---|
| **Zero** | 10 mv |
| **Span, 21.0 %** | 8013 mv |

Curve Coefficients

| **Slope** | **Intercept** |
|---|---|
| 381.1 | 10 |

**$CO_2$**

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

Calibration Standards

| **%** | **Cylinder ID** |
|---|---|
| 8.9 | CC62094 |
| 16.6 | SG9169108 |

Calibration Results

| | |
|---|---|
| **Zero** | 1 mv |
| **Span, 16.6 %** | 8292 mv |

Curve Coefficients

| **Slope** | **Intercept** |
|---|---|
| 500.1 | 1 |

# CALIBRATION ERROR DATA

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **2 Mar 2018**

Start Time: 07:22

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %
**Slope** 381.1 **Intercept** 10.0

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

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %
**Slope** 500.1 **Intercept** 1.0

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

# BIAS

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **2 Mar 2018**

Start Time: 07:26

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.0 | 0.0 | 0.0 | 0.0 | Pass |
| **Span** | 12.0 | 12.0 | 0.0 | 0.0 | Pass |

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.0 | 0.0 | 0.0 | 0.0 | Pass |
| **Span** | 8.6 | 8.5 | -0.1 | -0.6 | Pass |

# RUN SUMMARY

Number 2

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **2 Mar 2018**

| | $O_2$ | $CO_2$ |
|---|---|---|
| **Method** | EPA 3A | EPA 3A |
| **Conc. Units** | % | % |

Time: 08:15 to 10:11

**Run Averages**

| | |
|---|---|
| 21.0 | 0.0 |

**Pre-run Bias at 07:26**

| | | |
|---|---|---|
| **Zero Bias** | 0.0 | 0.0 |
| **Span Bias** | 12.0 | 8.5 |
| **Span Gas** | 12.0 | 8.9 |

**Post-run Bias at 10:24**

| | | |
|---|---|---|
| **Zero Bias** | 0.1 | 0.1 |
| **Span Bias** | 12.1 | 8.5 |
| **Span Gas** | 12.0 | 8.9 |

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

| | |
|---|---|
| 20.9 | 0.0 |

Ambient Air
20.9 % $O_2$
0.0 % $CO_2$

# BIAS AND CALIBRATION DRIFT

Number 2

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **2 Mar 2018**

Start Time: 10:24

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

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

**Calibration Drift**

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

*Bias No. 1

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| Zero | 0.0 | 0.1 | 0.1 | 0.6 | Pass |
| Span | 8.6 | 8.5 | -0.1 | -0.6 | Pass |

**Calibration Drift**

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

*Bias No. 1

# METHODS AND ANALYZERS

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

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **27 Feb 2018**

Client Folders.A-F\Chemours\15418.002.002 Fayetteville 2018 Stack Testing\Data\Week of February 26th\0227

**Program Version:** 2.0, built 21 Feb 2015 **File Version:** 2.02
**Computer:** WSWCAIRSERVICES **Trailer:** 27
**Analog Input Device:** MCC USB-1608G

**Channel 1**

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

**Channel 2**

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

# CALIBRATION DATA

Number 1

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

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **27 Feb 2018**

Start Time: 08:06

**$O_2$**

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

Calibration Standards

| **%** | **Cylinder ID** |
|---|---|
| 12.0 | CC62094 |
| 21.0 | SG9169108 |

Calibration Results

| | |
|---|---|
| **Zero** | 20 mv |
| **Span, 21.0 %** | 8011 mv |

Curve Coefficients

| **Slope** | **Intercept** |
|---|---|
| 380.5 | 20 |

**$CO_2$**

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

Calibration Standards

| **%** | **Cylinder ID** |
|---|---|
| 8.9 | CC62094 |
| 16.6 | SG9169108 |

Calibration Results

| | |
|---|---|
| **Zero** | -1 mv |
| **Span, 16.6 %** | 8286 mv |

Curve Coefficients

| **Slope** | **Intercept** |
|---|---|
| 499.8 | -1 |

# CALIBRATION ERROR DATA

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **27 Feb 2018**

Start Time: 08:06

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %
**Slope** 380.5 **Intercept** 20.0

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

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

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

# BIAS

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **27 Feb 2018**

Start Time: 08:12

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.0 | 0.0 | 0.0 | 0.0 | Pass |
| **Span** | 12.0 | 12.0 | 0.0 | 0.0 | Pass |

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.0 | 0.0 | 0.0 | 0.0 | Pass |
| **Span** | 8.6 | 8.5 | -0.1 | -0.6 | Pass |

# RUN SUMMARY

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **27 Feb 2018**

| | $O_2$ | $CO_2$ |
|---|---|---|
| **Method** | EPA 3A | EPA 3A |
| **Conc. Units** | % | % |

Time: 10:18 to 12:08

**Run Averages**

| | |
|---|---|
| 20.9 | 0.1 |

**Pre-run Bias at 08:12**

| | | |
|---|---|---|
| **Zero Bias** | 0.0 | 0.0 |
| **Span Bias** | 12.0 | 8.5 |
| **Span Gas** | 12.0 | 8.9 |

**Post-run Bias at 13:37**

| | | |
|---|---|---|
| **Zero Bias** | 0.1 | 0.1 |
| **Span Bias** | 12.0 | 8.5 |
| **Span Gas** | 12.0 | 8.9 |

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

| | |
|---|---|
| 20.9 | 0.1 |

Ambient Air
20.9 % $O_2$
0.0 % $CO_2$

# BIAS AND CALIBRATION DRIFT

Number 2

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **27 Feb 2018**

Start Time: 13:37

## $O_2$

Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

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

**Calibration Drift**

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

*Bias No. 1

## $CO_2$

Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| Zero | 0.0 | 0.1 | 0.1 | 0.6 | Pass |
| Span | 8.6 | 8.5 | -0.1 | -0.6 | Pass |

**Calibration Drift**

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

*Bias No. 1

# RUN SUMMARY

Number 2

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **27 Feb 2018**

| | $O_2$ | $CO_2$ |
|---|---|---|
| **Method** | EPA 3A | EPA 3A |
| **Conc. Units** | % | % |

Time: 14:46 to 16:30

**Run Averages**

| | | |
|---|---|---|
| | 20.9 | 0.2 |

**Pre-run Bias at 13:37**

| | | |
|---|---|---|
| **Zero Bias** | 0.1 | 0.1 |
| **Span Bias** | 12.0 | 8.5 |
| **Span Gas** | 12.0 | 8.9 |

**Post-run Bias at 16:53**

| | | |
|---|---|---|
| **Zero Bias** | 0.1 | 0.0 |
| **Span Bias** | 12.0 | 8.5 |
| **Span Gas** | 12.0 | 8.9 |

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

| | |
|---|---|
| 20.9 | 0.1 |

Ambient Air
20.9 % $O_2$
0.0 % $CO_2$

# BIAS AND CALIBRATION DRIFT

Number 3

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **27 Feb 2018**

Start Time: 16:53

## $O_2$

Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

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

*Bias No. 2

## $CO_2$

Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.0 | 0.0 | 0.0 | 0.0 | Pass |
| **Span** | 8.6 | 8.5 | -0.1 | -0.6 | Pass |

**Calibration Drift**

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

*Bias No. 2

# METHODS AND ANALYZERS

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

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **26 Feb 2018**

**File:** C:\DATA\Chemours\fayetteville\february\022618 VES RUN 1 and 2.cem
**Program Version:** 2.0, built 21 Feb 2015 **File Version:** 2.02
**Computer:** WSWCAIRSERVICES **Trailer:** 27
**Analog Input Device:** Keithley KUSB-3108

**Channel 1**

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

**Channel 2**

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

# CALIBRATION DATA

Number 1

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

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **26 Feb 2018**

Start Time: 13:16

**$O_2$**

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

Calibration Standards

| **%** | **Cylinder ID** |
|---|---|
| 12.0 | CC62094 |
| 21.0 | SG9169108 |

Calibration Results

| | |
|---|---|
| **Zero** | 10 mv |
| **Span, 21.0 %** | 8014 mv |

Curve Coefficients

| **Slope** | **Intercept** |
|---|---|
| 381.1 | 10 |

**$CO_2$**

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

Calibration Standards

| **%** | **Cylinder ID** |
|---|---|
| 8.9 | CC62094 |
| 16.6 | SG9169108 |

Calibration Results

| | |
|---|---|
| **Zero** | -1 mv |
| **Span, 16.6 %** | 8289 mv |

Curve Coefficients

| **Slope** | **Intercept** |
|---|---|
| 500.0 | -1 |

# CALIBRATION ERROR DATA

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **26 Feb 2018**

Start Time: 13:16

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %
**Slope** 381.1 **Intercept** 10.0

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

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %
**Slope** 500.0 **Intercept** -1.0

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

# BIAS

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **26 Feb 2018**

Start Time: 13:21

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.0 | 0.0 | 0.0 | 0.0 | Pass |
| **Span** | 12.0 | 12.0 | 0.0 | 0.0 | Pass |

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| **Zero** | 0.0 | 0.0 | 0.0 | 0.0 | Pass |
| **Span** | 8.6 | 8.5 | -0.1 | -0.6 | Pass |

# BIAS AND CALIBRATION DRIFT

Number 2

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **26 Feb 2018**

Start Time: 15:29

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

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

**Calibration Drift**

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

*Bias No. 1

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| Zero | 0.0 | 0.0 | 0.0 | 0.0 | Pass |
| Span | 8.6 | 8.5 | -0.1 | -0.6 | Pass |

**Calibration Drift**

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

*Bias No. 1

# RUN SUMMARY

Number 1

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **26 Feb 2018**

| | $O_2$ | $CO_2$ |
|---|---|---|
| **Method** | EPA 3A | EPA 3A |
| **Conc. Units** | % | % |

Time: 15:52 to 17:35

**Run Averages**

| | | |
|---|---|---|
| | 20.7 | 0.2 |

**Pre-run Bias at 15:29**

| | | |
|---|---|---|
| **Zero Bias** | 0.0 | 0.0 |
| **Span Bias** | 11.9 | 8.5 |
| **Span Gas** | 12.0 | 8.9 |

**Post-run Bias at 17:38**

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

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

| | |
|---|---|
| 20.9 | 0.2 |

Ambient Air
20.9 % $O_2$
0.0 % $CO_2$

# BIAS AND CALIBRATION DRIFT

Number 3

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

Calibration **1**

Project Number: **15418.002.002.0001**
Operator: **SR**
Date: **26 Feb 2018**

Start Time: 17:38

**$O_2$**
Method: EPA 3A
Span Conc. 21.0 %

**Bias Results**

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

**Calibration Drift**

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

*Bias No. 2

**$CO_2$**
Method: EPA 3A
Span Conc. 16.6 %

**Bias Results**

| Standard Gas | Cal. % | Bias % | Difference % | Error % | Status |
|---|---|---|---|---|---|
| Zero | 0.0 | 0.0 | 0.0 | 0.0 | Pass |
| Span | 8.6 | 8.6 | 0.0 | 0.0 | Pass |

**Calibration Drift**

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

*Bias No. 2

# APPENDIX C
# LABORATORY ANALYTICAL DESCRIPTION AND ANALYTICAL REPORT

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

## TestAmerica HFPO-DA Method 0010 Sampling Train Fraction Preparation and Analysis Summary

The Method 0010 Sampling train fractions are transported from the Chemours Plant site in Fayetteville, NC to the TestAmerica Laboratory in Knoxville, TN for processing. The fractions are collected and recovered from the sampling train according to SW-846 additional guidelines found in Method 3542 for the breakdown of Method 0010 components. The train fraction designations are as follows:

- Front-Half Composite—consisting of a particulate filter, and a probe, nozzle and front portion of the filter holder bell housing glassware solvent rinses,
- Back-Half Composite—consisting of an XAD-2 resin module, and the back portion of the filter holder bell housing with connecting glassware solvent rinses,
- Condensate and Impinger Contents—consisting of the D.I. Water content used to initially charge the impingers and Condensate collected during the sampling run.
- Breakthrough XAD-2 Resin Tube—consisting of a standard XAD-2 module placed behind the Condensate Impingers as a final quality assurance indicator of the lack of breakthrough of the HFPO-DA through the sampling train.

In the laboratory, the Front-Half sample fraction components are placed in to an HDPE bottle and spiked with $^{13}C_3$-HFPO isotope dilution internal standard (IDA). This composite is extracted with basic methanol for 18 hours at room temperature followed by acidification using formic acid. The final formulation is filtered through a 0.45 µm filter and analyzed by Method 8321A for HFPO-DA. Instrumental analysis for these extracts is conducted in the TestAmerica Denver Laboratory.

The Back-Half sample fraction components, including the approximately 40 grams of XAD-2 resin material, are transferred to an HDPE bottle and spiked with the IDA internal standard. This Back-Half Composite is extracted at room temperature using two (2) successive 18 hour periods and separate portions of basic methanol. The XAD-2 resin material is removed, and the extraction fluid is acidified using formic acid. The final formulation is filtered through a 0.45 µm filter and analyzed by Method 8321A for HFPO-DA in the TestAmerica Denver Laboratory.

The Condensate Composite fraction of the sampling train is measured to record the total volume in the composite followed by preparation by concentration on a solid phase extractor (SPE). The SPE cartridge is treated with water/methanol mixture to release the HFPO-DA. The extract is run for the HFPO-DA using Method 8321A.

The Breakthrough XAD-2 Resin Tube fraction is prepared and analyzed by the same process as that used for the Back-half sampling train fraction.

Due to the sensitivity of the LCMS methodology, concentrations levels collected on Method 0010 sampling trains of HFPO-DA may require significant dilutions in order to report analytical data that is "hard quantified" within the calibration range of the process. The diluted samples avoid "E" (estimated) values for the results of the HFPO-DA.

# ANALYTICAL REPORT

Job Number: 140-10862-1

Job Description: South VE Emissions Test

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager I
3/16/2018 12:18 PM

Courtney M Adkins, Project Manager I
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03/16/2018

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## 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. |
| E | Result exceeded calibration range. |
| D | Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples. |

## Glossary

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

# Method Summary

Client: Chemours Company FC, LLC The
Project/Site: South VE Emissions Test

TestAmerica Job ID: 140-10862-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 8321A | PFOA and PFOS | SW846 | TAL DEN |
| 8321A | HFPO-DA | SW846 | TAL DEN |

**Protocol References:**

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

**Laboratory References:**

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

# Sample Summary

Client: Chemours Company FC, LLC The
Project/Site: South VE Emissions Test

TestAmerica Job ID: 140-10862-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 140-10862-1 | C-2801,2802 R1 M0010 FH | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-2 | C-2803,2804,2806 R1 M0010 BH | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-3 | C-2805 R1 M0010 IMP COND | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-4 | C-2807 R1 M0010 XAD-2 | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-5 | C-2808,2809 R2 M0010 FH | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-6 | C-2810,2811,2813 R2 M0010 BH | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-7 | C-2812 R2 M0010 IMP COND | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-8 | C-2814 R2 M0010 XAD-2 | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-9 | C-2815,2816 R3 M0010 FH | Air | 02/26/18 00:00 | 03/03/18 08:00 |
| 140-10862-10 | C-2817,2818,2820 R3 M0010 BH | Air | 02/26/18 00:00 | 03/03/18 08:00 |
| 140-10862-11 | C-2819 R3 M0010 IMP COND | Air | 02/26/18 00:00 | 03/03/18 08:00 |
| 140-10862-12 | C-2821 R3 M0010 XAD-2 | Air | 02/26/18 00:00 | 03/03/18 08:00 |
| 140-10862-13 | C-2822,2823 R QC M0010 FH BT | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-14 | C-2824,2825,2827 R QC M0010 BH BT | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-15 | C-2826 R QC M0010 IMP COND BT | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-16 | C-2828 R QC M0010 XAD-2 BT | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-17 | C-2829 R QC M0010 DI WATER RB | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-18 | C-2830 R QC M0010 MEOH WITH 5% NH4OH RB | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-19 | C-2831 R QC M0010 XAD-2 RB | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10862-20 | C-2832 R QC M0010 MEOH WITH 5% NH4OH TB | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-21 | C-2833 R QC M0010 XAD-2 TB | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10862-22 | C-2834,2835,2836 R QC M0010 PROOF BLANK | Air | 02/27/18 00:00 | 03/03/18 08:00 |
| 140-10862-23 | A-6414 MEDIA CHECK XAD | Air | 02/26/18 00:00 | 03/03/18 08:00 |
| 140-10862-24 | A-6415 MEDIA CHECK FILTER | Air | 02/26/18 00:00 | 03/03/18 08:00 |

# Job Narrative
# 140-10862-1

**Sample Receipt**

The samples were received on March 3, 2018 at 8:00 AM in good condition and properly preserved.. The temperatures of the 5 coolers at receipt time were 1.3º C, 1.7º C, 2.3º C, 2.7º C and 2.9º 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 Denver laboratory for HFPO-DA analysis. All results are reported in "Total ug" per sample.

**LCMS**

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

**Organic Prep**

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

**Comments**

Reporting Limits (RLs) and Method Detection Limits (MDLs) for the HFPO-DA used in this report were derived in Denver for reporting soils and water samples. Method 0010 sampling train matrix specific RLs and MDLs have not been established for HFPO-DA. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

The expanded deliverable section of the package is split into two sections: 8321A_HFPO_DU is specific to condensates, and Method DV-LC-0012 contains the XAD and Filter data. Both methods share the same calibration on 10/10/17. A single instance of this calibration and the associated detection limit check (DLCK) and Initial calibration verification (ICV) can be found in the 8321A_HFPO_DU section of the package as part of our automated package generation procedures.

## LCMS

### Analysis Batch: 404345

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| DLCK 280-404345/13 | Lab Control Sample | Total/NA | Air | 8321A | |

### Prep Batch: 406763

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10862-1 | C-2801,2802 R1 M0010 FH | Total/NA | Air | None | |
| 140-10862-5 | C-2808,2809 R2 M0010 FH | Total/NA | Air | None | |
| 140-10862-9 | C-2815,2816 R3 M0010 FH | Total/NA | Air | None | |
| 140-10862-13 | C-2822,2823 R QC M0010 FH BT | Total/NA | Air | None | |
| 140-10862-18 | C-2830 R QC M0010 MEOH WITH 5% NH4OH F | Total/NA | Air | None | |
| 140-10862-20 | C-2832 R QC M0010 MEOH WITH 5% NH4OH T | Total/NA | Air | None | |
| 140-10862-24 | A-6415 MEDIA CHECK FILTER | Total/NA | Air | None | |
| MB 280-406763/1-A | Method Blank | Total/NA | Air | None | |
| LCS 280-406763/2-A | Lab Control Sample | Total/NA | Air | None | |

### Prep Batch: 406764

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10862-2 | C-2803,2804,2806 R1 M0010 BH | Total/NA | Air | None | |
| 140-10862-4 | C-2807 R1 M0010 XAD-2 | Total/NA | Air | None | |
| 140-10862-6 | C-2810,2811,2813 R2 M0010 BH | Total/NA | Air | None | |
| 140-10862-8 | C-2814 R2 M0010 XAD-2 | Total/NA | Air | None | |
| 140-10862-10 | C-2817,2818,2820 R3 M0010 BH | Total/NA | Air | None | |
| 140-10862-12 | C-2821 R3 M0010 XAD-2 | Total/NA | Air | None | |
| 140-10862-14 | C-2824,2825,2827 R QC M0010 BH BT | Total/NA | Air | None | |
| 140-10862-16 | C-2828 R QC M0010 XAD-2 BT | Total/NA | Air | None | |
| 140-10862-19 | C-2831 R QC M0010 XAD-2 RB | Total/NA | Air | None | |
| 140-10862-21 | C-2833 R QC M0010 XAD-2 TB | Total/NA | Air | None | |
| 140-10862-22 | C-2834,2835,2836 R QC M0010 PROOF BLANK | Total/NA | Air | None | |
| 140-10862-23 | A-6414 MEDIA CHECK XAD | Total/NA | Air | None | |
| MB 280-406764/1-A | Method Blank | Total/NA | Air | None | |
| LCS 280-406764/2-A | Lab Control Sample | Total/NA | Air | None | |

### Prep Batch: 406765

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10862-3 | C-2805 R1 M0010 IMP COND | Total/NA | Air | None | |
| 140-10862-7 | C-2812 R2 M0010 IMP COND | Total/NA | Air | None | |
| 140-10862-11 | C-2819 R3 M0010 IMP COND | Total/NA | Air | None | |
| 140-10862-15 | C-2826 R QC M0010 IMP COND BT | Total/NA | Air | None | |
| 140-10862-17 | C-2829 R QC M0010 DI WATER RB | Total/NA | Air | None | |
| MB 280-406765/1-A | Method Blank | Total/NA | Air | None | |
| LCS 280-406765/2-A | Lab Control Sample | Total/NA | Air | None | |
| LCSD 280-406765/14-A | Lab Control Sample Dup | Total/NA | Air | None | |
| LLCS 280-406765/15-A | Lab Control Sample | Total/NA | Air | None | |

### Analysis Batch: 407389

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10862-1 | C-2801,2802 R1 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10862-5 | C-2808,2809 R2 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10862-9 | C-2815,2816 R3 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10862-13 | C-2822,2823 R QC M0010 FH BT | Total/NA | Air | 8321A | 406763 |
| 140-10862-18 | C-2830 R QC M0010 MEOH WITH 5% NH4OH F | Total/NA | Air | 8321A | 406763 |
| 140-10862-20 | C-2832 R QC M0010 MEOH WITH 5% NH4OH T | Total/NA | Air | 8321A | 406763 |

## LCMS (Continued)

### Analysis Batch: 407389 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10862-24 | A-6415 MEDIA CHECK FILTER | Total/NA | Air | 8321A | 406763 |
| MB 280-406763/1-A | Method Blank | Total/NA | Air | 8321A | 406763 |
| LCS 280-406763/2-A | Lab Control Sample | Total/NA | Air | 8321A | 406763 |

### Analysis Batch: 407390

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10862-2 | C-2803,2804,2806 R1 M0010 BH | Total/NA | Air | 8321A | 406764 |
| 140-10862-4 | C-2807 R1 M0010 XAD-2 | Total/NA | Air | 8321A | 406764 |
| 140-10862-6 | C-2810,2811,2813 R2 M0010 BH | Total/NA | Air | 8321A | 406764 |
| 140-10862-8 | C-2814 R2 M0010 XAD-2 | Total/NA | Air | 8321A | 406764 |
| 140-10862-10 | C-2817,2818,2820 R3 M0010 BH | Total/NA | Air | 8321A | 406764 |
| 140-10862-12 | C-2821 R3 M0010 XAD-2 | Total/NA | Air | 8321A | 406764 |
| 140-10862-14 | C-2824,2825,2827 R QC M0010 BH BT | Total/NA | Air | 8321A | 406764 |
| 140-10862-16 | C-2828 R QC M0010 XAD-2 BT | Total/NA | Air | 8321A | 406764 |
| 140-10862-19 | C-2831 R QC M0010 XAD-2 RB | Total/NA | Air | 8321A | 406764 |
| 140-10862-21 | C-2833 R QC M0010 XAD-2 TB | Total/NA | Air | 8321A | 406764 |
| 140-10862-22 | C-2834,2835,2836 R QC M0010 PROOF BLANK | Total/NA | Air | 8321A | 406764 |
| 140-10862-23 | A-6414 MEDIA CHECK XAD | Total/NA | Air | 8321A | 406764 |
| MB 280-406764/1-A | Method Blank | Total/NA | Air | 8321A | 406764 |
| LCS 280-406764/2-A | Lab Control Sample | Total/NA | Air | 8321A | 406764 |

### Analysis Batch: 407565

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10862-5 | C-2808,2809 R2 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10862-9 | C-2815,2816 R3 M0010 FH | Total/NA | Air | 8321A | 406763 |

### Analysis Batch: 407567

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10862-3 | C-2805 R1 M0010 IMP COND | Total/NA | Air | 8321A | 406765 |
| 140-10862-7 | C-2812 R2 M0010 IMP COND | Total/NA | Air | 8321A | 406765 |
| 140-10862-11 | C-2819 R3 M0010 IMP COND | Total/NA | Air | 8321A | 406765 |
| 140-10862-15 | C-2826 R QC M0010 IMP COND BT | Total/NA | Air | 8321A | 406765 |
| 140-10862-17 | C-2829 R QC M0010 DI WATER RB | Total/NA | Air | 8321A | 406765 |
| MB 280-406765/1-A | Method Blank | Total/NA | Air | 8321A | 406765 |
| LCS 280-406765/2-A | Lab Control Sample | Total/NA | Air | 8321A | 406765 |
| LCSD 280-406765/14-A | Lab Control Sample Dup | Total/NA | Air | 8321A | 406765 |
| LLCS 280-406765/15-A | Lab Control Sample | Total/NA | Air | 8321A | 406765 |

## Client Sample ID: C-2801,2802 R1 M0010 FH

**Lab Sample ID: 140-10862-1**
**Matrix: Air**
**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 9.42 | | 0.0750 | 0.0750 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:12 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *79* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:12* | *1* |

## Client Sample ID: C-2803,2804,2806 R1 M0010 BH

**Lab Sample ID: 140-10862-2**
**Matrix: Air**
**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 5.70 | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:10 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *68* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:10* | *1* |

## Client Sample ID: C-2805 R1 M0010 IMP COND

**Lab Sample ID: 140-10862-3**
**Matrix: Air**
**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.0183 | J | 0.0500 | 0.00255 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:29 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *86* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 09:29* | *1* |

## Client Sample ID: C-2807 R1 M0010 XAD-2

**Lab Sample ID: 140-10862-4**
**Matrix: Air**
**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:14 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *73* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:14* | *1* |

## Client Sample ID: C-2808,2809 R2 M0010 FH

**Lab Sample ID: 140-10862-5**
**Matrix: Air**
**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 47.6 | E | 0.100 | 0.100 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:15 | 1 |
| HFPO-DA | 45.4 | | 0.500 | 0.500 | ug/Sample | | 03/05/18 14:00 | 03/12/18 08:27 | 5 |

## Client Sample ID: C-2808,2809 R2 M0010 FH

**Lab Sample ID: 140-10862-5**

**Date Collected: 02/27/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *71* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:15* | *1* |
| *13C3 HFPO-DA* | *81* | *D* | *50 - 200* | *03/05/18 14:00* | *03/12/18 08:27* | *5* |

## Client Sample ID: C-2810,2811,2813 R2 M0010 BH

**Lab Sample ID: 140-10862-6**

**Date Collected: 02/27/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 7.12 | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:17 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *69* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:17* | *1* |

## Client Sample ID: C-2812 R2 M0010 IMP COND

**Lab Sample ID: 140-10862-7**

**Date Collected: 02/27/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.0413 | J | 0.0500 | 0.00255 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:32 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *91* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 09:32* | *1* |

## Client Sample ID: C-2814 R2 M0010 XAD-2

**Lab Sample ID: 140-10862-8**

**Date Collected: 02/27/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 5.24 | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:20 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *54* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:20* | *1* |

## Client Sample ID: C-2815,2816 R3 M0010 FH

**Lab Sample ID: 140-10862-9**

**Date Collected: 02/26/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 45.9 | E | 0.125 | 0.125 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:18 | 1 |
| HFPO-DA | 46.9 | | 0.625 | 0.625 | ug/Sample | | 03/05/18 14:00 | 03/12/18 08:30 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *76* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:18* | *1* |

## Client Sample ID: C-2815,2816 R3 M0010 FH

**Lab Sample ID: 140-10862-9**
**Matrix: Air**
**Date Collected: 02/26/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS (Continued)

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 78 | D | 50 - 200 | 03/05/18 14:00 | 03/12/18 08:30 | 5 |

## Client Sample ID: C-2817,2818,2820 R3 M0010 BH

**Lab Sample ID: 140-10862-10**
**Matrix: Air**
**Date Collected: 02/26/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 3.25 | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:24 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 69 | | 50 - 200 | 03/05/18 04:38 | 03/09/18 13:24 | 1 |

## Client Sample ID: C-2819 R3 M0010 IMP COND

**Lab Sample ID: 140-10862-11**
**Matrix: Air**
**Date Collected: 02/26/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.0164 | | 0.00250 | 0.000128 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:35 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 86 | | 50 - 200 | 03/11/18 10:52 | 03/12/18 09:35 | 1 |

## Client Sample ID: C-2821 R3 M0010 XAD-2

**Lab Sample ID: 140-10862-12**
**Matrix: Air**
**Date Collected: 02/26/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:27 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 76 | | 50 - 200 | 03/05/18 04:38 | 03/09/18 13:27 | 1 |

## Client Sample ID: C-2822,2823 R QC M0010 FH BT

**Lab Sample ID: 140-10862-13**
**Matrix: Air**
**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.128 | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:21 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 75 | | 50 - 200 | 03/05/18 14:00 | 03/09/18 12:21 | 1 |

## Client Sample ID: C-2824,2825,2827 R QC M0010 BH BT

**Lab Sample ID: 140-10862-14**

**Date Collected: 02/27/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **HFPO-DA** | **0.849** | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:30 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *73* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:30* | *1* |

## Client Sample ID: C-2826 R QC M0010 IMP COND BT

**Lab Sample ID: 140-10862-15**

**Date Collected: 02/27/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **HFPO-DA** | **0.0157** | | 0.00250 | 0.000128 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:38 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *58* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 09:38* | *1* |

## Client Sample ID: C-2828 R QC M0010 XAD-2 BT

**Lab Sample ID: 140-10862-16**

**Date Collected: 02/27/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:33 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *72* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:33* | *1* |

## Client Sample ID: C-2829 R QC M0010 DI WATER RB

**Lab Sample ID: 140-10862-17**

**Date Collected: 02/27/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.00250 | 0.000128 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:42 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *95* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 09:42* | *1* |

## Client Sample ID: C-2830 R QC M0010 MEOH WITH 5% NH4OH RB

**Lab Sample ID: 140-10862-18**

**Date Collected: 02/27/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:25 | 1 |

## Client Sample ID: C-2830 R QC M0010 MEOH WITH 5% NH4OH RB

**Lab Sample ID: 140-10862-18**

**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

**Matrix: Air**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *74* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:25* | *1* |

## Client Sample ID: C-2831 R QC M0010 XAD-2 RB

**Lab Sample ID: 140-10862-19**

**Date Collected: 03/02/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

**Matrix: Air**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:40 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *71* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:40* | *1* |

## Client Sample ID: C-2832 R QC M0010 MEOH WITH 5% NH4OH TB

**Lab Sample ID: 140-10862-20**

**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

**Matrix: Air**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:28 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *75* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:28* | *1* |

## Client Sample ID: C-2833 R QC M0010 XAD-2 TB

**Lab Sample ID: 140-10862-21**

**Date Collected: 03/02/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

**Matrix: Air**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:43 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *75* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:43* | *1* |

## Client Sample ID: C-2834,2835,2836 R QC M0010 PROOF BLANK

**Lab Sample ID: 140-10862-22**

**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

**Matrix: Air**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:46 | 1 |

## Client Sample ID: C-2834,2835,2836 R QC M0010 PROOF BLANK

**Lab Sample ID: 140-10862-22**

**Date Collected: 02/27/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

**Matrix: Air**

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *85* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:46* | *1* |

## Client Sample ID: A-6414 MEDIA CHECK XAD

**Lab Sample ID: 140-10862-23**

**Date Collected: 02/26/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

**Matrix: Air**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:50 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *56* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:50* | *1* |

## Client Sample ID: A-6415 MEDIA CHECK FILTER

**Lab Sample ID: 140-10862-24**

**Date Collected: 02/26/18 00:00**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

**Matrix: Air**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:31 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *76* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:31* | *1* |

# Default Detection Limits

Client: Chemours Company FC, LLC The
Project/Site: South VE Emissions Test

TestAmerica Job ID: 140-10862-1

## Method: 8321A - HFPO-DA

### Prep: None

| Analyte | RL | MDL | Units | Method |
|---|---|---|---|---|
| HFPO-DA | 0.00250 | 0.00128 | ug/Sample | 8321A |

## Method: 8321A - PFOA and PFOS

### Prep: None

| Analyte | RL | MDL | Units | Method |
|---|---|---|---|---|
| HFPO-DA | 0.0250 | 0.0250 | ug/Sample | 8321A |
| HFPO-DA | 0.100 | 0.100 | ug/Sample | 8321A |

# Surrogate Summary

Client: Chemours Company FC, LLC The
Project/Site: South VE Emissions Test

TestAmerica Job ID: 140-10862-1

## Method: 8321A - HFPO-DA

**Matrix: Air** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) |
|---|---|---|
| Lab Sample ID | Client Sample ID | HFPODA (50-200) |
| 140-10862-3 | C-2805 R1 M0010 IMP COND | 86 |
| 140-10862-7 | C-2812 R2 M0010 IMP COND | 91 |
| 140-10862-11 | C-2819 R3 M0010 IMP COND | 86 |
| 140-10862-15 | C-2826 R QC M0010 IMP CONI | 58 |
| 140-10862-17 | C-2829 R QC M0010 DI WATEF | 95 |
| LCS 280-406765/2-A | Lab Control Sample | 90 |
| LCSD 280-406765/14-A | Lab Control Sample Dup | 92 |
| LLCS 280-406765/15-A | Lab Control Sample | 87 |
| MB 280-406765/1-A | Method Blank | 94 |

**Surrogate Legend**

HFPODA = 13C3 HFPO-DA

## Method: 8321A - PFOA and PFOS

**Matrix: Air** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) |
|---|---|---|
| Lab Sample ID | Client Sample ID | HFPODA (50-200) |
| 140-10862-1 | C-2801,2802 R1 M0010 FH | 79 |
| 140-10862-2 | C-2803,2804,2806 R1 M0010 BI | 68 |
| 140-10862-4 | C-2807 R1 M0010 XAD-2 | 73 |
| 140-10862-5 | C-2808,2809 R2 M0010 FH | 71 |
| 140-10862-5 | C-2808,2809 R2 M0010 FH | 81 D |
| 140-10862-6 | C-2810,2811,2813 R2 M0010 BI | 69 |
| 140-10862-8 | C-2814 R2 M0010 XAD-2 | 54 |
| 140-10862-9 | C-2815,2816 R3 M0010 FH | 76 |
| 140-10862-9 | C-2815,2816 R3 M0010 FH | 78 D |
| 140-10862-10 | C-2817,2818,2820 R3 M0010 BI | 69 |
| 140-10862-12 | C-2821 R3 M0010 XAD-2 | 76 |
| 140-10862-13 | C-2822,2823 R QC M0010 FH E | 75 |
| 140-10862-14 | C-2824,2825,2827 R QC M0010 | 73 |
| 140-10862-16 | C-2828 R QC M0010 XAD-2 BT | 72 |
| 140-10862-18 | C-2830 R QC M0010 MEOH WI | 74 |
| 140-10862-19 | C-2831 R QC M0010 XAD-2 RB | 71 |
| 140-10862-20 | C-2832 R QC M0010 MEOH WI | 75 |
| 140-10862-21 | C-2833 R QC M0010 XAD-2 TB | 75 |
| 140-10862-22 | C-2834,2835,2836 R QC M0010 | 85 |
| 140-10862-23 | A-6414 MEDIA CHECK XAD | 56 |
| 140-10862-24 | A-6415 MEDIA CHECK FILTER | 76 |
| DLCK 280-404345/13 | Lab Control Sample | 104 |
| LCS 280-406763/2-A | Lab Control Sample | 77 |
| LCS 280-406764/2-A | Lab Control Sample | 72 |
| MB 280-406763/1-A | Method Blank | 69 |
| MB 280-406764/1-A | Method Blank | 64 |

**Surrogate Legend**

HFPODA = 13C3 HFPO-DA

## Method: 8321A - HFPO-DA

**Lab Sample ID: MB 280-406765/1-A** — **Client Sample ID: Method Blank**
**Matrix: Air** — **Prep Type: Total/NA**
**Analysis Batch: 407567** — **Prep Batch: 406765**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.00250 | 0.000128 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:16 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *94* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 09:16* | *1* |

**Lab Sample ID: LCS 280-406765/2-A** — **Client Sample ID: Lab Control Sample**
**Matrix: Air** — **Prep Type: Total/NA**
**Analysis Batch: 407567** — **Prep Batch: 406765**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.0500 | 0.05486 | | ug/Sample | | 110 | 50 - 150 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *90* | | *50 - 200* |

**Lab Sample ID: LCSD 280-406765/14-A** — **Client Sample ID: Lab Control Sample Dup**
**Matrix: Air** — **Prep Type: Total/NA**
**Analysis Batch: 407567** — **Prep Batch: 406765**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.0500 | 0.05420 | | ug/Sample | | 108 | 50 - 150 | 1 | 35 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *92* | | *50 - 200* |

**Lab Sample ID: LLCS 280-406765/15-A** — **Client Sample ID: Lab Control Sample**
**Matrix: Air** — **Prep Type: Total/NA**
**Analysis Batch: 407567** — **Prep Batch: 406765**

| Analyte | | | Spike Added | LLCS Result | LLCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.00500 | 0.004384 | | ug/Sample | | 88 | 50 - 150 | | |

| *Surrogate* | *LLCS %Recovery* | *LLCS Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *87* | | *50 - 200* |

## Method: 8321A - PFOA and PFOS

**Lab Sample ID: DLCK 280-404345/13** — **Client Sample ID: Lab Control Sample**
**Matrix: Air** — **Prep Type: Total/NA**
**Analysis Batch: 404345**

| Analyte | | | Spike Added | DLCK Result | DLCK Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.250 | 0.2255 | | ug/L | | 90 | 70 - 130 | | |

| *Surrogate* | *DLCK %Recovery* | *DLCK Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *104* | | *50 - 200* |

## Method: 8321A - PFOA and PFOS (Continued)

**Lab Sample ID: MB 280-406763/1-A**
**Matrix: Air**
**Analysis Batch: 407389**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 406763**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:05 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *69* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:05* | *1* |

**Lab Sample ID: LCS 280-406763/2-A**
**Matrix: Air**
**Analysis Batch: 407389**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 406763**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.500 | 0.4835 | | ug/Sample | | 97 | 50 - 150 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *77* | | *50 - 200* |

**Lab Sample ID: MB 280-406764/1-A**
**Matrix: Air**
**Analysis Batch: 407390**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 406764**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:04 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *64* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:04* | *1* |

**Lab Sample ID: LCS 280-406764/2-A**
**Matrix: Air**
**Analysis Batch: 407390**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 406764**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 4.00 | 3.498 | | ug/Sample | | 87 | 50 - 150 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *72* | | *50 - 200* |

## Client Sample ID: C-2801,2802 R1 M0010 FH

**Lab Sample ID: 140-10862-1**

**Date Collected: 02/27/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 150 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:12 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2803,2804,2806 R1 M0010 BH

**Lab Sample ID: 140-10862-2**

**Date Collected: 02/27/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:10 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2805 R1 M0010 IMP COND

**Lab Sample ID: 140-10862-3**

**Date Collected: 02/27/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 0.05 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:29 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2807 R1 M0010 XAD-2

**Lab Sample ID: 140-10862-4**

**Date Collected: 02/27/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:14 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2808,2809 R2 M0010 FH

**Lab Sample ID: 140-10862-5**

**Date Collected: 02/27/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 200 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:15 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 1 Sample | 200 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 5 | | | 407565 | 03/12/18 08:27 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2810,2811,2813 R2 M0010 BH — Lab Sample ID: 140-10862-6

**Date Collected: 02/27/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:17 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2812 R2 M0010 IMP COND — Lab Sample ID: 140-10862-7

**Date Collected: 02/27/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 0.05 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:32 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2814 R2 M0010 XAD-2 — Lab Sample ID: 140-10862-8

**Date Collected: 02/27/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:20 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2815,2816 R3 M0010 FH — Lab Sample ID: 140-10862-9

**Date Collected: 02/26/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 250 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:18 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 1 Sample | 250 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 5 | | | 407565 | 03/12/18 08:30 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2817,2818,2820 R3 M0010 BH — Lab Sample ID: 140-10862-10

**Date Collected: 02/26/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:24 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2819 R3 M0010 IMP COND

**Lab Sample ID: 140-10862-11**

**Date Collected: 02/26/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:35 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2821 R3 M0010 XAD-2

**Lab Sample ID: 140-10862-12**

**Date Collected: 02/26/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:27 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2822,2823 R QC M0010 FH BT

**Lab Sample ID: 140-10862-13**

**Date Collected: 02/27/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:21 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2824,2825,2827 R QC M0010 BH BT

**Lab Sample ID: 140-10862-14**

**Date Collected: 02/27/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:30 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2826 R QC M0010 IMP COND BT

**Lab Sample ID: 140-10862-15**

**Date Collected: 02/27/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:38 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2828 R QC M0010 XAD-2 BT — Lab Sample ID: 140-10862-16

**Date Collected: 02/27/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:33 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2829 R QC M0010 DI WATER RB — Lab Sample ID: 140-10862-17

**Date Collected: 02/27/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:42 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2830 R QC M0010 MEOH WITH 5% NH4OH RB — Lab Sample ID: 140-10862-18

**Date Collected: 02/27/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:25 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2831 R QC M0010 XAD-2 RB — Lab Sample ID: 140-10862-19

**Date Collected: 03/02/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:40 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2832 R QC M0010 MEOH WITH 5% NH4OH TB — Lab Sample ID: 140-10862-20

**Date Collected: 02/27/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:28 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2833 R QC M0010 XAD-2 TB

**Lab Sample ID: 140-10862-21**

**Date Collected: 03/02/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:43 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: C-2834,2835,2836 R QC M0010 PROOF BLANK

**Lab Sample ID: 140-10862-22**

**Date Collected: 02/27/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:46 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: A-6414 MEDIA CHECK XAD

**Lab Sample ID: 140-10862-23**

**Date Collected: 02/26/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:50 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: A-6415 MEDIA CHECK FILTER

**Lab Sample ID: 140-10862-24**

**Date Collected: 02/26/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:31 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Method Blank

**Lab Sample ID: MB 280-406763/1-A**

**Date Collected: N/A**

**Matrix: Air**

**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:05 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Method Blank
**Lab Sample ID: MB 280-406764/1-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:04 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Method Blank
**Lab Sample ID: MB 280-406765/1-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:16 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample
**Lab Sample ID: DLCK 280-404345/13**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8321A | | 1 | | | 404345 | 02/08/18 13:38 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample
**Lab Sample ID: LCS 280-406763/2-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:08 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample
**Lab Sample ID: LCS 280-406764/2-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:07 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample
**Lab Sample ID: LCS 280-406765/2-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:19 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample Dup
**Lab Sample ID: LCSD 280-406765/14-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:22 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample
**Lab Sample ID: LLCS 280-406765/15-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:25 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

**Laboratory References:**

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

# Accreditation/Certification Summary

Client: Chemours Company FC, LLC The
Project/Site: South VE Emissions Test

TestAmerica Job ID: 140-10862-1

## Laboratory: TestAmerica Knoxville

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| | AFCEE | | N/A | |
| ANAB | DoD ELAP | | L2311 | 02-13-19 |
| Arkansas DEQ | State Program | 6 | 88-0688 | 06-16-18 |
| California | State Program | 9 | 2423 | 06-30-18 |
| Colorado | State Program | 8 | TN00009 | 02-28-19 |
| Connecticut | State Program | 1 | PH-0223 | 09-30-19 |
| Florida | NELAP | 4 | E87177 | 06-30-18 |
| Georgia | State Program | 4 | 906 | 04-13-20 |
| Hawaii | State Program | 9 | N/A | 04-13-18 |
| Kansas | NELAP | 7 | E-10349 | 10-31-18 |
| Kentucky (DW) | State Program | 4 | 90101 | 12-31-18 |
| Louisiana | NELAP | 6 | 83979 | 06-30-18 |
| Louisiana (DW) | NELAP | 6 | LA160005 | 12-31-18 |
| Maryland | State Program | 3 | 277 | 03-31-19 |
| Michigan | State Program | 5 | 9933 | 04-13-20 |
| Nevada | State Program | 9 | TN00009 | 07-31-18 |
| New Jersey | NELAP | 2 | TN001 | 06-30-18 |
| New York | NELAP | 2 | 10781 | 03-31-18 |
| North Carolina (DW) | State Program | 4 | 21705 | 07-31-18 |
| North Carolina (WW/SW) | State Program | 4 | 64 | 12-31-18 |
| Ohio VAP | State Program | 5 | CL0059 | 11-22-18 |
| Oklahoma | State Program | 6 | 9415 | 08-31-18 |
| Oregon | NELAP | 10 | TNI0189 | 01-01-19 |
| Pennsylvania | NELAP | 3 | 68-00576 | 12-31-18 |
| Tennessee | State Program | 4 | 2014 | 04-13-20 |
| Texas | NELAP | 6 | T104704380-16-9 | 08-31-18 |
| US Fish & Wildlife | Federal | | LE-058448-0 | 07-31-18 |
| USDA | Federal | | P330-16-00262 | 08-20-19 |
| Utah | NELAP | 8 | TN00009 | 07-31-18 |
| Virginia | NELAP | 3 | 460176 | 09-14-18 |
| Washington | State Program | 10 | C593 | 01-19-19 |
| West Virginia (DW) | State Program | 3 | 9955C | 12-31-18 |
| West Virginia DEP | State Program | 3 | 345 | 04-30-18 |
| Wisconsin | State Program | 5 | 998044300 | 08-31-18 |

## Laboratory: TestAmerica Denver

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| A2LA | DoD ELAP | | 2907.01 | 10-31-19 |
| A2LA | ISO/IEC 17025 | | 2907.01 | 10-31-19 |
| Alabama | State Program | 4 | 40730 | 09-30-12 * |
| Alaska (UST) | State Program | 10 | UST-30 | 04-05-18 |
| Arizona | State Program | 9 | AZ0713 | 12-20-18 |
| Arkansas DEQ | State Program | 6 | 88-0687 | 06-01-18 |
| California | State Program | 9 | 2513 | 01-18-19 |
| Connecticut | State Program | 1 | PH-0686 | 09-30-18 |
| Florida | NELAP | 4 | E87667 | 06-30-18 |
| Georgia | State Program | 4 | N/A | 01-08-18 * |
| Illinois | NELAP | 5 | 200017 | 04-30-18 |

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

## Laboratory: TestAmerica Denver (Continued)

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| Iowa | State Program | 7 | 370 | 12-01-18 |
| Kansas | NELAP | 7 | E-10166 | 04-30-18 |
| Louisiana | NELAP | 6 | 02096 | 06-30-18 |
| Maine | State Program | 1 | CO0002 | 03-03-19 |
| Minnesota | NELAP | 5 | 8-999-405 | 12-31-18 |
| Nevada | State Program | 9 | CO0026 | 07-31-18 |
| New Hampshire | NELAP | 1 | 205310 | 04-28-18 |
| New Jersey | NELAP | 2 | CO004 | 06-30-18 |
| New York | NELAP | 2 | 11964 | 04-01-18 |
| North Carolina (WW/SW) | State Program | 4 | 358 | 12-31-18 |
| North Dakota | State Program | 8 | R-034 | 01-08-19 |
| Oklahoma | State Program | 6 | 8614 | 08-31-18 |
| Oregon | NELAP | 10 | 4025 | 01-08-19 |
| Pennsylvania | NELAP | 3 | 68-00664 | 07-31-18 |
| South Carolina | State Program | 4 | 72002001 | 01-08-19 |
| Texas | NELAP | 6 | T104704183-17-14 | 09-30-18 |
| USDA | Federal | | P330-16-00397 | 12-15-19 |
| Utah | NELAP | 8 | CO00026 | 07-31-18 |
| Virginia | NELAP | 3 | 460232 | 06-14-18 |
| Washington | State Program | 10 | C583 | 08-03-18 |
| West Virginia DEP | State Program | 3 | 354 | 12-31-18 |
| Wisconsin | State Program | 5 | 999615430 | 08-31-18 |
| Wyoming (UST) | A2LA | 8 | 2907.01 | 10-31-19 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Instrument ID: LC_LCMS7 Analysis Batch Number: 404345

Lab Sample ID: STD001 280-404345/3 IC Client Sample ID:

Date Analyzed: 02/08/18 13:05 Lab File ID: hfpo718B08034.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.06 | Assign Peak | meyera | 02/08/18 15:19 |

Lab Sample ID: STD002 280-404345/4 IC Client Sample ID:

Date Analyzed: 02/08/18 13:08 Lab File ID: hfpo718B08035.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.06 | Baseline | meyera | 02/08/18 15:19 |

Lab Sample ID: DLCK 280-404345/13 Client Sample ID:

Date Analyzed: 02/08/18 13:38 Lab File ID: hfpo718B08044.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.06 | Baseline | meyera | 02/08/18 15:20 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Instrument ID: LC_LCMS7 Analysis Batch Number: 407390

Lab Sample ID: 140-10862-21 Client Sample ID: C-2833 R QC M0010 XAD-2 TB

Date Analyzed: 03/09/18 13:43 Lab File ID: hfpo718C09101.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.03 | Baseline | meyera | 03/12/18 07:22 |

# 8321A_HFPO_Du

**HFPO-DA**

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Matrix: Air Level: Low

GC Column (1): Synergi Hyd ID:

| Client Sample ID | Lab Sample ID | HFPODA # |
|---|---|---|
| C-2805 R1 M0010 IMP COND | 140-10862-3 | 86 |
| C-2812 R2 M0010 IMP COND | 140-10862-7 | 91 |
| C-2819 R3 M0010 IMP COND | 140-10862-11 | 86 |
| C-2826 R QC M0010 IMP COND BT | 140-10862-15 | 58 |
| C-2829 R QC M0010 DI WATER RB | 140-10862-17 | 95 |
| | MB 280-406765/1-A | 94 |
| | LCS 280-406765/2-A | 90 |
| | LCSD 280-406765/14-A | 92 |
| | LLCS 280-406765/15-A | 87 |

| | QC LIMITS |
|---|---|
| HFPODA = 13C3 HFPO-DA | 50-200 |

# Column to be used to flag recovery values

FORM II 8321A

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Matrix: Air Level: Low Lab File ID: hfpo718C12020.d

Lab ID: LCS 280-406765/2-A Client ID:

| COMPOUND | SPIKE ADDED (ug/Sample) | LCS CONCENTRATION (ug/Sample) | LCS % REC | QC LIMITS REC | # |
|---|---|---|---|---|---|
| HFPO-DA | 0.0500 | 0.05486 | 110 | 50-150 | |

# Column to be used to flag recovery and RPD values

FORM III 8321A

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Matrix: Air Level: Low Lab File ID: hfpo718C12021.d

Lab ID: LCSD 280-406765/14-A Client ID:

| COMPOUND | SPIKE ADDED (ug/Sample) | LCSD CONCENTRATION (ug/Sample) | LCSD % REC | % RPD | QC LIMITS RPD | QC LIMITS REC | # |
|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.0500 | 0.05420 | 108 | 1 | 35 | 50-150 | |

# Column to be used to flag recovery and RPD values

FORM III 8321A

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Matrix: Air Level: Low Lab File ID: hfpo718C12022.d

Lab ID: LLCS 280-406765/15-A Client ID:

| COMPOUND | SPIKE ADDED (ug/Sample) | LLCS CONCENTRATION (ug/Sample) | LLCS % REC | QC LIMITS REC | # |
|---|---|---|---|---|---|
| HFPO-DA | 0.00500 | 0.004384 | 88 | 50-150 | |

# Column to be used to flag recovery and RPD values

FORM III 8321A

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Lab File ID: hfpo718C12019.d Lab Sample ID: MB 280-406765/1-A

Matrix: Air Date Extracted: 03/11/2018 10:52

Instrument ID: LC_LCMS7 Date Analyzed: 03/12/2018 09:16

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|
| | LCS 280-406765/2-A | hfpo718C12020.d | 03/12/2018 09:19 |
| | LCSD 280-406765/14-A | hfpo718C12021.d | 03/12/2018 09:22 |
| | LLCS 280-406765/15-A | hfpo718C12022.d | 03/12/2018 09:25 |
| C-2805 R1 M0010 IMP COND | 140-10862-3 | hfpo718C12023.d | 03/12/2018 09:29 |
| C-2812 R2 M0010 IMP COND | 140-10862-7 | hfpo718C12024.d | 03/12/2018 09:32 |
| C-2819 R3 M0010 IMP COND | 140-10862-11 | hfpo718C12025.d | 03/12/2018 09:35 |
| C-2826 R QC M0010 IMP COND BT | 140-10862-15 | hfpo718C12026.d | 03/12/2018 09:38 |
| C-2829 R QC M0010 DI WATER RB | 140-10862-17 | hfpo718C12027.d | 03/12/2018 09:42 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10862-1

SDG No.:

Client Sample ID: C-2805 R1 M0010 IMP COND | Lab Sample ID: 140-10862-3

Matrix: Air | Lab File ID: hfpo718C12023.d

Analysis Method: 8321A | Date Collected: 02/27/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 0.05(Sample) | Date Analyzed: 03/12/2018 09:29

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.0183 | J | 0.0500 | 0.00255 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 86 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12023.d
Lims ID: 140-10862-A-3-A
Client ID: C-2805 R1 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:29:01 ALS Bottle#: 22 Worklist Smp#: 23
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10862-A-3-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:44

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | 1.000 | 645479 | 8.65 | 3454 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | | 645479 | 10.0 | 3454 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 14876 | 0.1827 | 5.6 | |

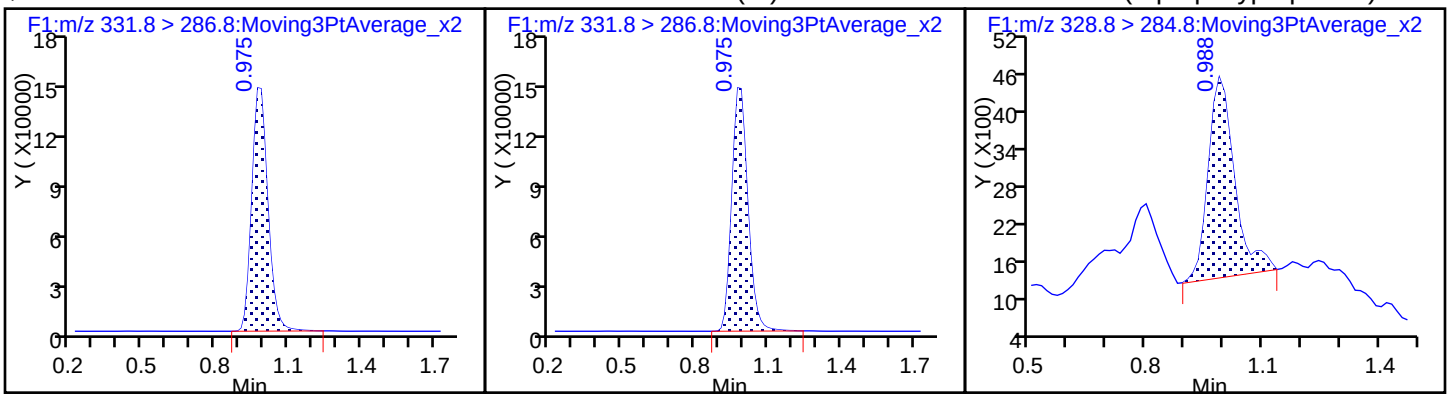
Report Date: 12-Mar-2018 10:54:12 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12023.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 09:29:01 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10862-A-3-A | Lab Sample ID: | 280-10862-3 | | |
| Client ID: | C-2805 R1 M0010 IMP COND | | | | |
| Operator ID: | JBH | ALS Bottle#: | 22 | Worklist Smp#: | 23 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12023.d
Lims ID: 140-10862-A-3-A
Client ID: C-2805 R1 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:29:01 ALS Bottle#: 22 Worklist Smp#: 23
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10862-A-3-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:44

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 8.65 | 86.46 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10862-1

SDG No.:

Client Sample ID: C-2812 R2 M0010 IMP COND | Lab Sample ID: 140-10862-7

Matrix: Air | Lab File ID: hfpo718C12024.d

Analysis Method: 8321A | Date Collected: 02/27/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 0.05(Sample) | Date Analyzed: 03/12/2018 09:32

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.0413 | J | 0.0500 | 0.00255 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 91 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12024.d
Lims ID: 140-10862-A-7-A
Client ID: C-2812 R2 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:32:16 ALS Bottle#: 23 Worklist Smp#: 24
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10862-A-7-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:47

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | 1.000 | 677796 | 9.08 | 2550 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | | 677796 | 10.0 | 2550 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 32263 | 0.4135 | 9.4 | |

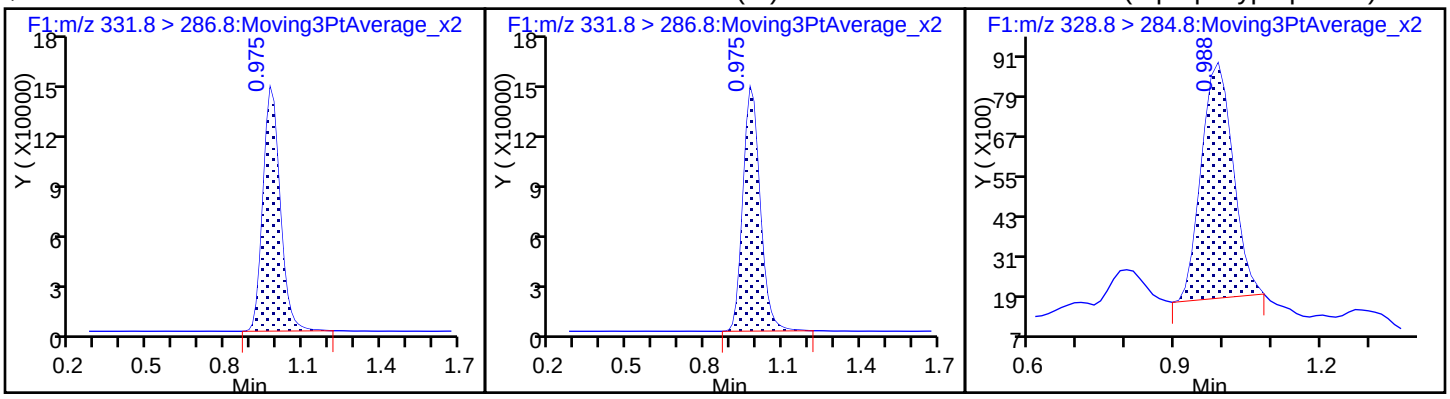
Report Date: 12-Mar-2018 10:54:13 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12024.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 09:32:16 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10862-A-7-A | Lab Sample ID: | 280-10862-7 | | |
| Client ID: | C-2812 R2 M0010 IMP COND | | | | |
| Operator ID: | JBH | ALS Bottle#: | 23 | Worklist Smp#: | 24 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12024.d | | | | |
| Lims ID: | 140-10862-A-7-A | | | | |
| Client ID: | C-2812 R2 M0010 IMP COND | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 12-Mar-2018 09:32:16 | ALS Bottle#: | 23 | Worklist Smp#: | 24 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 140-10862-A-7-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:04 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:50:47 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 9.08 | 90.78 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10862-1

SDG No.:

Client Sample ID: C-2819 R3 M0010 IMP COND | Lab Sample ID: 140-10862-11

Matrix: Air | Lab File ID: hfpo718C12025.d

Analysis Method: 8321A | Date Collected: 02/26/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:35

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.0164 | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 86 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12025.d
Lims ID: 140-10862-A-11-A
Client ID: C-2819 R3 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:35:31 ALS Bottle#: 24 Worklist Smp#: 25
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10862-A-11-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:51

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | 1.000 | 644570 | 8.63 | 3407 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | | 644570 | 10.0 | 3407 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 226661 | 3.27 | 89.1 | |

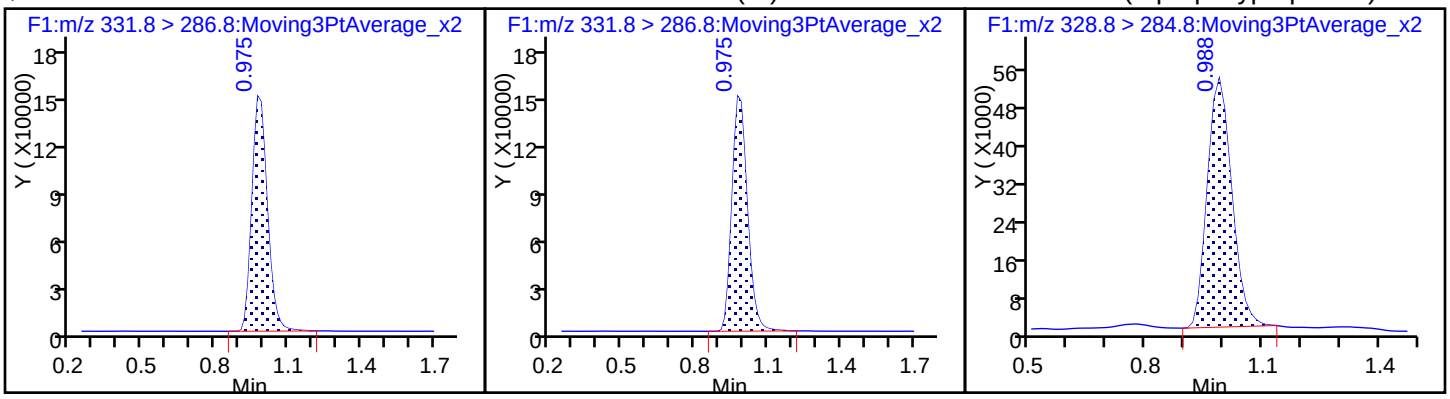
Report Date: 12-Mar-2018 10:54:15 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12025.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 09:35:31 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10862-A-11-A | Lab Sample ID: | 280-10862-11 | | |
| Client ID: | C-2819 R3 M0010 IMP COND | | | | |
| Operator ID: | JBH | ALS Bottle#: | 24 | Worklist Smp#: | 25 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12025.d
Lims ID: 140-10862-A-11-A
Client ID: C-2819 R3 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:35:31 ALS Bottle#: 24 Worklist Smp#: 25
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10862-A-11-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:51

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 8.63 | 86.33 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10862-1

SDG No.:

Client Sample ID: C-2826 R QC M0010 IMP COND BT | Lab Sample ID: 140-10862-15

Matrix: Air | Lab File ID: hfpo718C12026.d

Analysis Method: 8321A | Date Collected: 02/27/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:38

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.0157 | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 58 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12026.d
Lims ID: 140-10862-A-15-A
Client ID: C-2826 R QC M0010 IMP COND BT
Sample Type: Client
Inject. Date: 12-Mar-2018 09:38:47 ALS Bottle#: 25 Worklist Smp#: 26
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10862-A-15-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:54

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | 1.000 | 431951 | 5.79 | 2123 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | | 431951 | 10.0 | 2123 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 146054 | 3.14 | 49.9 | |

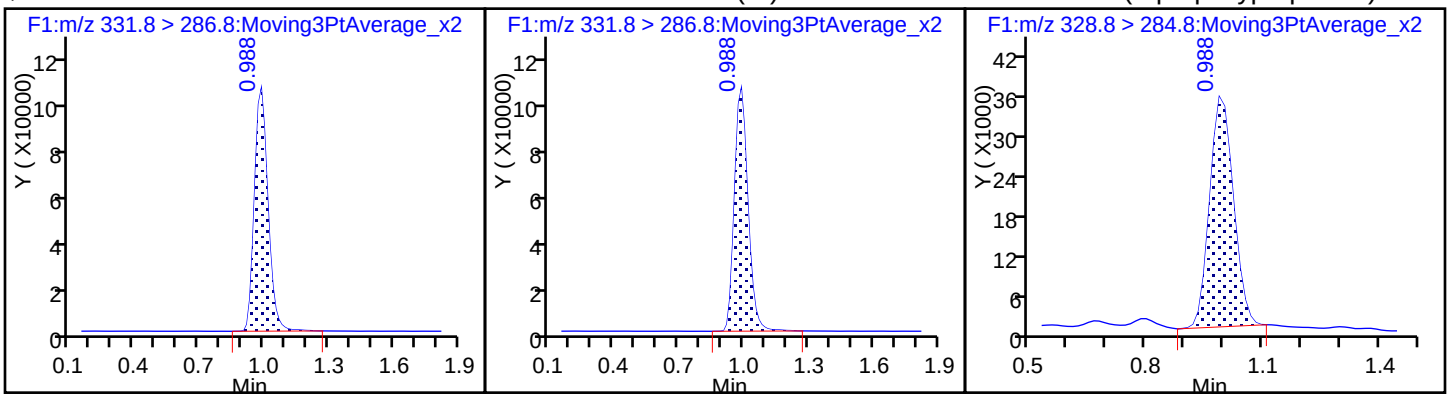
Report Date: 12-Mar-2018 10:54:17 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12026.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 09:38:47 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10862-A-15-A | Lab Sample ID: | 280-10862-15 | | |
| Client ID: | C-2826 R QC M0010 IMP COND BT | | | | |
| Operator ID: | JBH | ALS Bottle#: | 25 | Worklist Smp#: | 26 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12026.d
Lims ID: 140-10862-A-15-A
Client ID: C-2826 R QC M0010 IMP COND BT
Sample Type: Client
Inject. Date: 12-Mar-2018 09:38:47 ALS Bottle#: 25 Worklist Smp#: 26
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10862-A-15-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:54

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 5.79 | 57.86 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10862-1

SDG No.:

Client Sample ID: C-2829 R QC M0010 DI WATER RB | Lab Sample ID: 140-10862-17

Matrix: Air | Lab File ID: hfpo718C12027.d

Analysis Method: 8321A | Date Collected: 02/27/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:42

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | ND | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 95 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12027.d
Lims ID: 140-10862-A-17-A
Client ID: C-2829 R QC M0010 DI WATER RB
Sample Type: Client
Inject. Date: 12-Mar-2018 09:42:02 ALS Bottle#: 26 Worklist Smp#: 27
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10862-A-17-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:52:51

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | 1.000 | 711492 | 9.53 | 3452 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | | 711492 | 10.0 | 3452 | |

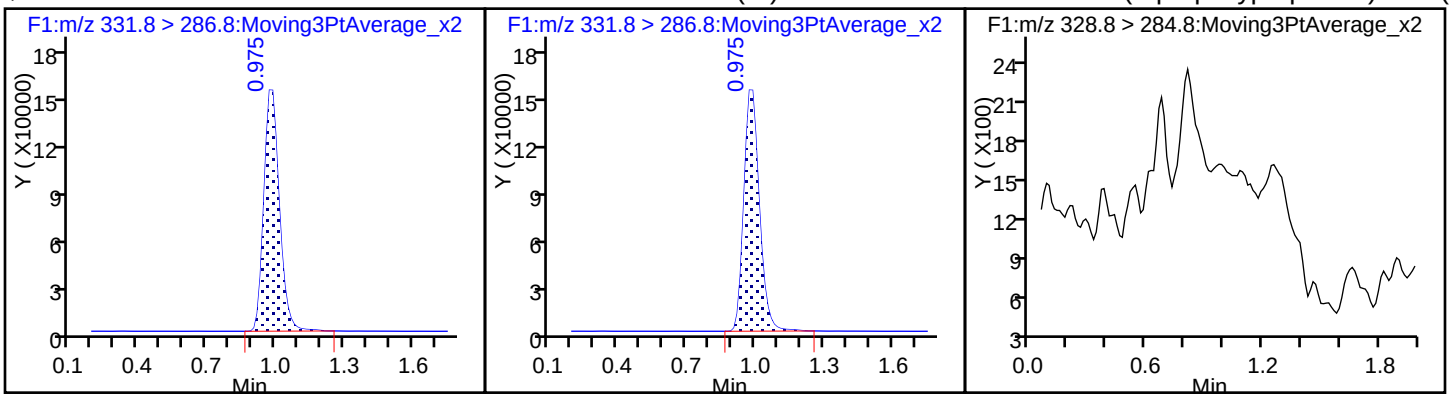
Report Date: 12-Mar-2018 10:54:20 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12027.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 09:42:02 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10862-A-17-A | Lab Sample ID: | 280-10862-17 | | |
| Client ID: | C-2829 R QC M0010 DI WATER RB | | | | |
| Operator ID: | JBH | ALS Bottle#: | 26 | Worklist Smp#: | 27 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid (ND)



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12027.d
Lims ID: 140-10862-A-17-A
Client ID: C-2829 R QC M0010 DI WATER RB
Sample Type: Client
Inject. Date: 12-Mar-2018 09:42:02 ALS Bottle#: 26 Worklist Smp#: 27
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10862-A-17-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:52:51

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 9.53 | 95.30 |

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10862-1 Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7 GC Column: Synergi Hyd ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05 Calibration End Date: 02/08/2018 13:31 Calibration ID: 31612

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | STD001 280-404345/3 | hfpo718B08034.d |
| Level 2 | STD002 280-404345/4 | hfpo718B08035.d |
| Level 3 | STD003 280-404345/5 | hfpo718B08036.d |
| Level 4 | STD004 280-404345/6 | hfpo718B08037.d |
| Level 5 | STD005 280-404345/7 | hfpo718B08038.d |
| Level 6 | STD006 280-404345/8 | hfpo718B08039.d |
| Level 7 | STD007 280-404345/9 | hfpo718B08040.d |
| Level 8 | STD008 280-404345/10 | hfpo718B08041.d |
| Level 9 | STD009 280-404345/11 | hfpo718B08042.d |

| ANALYTE | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | LVL 8 | LVL 9 | | RT WINDOW | AVG RT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | | 0.556 - 1.556 | 1.056 |
| 13C3 HFPO-DA | 1.042 | 1.042 | 1.042 | 1.042 | 1.042 | 1.042 | 1.042 | 1.056 | 1.056 | | 0.545 - 1.545 | 1.045 |

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 140-10862-1 Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7 GC Column: Synergi Hyd ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05 Calibration End Date: 02/08/2018 13:31 Calibration ID: 31612

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | STD001 280-404345/3 | hfpo718B08034.d |
| Level 2 | STD002 280-404345/4 | hfpo718B08035.d |
| Level 3 | STD003 280-404345/5 | hfpo718B08036.d |
| Level 4 | STD004 280-404345/6 | hfpo718B08037.d |
| Level 5 | STD005 280-404345/7 | hfpo718B08038.d |
| Level 6 | STD006 280-404345/8 | hfpo718B08039.d |
| Level 7 | STD007 280-404345/9 | hfpo718B08040.d |
| Level 8 | STD008 280-404345/10 | hfpo718B08041.d |
| Level 9 | STD009 280-404345/11 | hfpo718B08042.d |

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LVL 1 LVL 5 LVL 9 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 LVL 8 | | B | M1 | M2 | | | | | | | | |
| 13C3 HFPO-DA | 75771 75244 71284 | 75964 75940 | 72010 75039 | 77000 73687 | Ave | | 74659.8778 | | | | 2.6 | | 30.0 | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 140-10862-1 Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7 GC Column: Synergi Hyd ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05 Calibration End Date: 02/08/2018 13:31 Calibration ID: 31612

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| HFPO-DA | 1.1630<br>1.1128 | 1.1250<br>1.0911 | 1.0756<br>1.0665 | 1.0527<br>1.0507 | 1.1211 | Lin1 | 0.0361 | 1.0638 | | | | | | | 1.0000 | | 0.9900 |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 140-10862-1 Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7 GC Column: Synergi Hyd ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05 Calibration End Date: 02/08/2018 13:31 Calibration ID: 31612

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | STD001 280-404345/3 | hfpo718B08034.d |
| Level 2 | STD002 280-404345/4 | hfpo718B08035.d |
| Level 3 | STD003 280-404345/5 | hfpo718B08036.d |
| Level 4 | STD004 280-404345/6 | hfpo718B08037.d |
| Level 5 | STD005 280-404345/7 | hfpo718B08038.d |
| Level 6 | STD006 280-404345/8 | hfpo718B08039.d |
| Level 7 | STD007 280-404345/9 | hfpo718B08040.d |
| Level 8 | STD008 280-404345/10 | hfpo718B08041.d |
| Level 9 | STD009 280-404345/11 | hfpo718B08042.d |

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (UG/L) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 |
| 13C3 HFPO-DA | Ave | 757714<br>759397 | 759642<br>750388 | 720099<br>736869 | 769995<br>712841 | 752444 | 10.0<br>10.0 | 10.0<br>10.0 | 10.0<br>10.0 | 10.0<br>10.0 | 10.0 |

Curve Type Legend:
Ave = Average

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver  Job No.: 140-10862-1  Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7  GC Column: Synergi Hyd ID:  Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05  Calibration End Date: 02/08/2018 13:31  Calibration ID: 31612

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | STD001 280-404345/3 | hfpo718B08034.d |
| Level 2 | STD002 280-404345/4 | hfpo718B08035.d |
| Level 3 | STD003 280-404345/5 | hfpo718B08036.d |
| Level 4 | STD004 280-404345/6 | hfpo718B08037.d |
| Level 5 | STD005 280-404345/7 | hfpo718B08038.d |
| Level 6 | STD006 280-404345/8 | hfpo718B08039.d |
| Level 7 | STD007 280-404345/9 | hfpo718B08040.d |
| Level 8 | STD008 280-404345/10 | hfpo718B08041.d |
| Level 9 | STD009 280-404345/11 | hfpo718B08042.d |

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (UG/L) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 |
| HFPO-DA | 13CP<br>ODA | Lin1 | 22031<br>845082 | 42730<br>2046873 | 77455<br>3929397 | 162117<br>7489478 | 421775 | 0.250<br>10.0 | 0.500<br>25.0 | 1.00<br>50.0 | 2.00<br>100 | 5.00 |

Curve Type Legend:
Lin1 = Linear 1/conc ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08034.d
Lims ID: std001
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 08-Feb-2018 13:05:38 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L1
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:13 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:04

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 757714 | 10.0 | 1562 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 757714 | 10.1 | 1562 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | M |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 22031 | 0.2394 | 4.4 | M |

## QC Flag Legend

Review Flags
M - Manually Integrated

## Reagents:

HFPO_CAL-1_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:13 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08034.d

Injection Date: 08-Feb-2018 13:05:38 Instrument ID: LC_LCMS7

Lims ID: std001

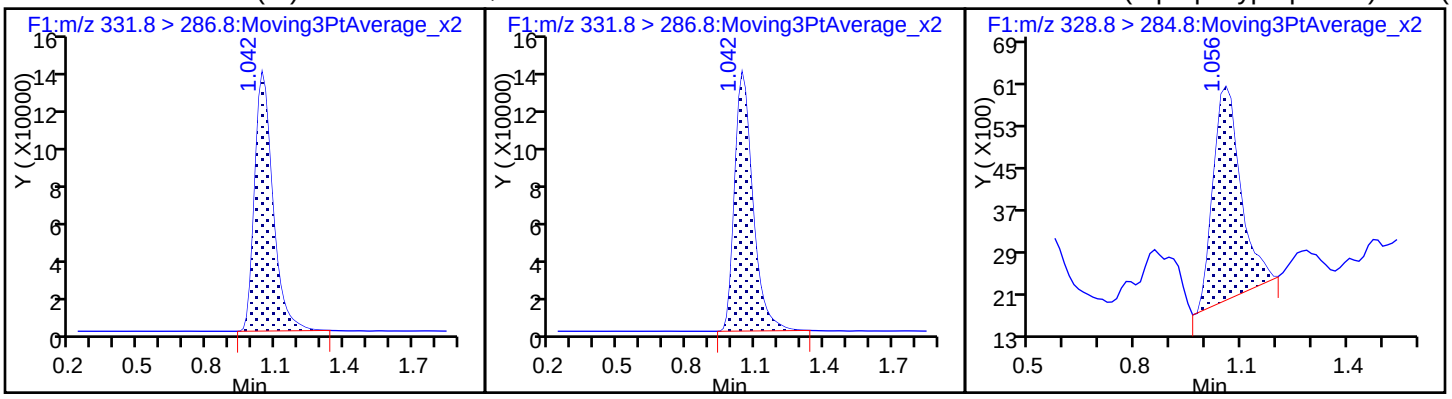
Client ID:

Operator ID: JBH ALS Bottle#: 2 Worklist Smp#: 3

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid (M)



Manual Integration/User Assign Peak Report

TestAmerica Denver

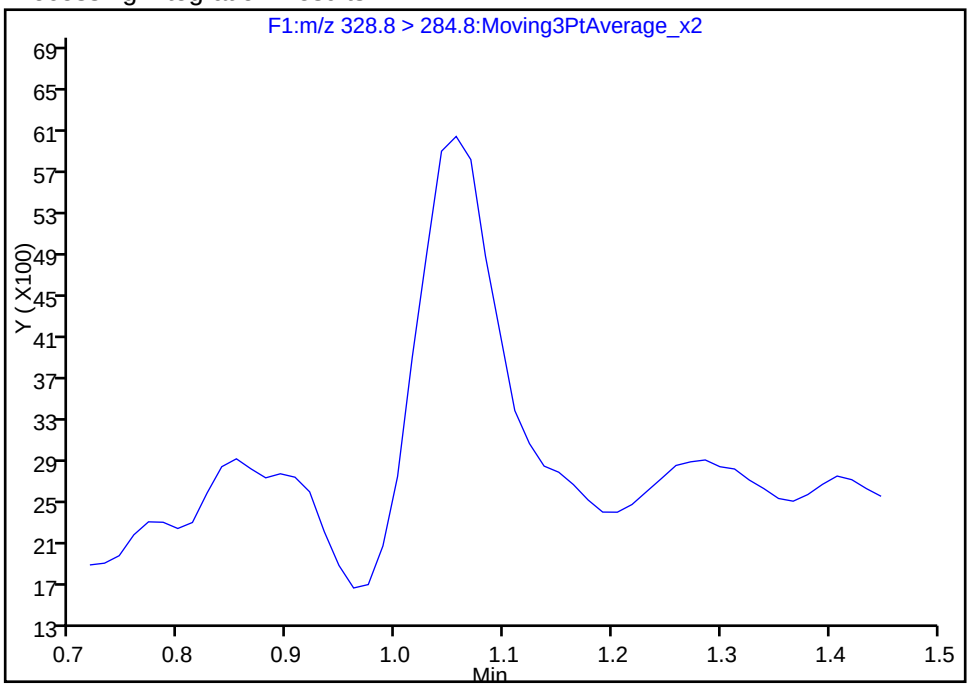
Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08034.d
Injection Date: 08-Feb-2018 13:05:38 Instrument ID: LC_LCMS7
Lims ID: std001
Client ID:
Operator ID: JBH ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: HFPO Limit Group: LC - 8321A_HFPO_Du
Column: Detector F1:MRM

## 1 Perfluoro(2-propoxypropanoic) acid, CAS: 13252-13-6

Signal: 1

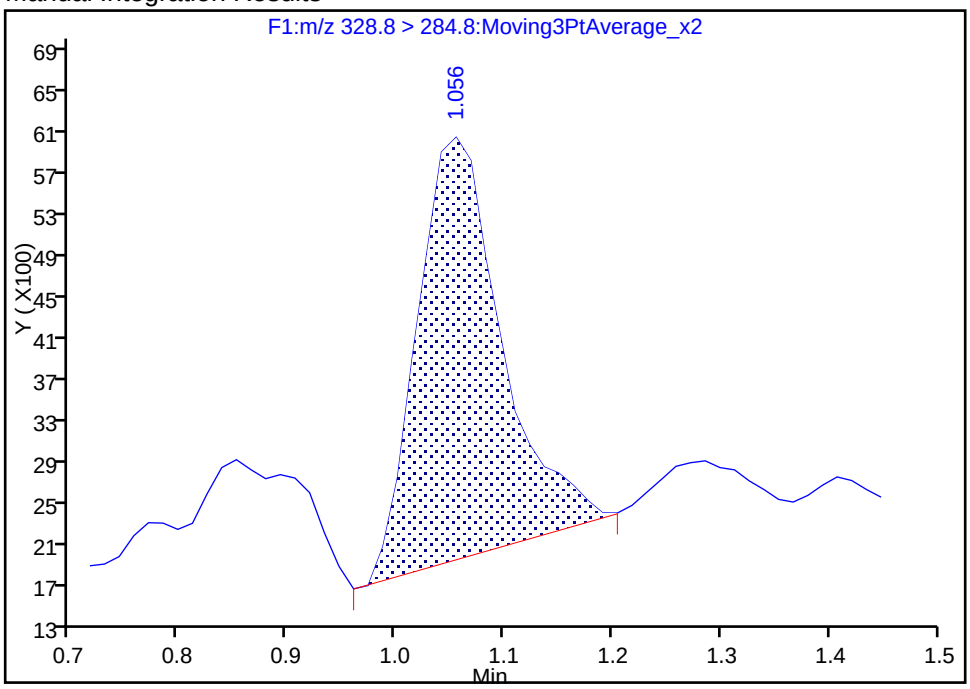
Not Detected
Expected RT: 1.06

Processing Integration Results




Manual Integration Results

RT: 1.06
Area: 22031
Amount: 0.239356
Amount Units: ug/l




Reviewer: meyera, 08-Feb-2018 15:19:01
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08035.d
Lims ID: std002
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 08-Feb-2018 13:08:52 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L2
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:14 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:16

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 759642 | 10.2 | 1267 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 759642 | 10.0 | 1267 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | M |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 42730 | 0.4948 | 6.5 | M |

## QC Flag Legend

Review Flags
M - Manually Integrated

## Reagents:

HFPO_CAL-2_00033 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:14 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08035.d

Injection Date: 08-Feb-2018 13:08:52 Instrument ID: LC_LCMS7

Lims ID: std002

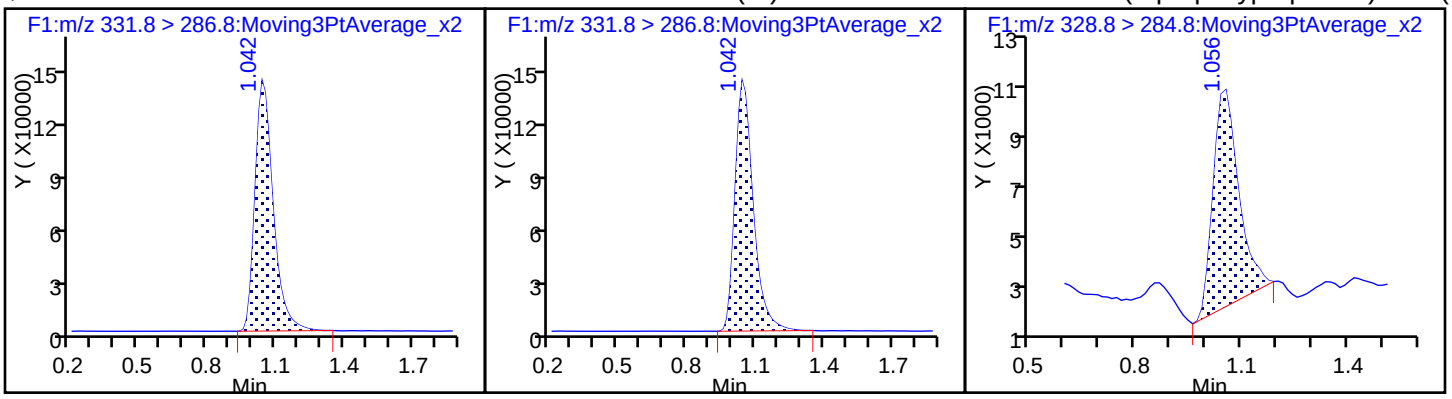
Client ID:

Operator ID: JBH ALS Bottle#: 3 Worklist Smp#: 4

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid (M)



Manual Integration/User Assign Peak Report

TestAmerica Denver

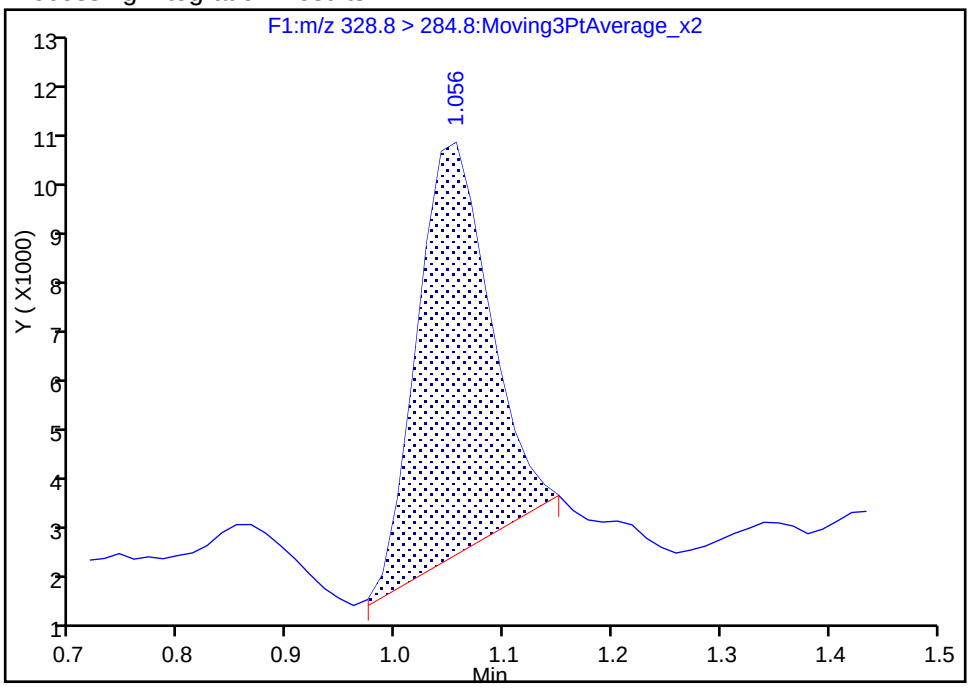
Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08035.d
Injection Date: 08-Feb-2018 13:08:52 Instrument ID: LC_LCMS7
Lims ID: std002
Client ID:
Operator ID: JBH ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: HFPO Limit Group: LC - 8321A_HFPO_Du
Column: Detector F1:MRM

## 1 Perfluoro(2-propoxypropanoic) acid, CAS: 13252-13-6

Signal: 1

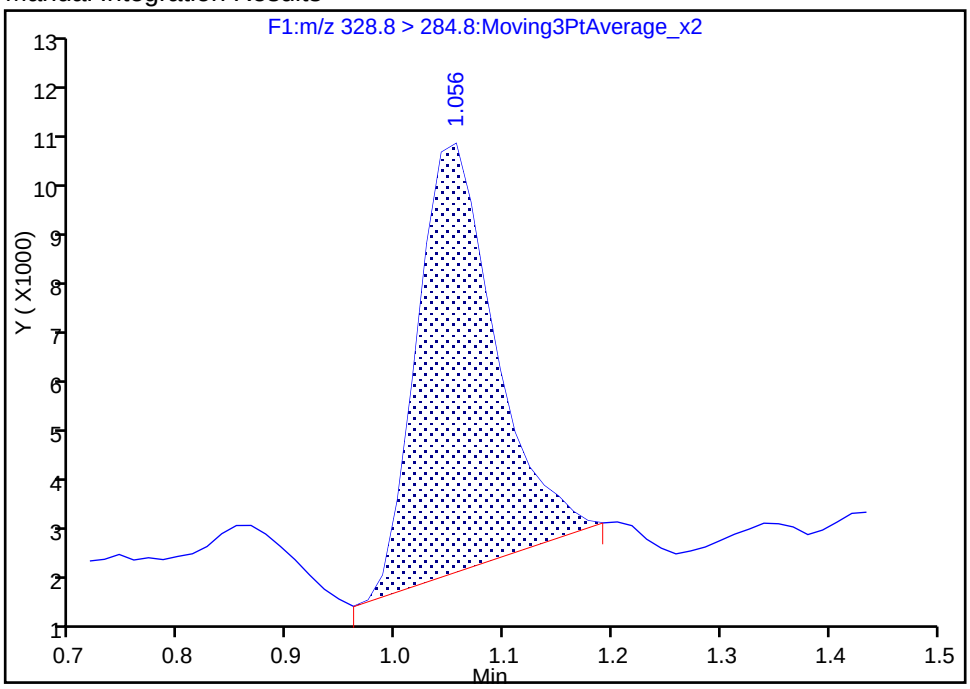
Processing Integration Results

RT: 1.06
Area: 38092
Amount: 0.452274
Amount Units: ug/l




Manual Integration Results

RT: 1.06
Area: 42730
Amount: 0.494804
Amount Units: ug/l




Reviewer: meyera, 08-Feb-2018 15:19:12
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08036.d
Lims ID: std003
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 08-Feb-2018 13:12:06 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L3
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:14 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:19

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 720099 | 10.0 | 956 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 720099 | 9.65 | 956 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 77455 | 0.9771 | 10.6 | |

## Reagents:

HFPO_CAL-3_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:15 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08036.d

Injection Date: 08-Feb-2018 13:12:06 Instrument ID: LC_LCMS7

Lims ID: std003

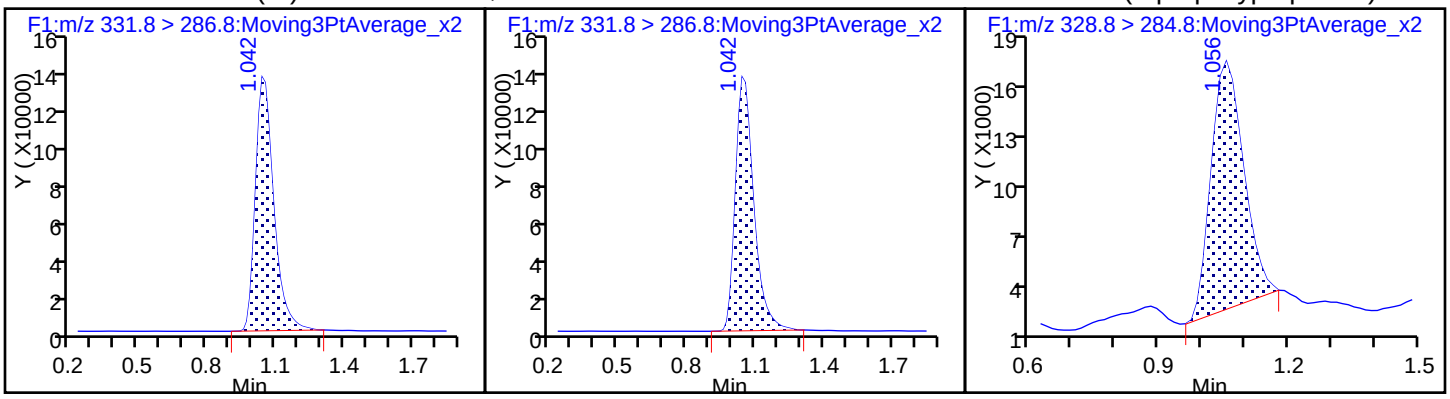
Client ID:

Operator ID: JBH ALS Bottle#: 4 Worklist Smp#: 5

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08037.d
Lims ID: std004
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 08-Feb-2018 13:15:21 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L4
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:15 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:22

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 769995 | 10.3 | 1154 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 769995 | 10.0 | 1154 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 162117 | 1.95 | 26.1 | |

## Reagents:

HFPO_CAL-4_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:15 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08037.d

Injection Date: 08-Feb-2018 13:15:21 Instrument ID: LC_LCMS7

Lims ID: std004

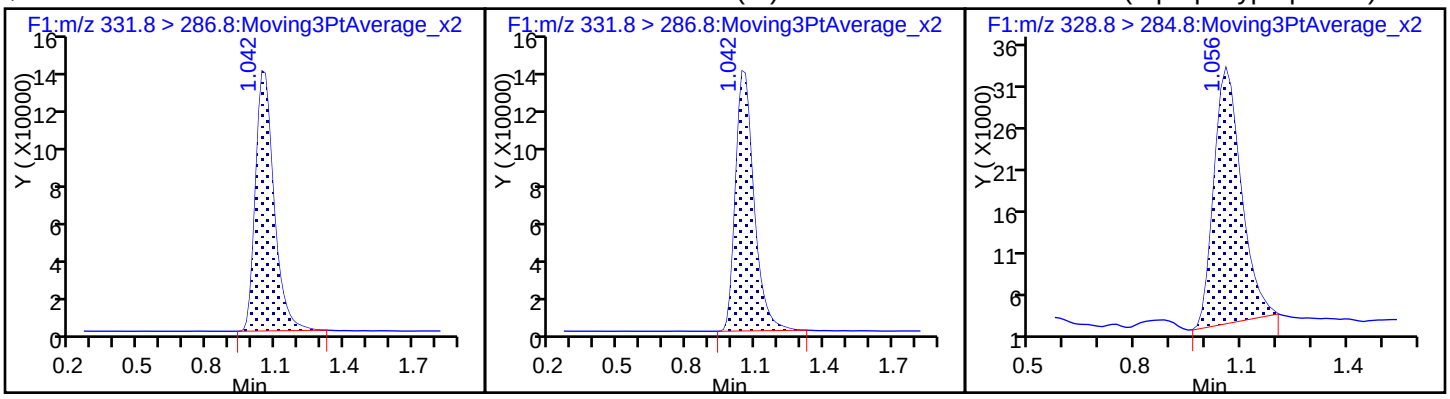
Client ID:

Operator ID: JBH ALS Bottle#: 5 Worklist Smp#: 6

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08038.d
Lims ID: std005
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 08-Feb-2018 13:18:35 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L5
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:15 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:24

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 752444 | 10.0 | 1072 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 752444 | 10.1 | 1072 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 421775 | 5.24 | 66.0 | |

## Reagents:

HFPO_CAL-5_00080 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:16 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08038.d

Injection Date: 08-Feb-2018 13:18:35 Instrument ID: LC_LCMS7

Lims ID: std005

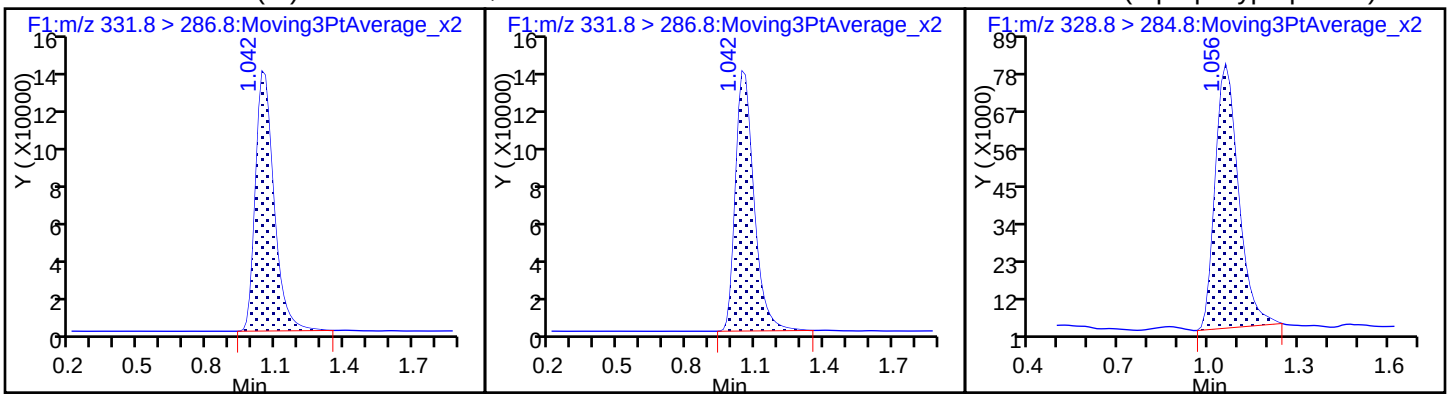
Client ID:

Operator ID: JBH ALS Bottle#: 6 Worklist Smp#: 7

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08039.d
Lims ID: std006
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 08-Feb-2018 13:21:49 ALS Bottle#: 7 Worklist Smp#: 8
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L6
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:16 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:26

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 759397 | 10.2 | 1193 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 759397 | 10.0 | 1193 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 845082 | 10.4 | 146 | |

## Reagents:

HFPO_CAL-6_00080 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:16 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08039.d

Injection Date: 08-Feb-2018 13:21:49 Instrument ID: LC_LCMS7

Lims ID: std006

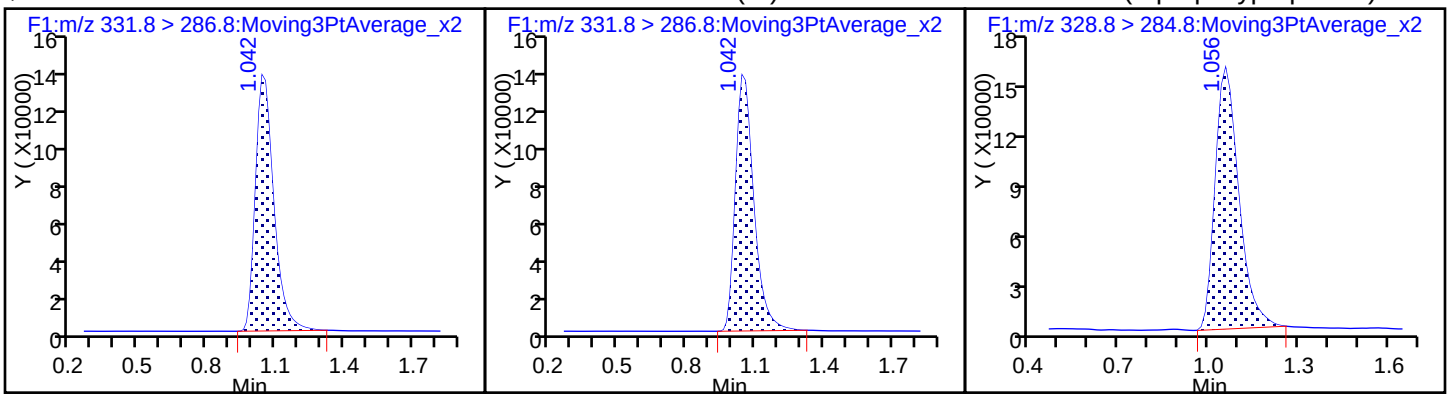
Client ID:

Operator ID: JBH ALS Bottle#: 7 Worklist Smp#: 8

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08040.d
Lims ID: std007
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 08-Feb-2018 13:25:03 ALS Bottle#: 8 Worklist Smp#: 9
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L7
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:16 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:28

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 750388 | 10.0 | 1247 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 750388 | 10.1 | 1247 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 2046873 | 25.6 | 246 | |

## Reagents:

HFPO_CAL-7_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:17 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08040.d

Injection Date: 08-Feb-2018 13:25:03 Instrument ID: LC_LCMS7

Lims ID: std007

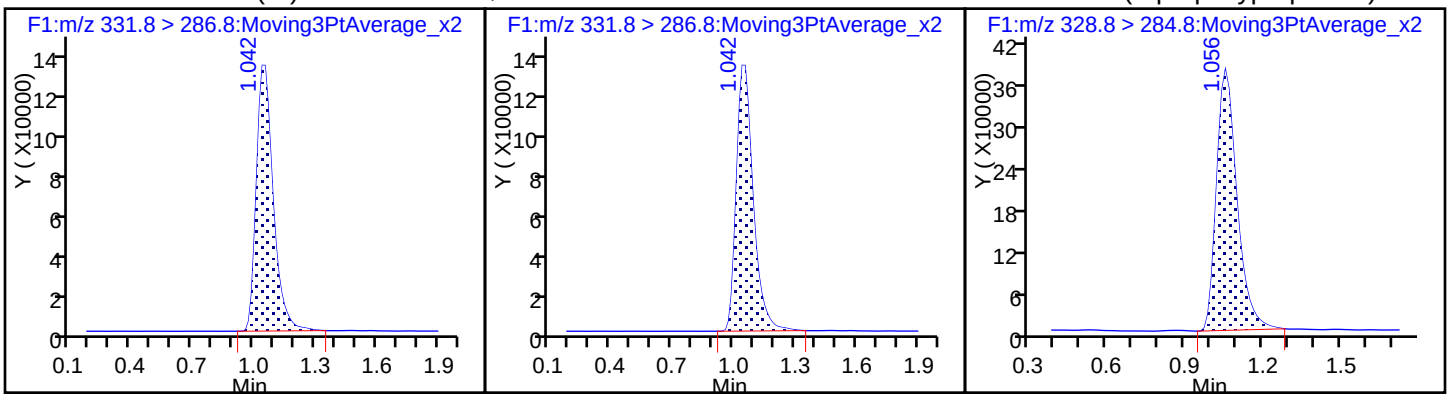
Client ID:

Operator ID: JBH ALS Bottle#: 8 Worklist Smp#: 9

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08041.d
Lims ID: std008
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 08-Feb-2018 13:28:18 ALS Bottle#: 9 Worklist Smp#: 10
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L8
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:17 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:30

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.056 | 1.045 | 0.011 | 1.000 | 736869 | 9.87 | 1055 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.056 | 1.045 | 0.011 | | 736869 | 10.0 | 1055 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 3929397 | 50.1 | 416 | |

## Reagents:

HFPO_CAL-8_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:17 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08041.d

Injection Date: 08-Feb-2018 13:28:18 Instrument ID: LC_LCMS7

Lims ID: std008

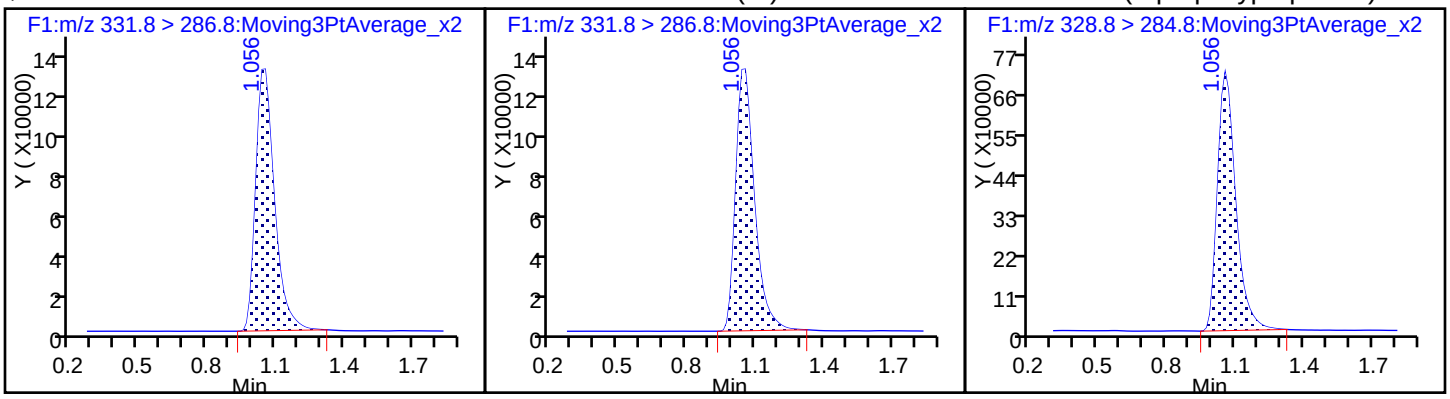
Client ID:

Operator ID: JBH ALS Bottle#: 9 Worklist Smp#: 10

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d
Lims ID: std009
Client ID:
Sample Type: IC Calib Level: 9
Inject. Date: 08-Feb-2018 13:31:32 ALS Bottle#: 10 Worklist Smp#: 11
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L9
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:17 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:38

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.056 | 1.045 | 0.011 | | 712841 | 10.0 | 1141 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.056 | 1.045 | 0.011 | 1.000 | 712841 | 9.55 | 1141 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 7489478 | 98.7 | 561 | |

## Reagents:

HFPO_CAL-9_00001 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:18 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Injection Date: 08-Feb-2018 13:31:32 Instrument ID: LC_LCMS7

Lims ID: std009

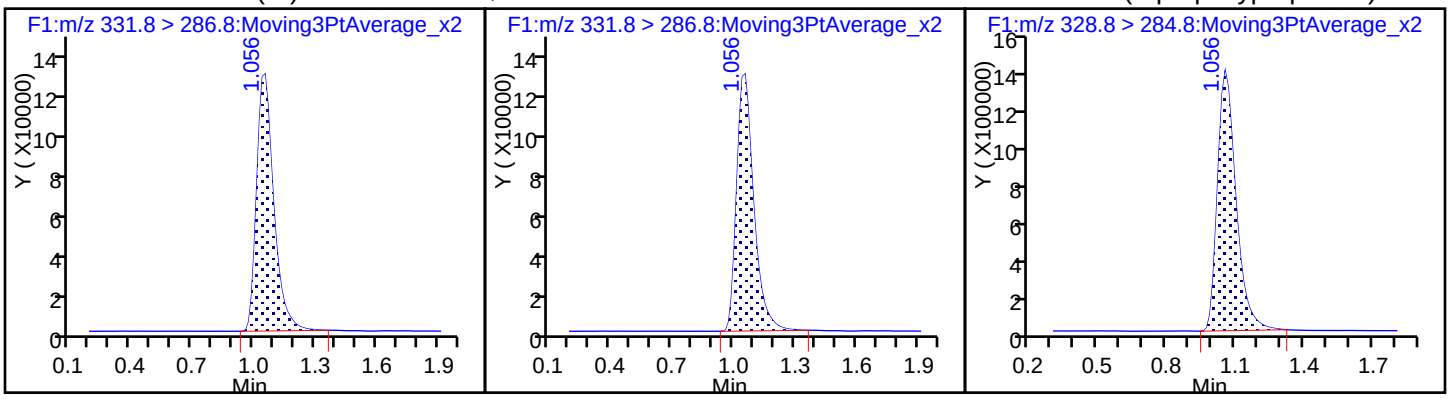
Client ID:

Operator ID: JBH ALS Bottle#: 10 Worklist Smp#: 11

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Lab Sample ID: CCV 280-407567/18 Calibration Date: 03/12/2018 09:12

Instrument ID: LC_LCMS7 Calib Start Date: 02/08/2018 13:05

GC Column: Synergi Hydro ID: Calib End Date: 02/08/2018 13:31

Lab File ID: hfpo718C12018.d Conc. Units: ug/L

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|---|---|---|---|---|---|---|---|---|
| HFPO-DA | Lin1 | | 0.9658 | | 9.04 | 10.0 | -9.6 | 20.0 |
| 13C3 HFPO-DA | Ave | 74660 | 55461 | | 7.43 | 10.0 | -25.7 | |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12018.d
Lims ID: CCV L6
Client ID:
Sample Type: CCV
Inject. Date: 12-Mar-2018 09:12:45 ALS Bottle#: 4 Worklist Smp#: 18
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: CCV L6
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:25

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | 1.000 | 554608 | 7.43 | 2070 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | | 554608 | 10.0 | 2070 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.042 | 1.056 | -0.014 | 1.000 | 535617 | 9.04 | 147 | |

## Reagents:

HFPO_CAL-6_00083 Amount Added: 1.00 Units: mL

Report Date: 12-Mar-2018 10:54:05 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12018.d

Injection Date: 12-Mar-2018 09:12:45 Instrument ID: LC_LCMS7

Lims ID: CCV L6

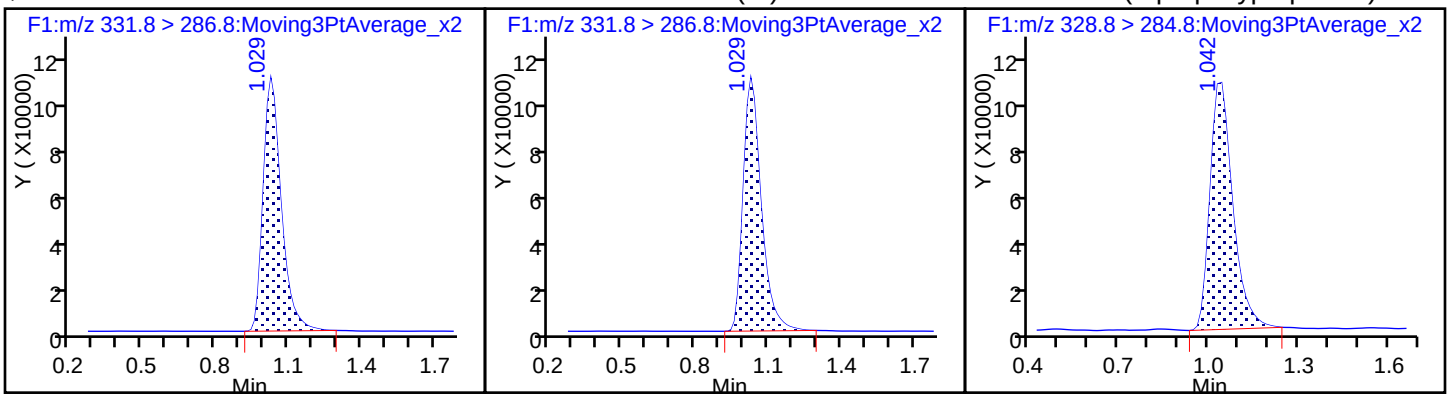
Client ID:

Operator ID: JBH ALS Bottle#: 4 Worklist Smp#: 18

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Lab Sample ID: CCV 280-407567/28 Calibration Date: 03/12/2018 09:45

Instrument ID: LC_LCMS7 Calib Start Date: 02/08/2018 13:05

GC Column: Synergi Hydro ID: Calib End Date: 02/08/2018 13:31

Lab File ID: hfpo718C12028.d Conc. Units: ug/L

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|---|---|---|---|---|---|---|---|---|
| HFPO-DA | Lin1 | | 1.105 | | 5.16 | 5.00 | 3.2 | 20.0 |
| 13C3 HFPO-DA | Ave | 74660 | 55461 | | 7.43 | 10.0 | -25.7 | |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12028.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 12-Mar-2018 09:45:17 ALS Bottle#: 3 Worklist Smp#: 28
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:52:55

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.015 | 1.045 | -0.030 | 1.000 | 554610 | 7.43 | 1522 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.015 | 1.045 | -0.030 | | 554610 | 10.0 | 1522 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.015 | 1.056 | -0.041 | 1.000 | 306348 | 5.16 | 91.8 | |

## Reagents:

HFPO_CAL-5_00083 Amount Added: 1.00 Units: mL

Report Date: 12-Mar-2018 10:54:21 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12028.d

Injection Date: 12-Mar-2018 09:45:17 Instrument ID: LC_LCMS7

Lims ID: CCV L5

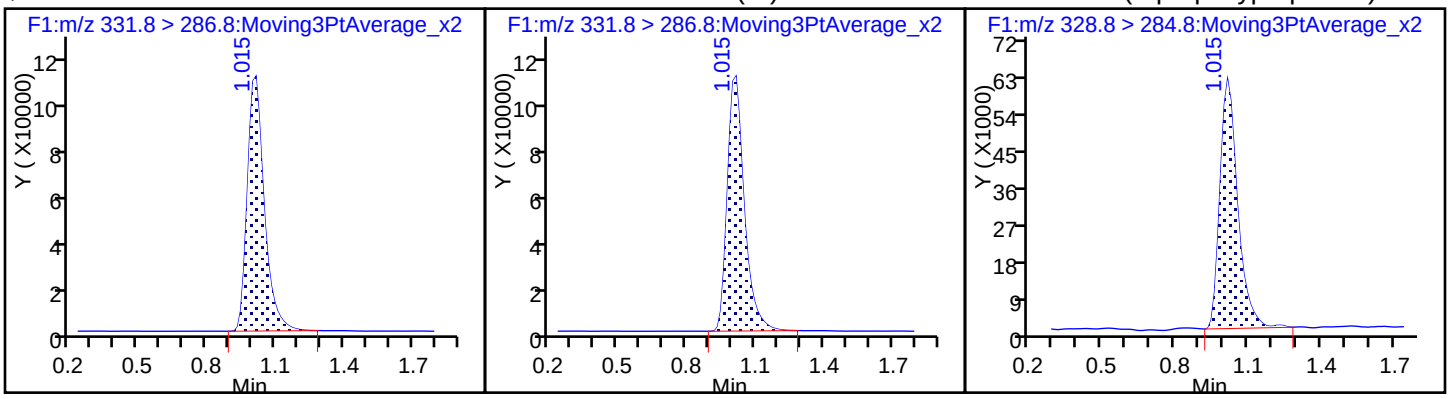
Client ID:

Operator ID: JBH ALS Bottle#: 3 Worklist Smp#: 28

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid

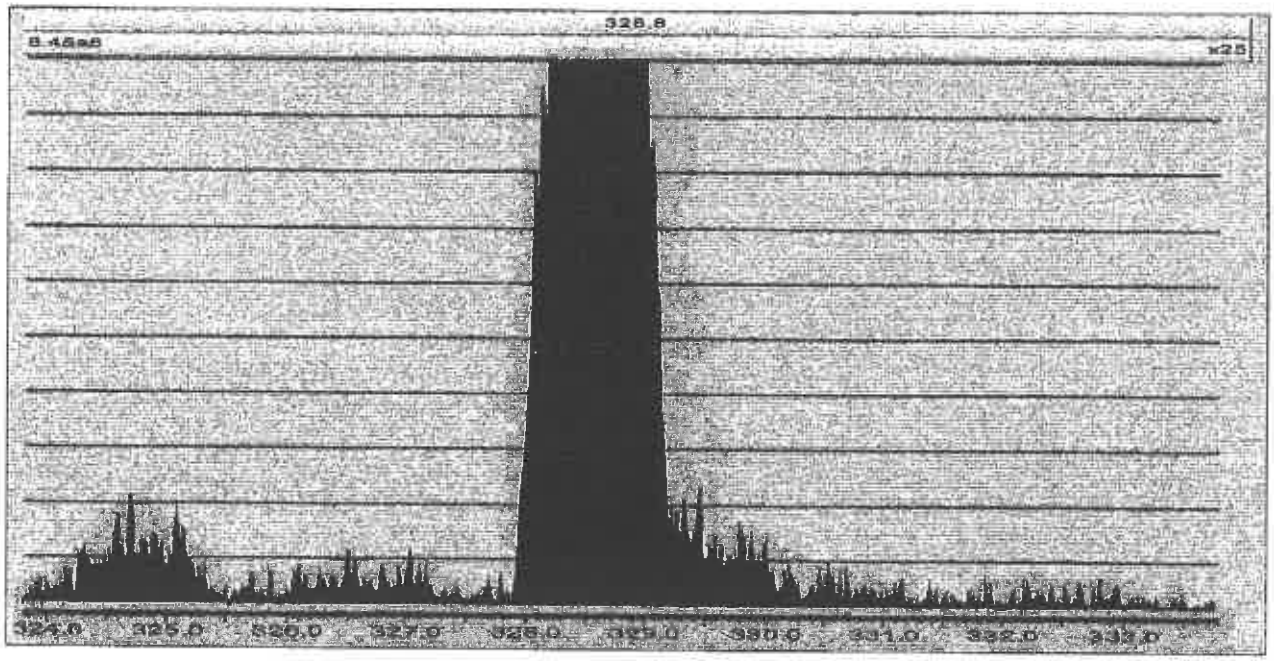


**Waters Xevo TQ MS Detector Tune Parameters - MassLynx 4.1 SCN 843**

File: C:\MassLynx\8321.PRO\ACQUDB\HFPOMRM.ipr

Instrument: XEVO-TQMS#VBA453

Printed: Monday, March 12, 2018 08:05:24 Mountain Daylight Time




| Type | Start Mass | End Mass | Set Mass |
|---|---|---|---|
| MS1 Scan | 323.80 | 333.80 | |

| Source (ES-) | Settings | Readbacks |
|---|---|---|
| Capillary (kV) | 0.50 | 0.53 |
| Cone (V) | 10.00 | -21.06 |
| Extractor (V) | 3.00 | -10.61 |
| Source Temperature (°C) | 120 | 120 |
| Desolvation Temperature (°C) | 200 | 200 |
| Cone Gas Flow (L/Hr) | 50 | 49 |
| Desolvation Gas Flow (L/Hr) | 800 | 795 |
| Collision Gas Flow (mL/Min) | 0.15 | 0.04 |

| Analyser | Settings | Readbacks |
|---|---|---|
| LM 1 Resolution | 2.8 | |
| HM 1 Resolution | 14.6 | |
| Ion Energy 1 | 0.7 | |
| MS Mode Collision Energy | 7.00 | |
| MSMS Mode Collision Energy | 20.00 | |
| MS Mode Entrance | 0.50 | |
| MS Mode Exit | 0.50 | |
| Gas On MS Mode Entrance | 0.50 | |
| Gas On MS Mode Exit | 0.50 | |
| Gas On MSMS Mode Entrance | 0.50 | |
| Gas On MSMS Mode Exit | 0.50 | |
| Gas Off MS Mode Entrance | 30.00 | |
| Gas Off MS Mode Exit | 30.00 | |
| Gas Off MSMS Mode Entrance | 2.00 | |
| Gas Off MSMS Mode Exit | 2.00 | |
| ScanWave MS Mode Entrance | 0.50 | |
| ScanWave MS Mode Exit | 0.50 | |
| ScanWave MSMS Mode Entrance | 0.50 | |
| ScanWave MSMS Mode Exit | 0.50 | |
| LM 2 Resolution | 2.9 | |
| HM 2 Resolution | 14.7 | |
| Ion Energy 2 | 0.3 | |

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3/13/18

File: C:\MassLynx\8321.PRO\ACQUDB\HFPOMRM.ipr

Instrument: XEVO-TQMS#VBA453

Printed: Monday, March 12, 2018 08:05:24 Mountain Daylight Time

| | |
|---|---|
| Multiplier | 523.81 |
| Active Reservoir | A |

**Pressure Gauges**

| | |
|---|---|
| Collision Cell Pressure (mbar) | 7.830201e-005 |

**Instrument Configuration**

Automatic Mode

| | | |
|---|---|---|
| MS Inter-scan delay (secs) | 0.005 | |
| Polarity/Mode switch Inter-scan delay (secs) | | 0.020 |
| Enhanced Inter-scan delay (secs) | | 0.020 |

Inter-channel delay - See Tables

MS 1 Delay Table:

| R | delay |
|---|---|
| <= 0.500 | 0.005 |
| <= 2.000 | 0.008 |
| <= 4.000 | 0.010 |
| <= 11.000 | 0.012 |
| > 11.000 | 0.014 |

MS 2 Delay Table:

| R | delay |
|---|---|
| <= 8.000 | 0.005 |
| <= 25.000 | 0.005 |
| > 25.000 | 0.007 |

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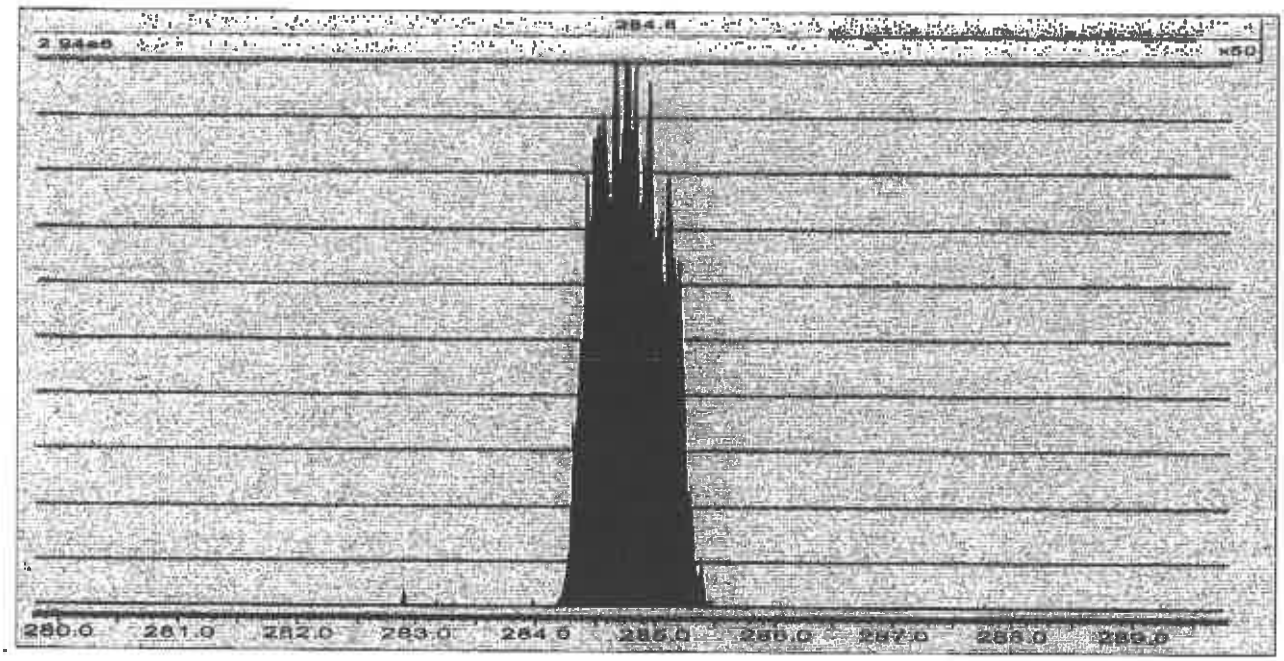
File: C:\MassLynx\8321.PRO\ACQUDB\HFPOMRM.lpr

Instrument: XEVO-TQMS#VBA453

Printed: Monday, March 12, 2018 08:06:05 Mountain Daylight Time




| Type | Start Mass | End Mass | Set Mass |
|---|---|---|---|
| Daughter Scan | 279.80 | 289.80 | 328.80 |

| Source (ES-) | Settings | Readbacks |
|---|---|---|
| Capillary (kV) | 0.50 | 0.52 |
| Cone (V) | 10.00 | -21.06 |
| Extractor (V) | 3.00 | -10.61 |
| Source Temperature (°C) | 120 | 120 |
| Desolvation Temperature (°C) | 200 | 200 |
| Cone Gas Flow (L/Hr) | 50 | 50 |
| Desolvation Gas Flow (L/Hr) | 800 | 791 |
| Collision Gas Flow (mL/Min) | 0.15 | 0.14 |

| Analyser | Settings | Readbacks |
|---|---|---|
| LM 1 Resolution | 2.8 | |
| HM 1 Resolution | 14.8 | |
| Ion Energy 1 | 0.7 | |
| MS Mode Collision Energy | 7.00 | |
| MSMS Mode Collision Energy | 20.00 | |
| MS Mode Entrance | 0.50 | |
| MS Mode Exit | 0.50 | |
| Gas On MS Mode Entrance | 0.50 | |
| Gas On MS Mode Exit | 0.50 | |
| Gas On MSMS Mode Entrance | 0.50 | |
| Gas On MSMS Mode Exit | 0.50 | |
| Gas Off MS Mode Entrance | 30.00 | |
| Gas Off MS Mode Exit | 30.00 | |
| Gas Off MSMS Mode Entrance | 2.00 | |
| Gas Off MSMS Mode Exit | 2.00 | |
| ScanWave MS Mode Entrance | 0.50 | |
| ScanWave MS Mode Exit | 0.50 | |
| ScanWave MSMS Mode Entrance | 0.50 | |
| ScanWave MSMS Mode Exit | 0.50 | |
| LM 2 Resolution | 2.9 | |
| HM 2 Resolution | 14.7 | |
| Ion Energy 2 | 0.3 | |

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File: C:\MassLynx\8321.PRO\ACQUDB\HFPOMRM.ipr

Instrument: XEVO-TQMS#VBA453

Printed: Monday, March 12, 2018 08:06:05 Mountain Daylight Time

| | |
|---|---|
| Multiplier | 523.81 |
| Active Reservoir | A |

**Pressure Gauges**

| | |
|---|---|
| Collision Cell Pressure (mbar) | 1.119026e-003 |

**Instrument Configuration**

| | | |
|---|---|---|
| Automatic Mode | | |
| MS Inter-scan delay (secs) | 0.005 | |
| Polarity/Mode switch inter-scan delay (secs) | | 0.020 |
| Enhanced inter-scan delay (secs) | | 0.020 |
| Inter-channel delay - See Tables | | |

MS 1 Delay Table:

| R | delay |
|---|---|
| <= 0.500 | 0.005 |
| <= 2.000 | 0.008 |
| <= 4.000 | 0.010 |
| <= 11.000 | 0.012 |
| > 11.000 | 0.014 |

MS 2 Delay Table:

| R | delay |
|---|---|
| <= 8.000 | 0.005 |
| <= 25.000 | 0.005 |
| > 25.000 | 0.007 |

dmdapam
3/13/18

File: c:\masslynx\8321.pro\acqudb\hfpo.exp

Printed: Monday, March 12, 2018 10:32:13 Mountain Daylight Time

| | |
|---|---|
| Creation Time | Fri 18 Nov 2016 09:08:40 |
| Instrument Identifier | XEVO-TQMS#VBA453 |
| Version Number | 1.0 |
| Duration (min) | 2.0 |
| Calibration Filename | C:\MassLynx\IntelliStart\Results\Unit Mass Resolution\Calibration_20100811_2.cal |
| Solvent Delay Divert Valve Enabled | 0 |
| Number Of Functions | 1 |

**Function 1 : MRM of 2 mass pairs, Time 0.00 to 2.00, ES-**

| | |
|---|---|
| Type | MRM |
| Ion Mode | ES- |
| Inter Channel Delay (sec) | -1.000 |
| InterScan Time (sec) | -1.000 |
| Span (Da) | 0.5 |
| Start Time (min) | 0.0 |
| End Time (min) | 2.0 |

| Ch | Prnt(Da) | Dau(Da) | Dwell(s) | Cone(V) | Coll(eV) | Delay(s) | Compound |
|---|---|---|---|---|---|---|---|
| 1 | 329.80 | 284.80 | 0.400 | 10.00 | 7.00 | -1.000 | HFPO |
| 2 | 331.80 | 286.80 | 0.400 | 10.00 | 7.00 | -1.000 | HFPO IS |

chudapan

3/13/18.

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10862-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-406765/1-A

Matrix: Air | Lab File ID: hfpo718C12019.d

Analysis Method: 8321A | Date Collected:

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:16

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | ND | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 94 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12019.d
Lims ID: MB 280-406765/1-A
Client ID:
Sample Type: MB
Inject. Date: 12-Mar-2018 09:16:02 ALS Bottle#: 18 Worklist Smp#: 19
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: MB280-406765/1-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:29

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | 1.000 | 701542 | 9.40 | 2791 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | | 701542 | 10.0 | 2791 | |

Report Date: 12-Mar-2018 10:54:06 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12019.d

Injection Date: 12-Mar-2018 09:16:02 Instrument ID: LC_LCMS7

Lims ID: MB 280-406765/1-A

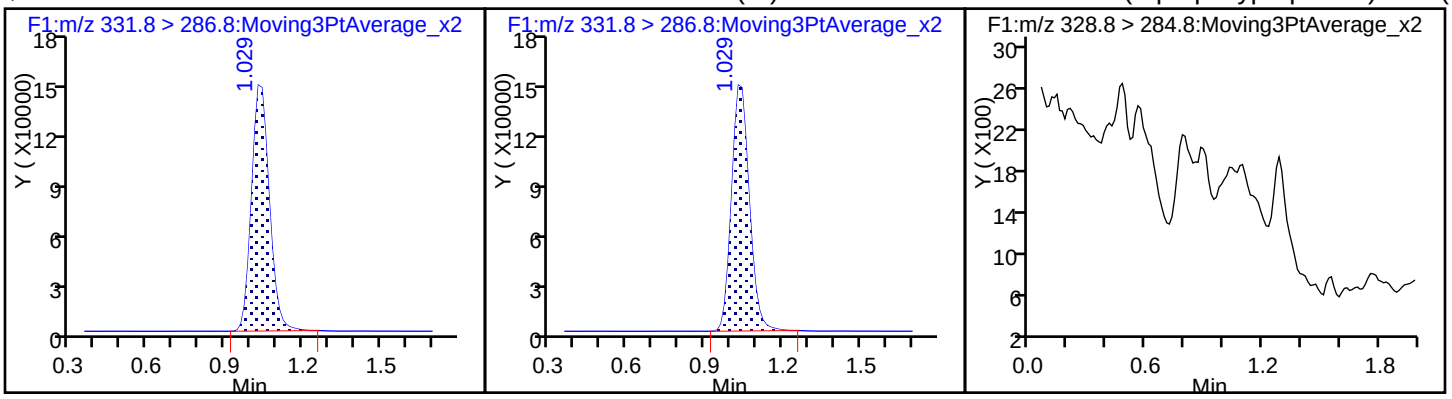
Client ID:

Operator ID: JBH ALS Bottle#: 18 Worklist Smp#: 19

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid (ND)



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12019.d | | | | |
| Lims ID: | MB 280-406765/1-A | | | | |
| Client ID: | | | | | |
| Sample Type: | MB | | | | |
| Inject. Date: | 12-Mar-2018 09:16:02 | ALS Bottle#: | 18 | Worklist Smp#: | 19 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | MB280-406765/1-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:04 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:50:29 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 9.40 | 93.97 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10862-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-406765/2-A

Matrix: Air | Lab File ID: hfpo718C12020.d

Analysis Method: 8321A | Date Collected:

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:19

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.05486 | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 90 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12020.d
Lims ID: LCS 280-406765/2-A
Client ID:
Sample Type: LCS
Inject. Date: 12-Mar-2018 09:19:17 ALS Bottle#: 19 Worklist Smp#: 20
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: LCS280-406765/2-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:32

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | 1.000 | 668790 | 8.96 | 3108 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | | 668790 | 10.0 | 3108 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 783092 | 11.0 | 306 | |

Report Date: 12-Mar-2018 10:54:08 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12020.d

Injection Date: 12-Mar-2018 09:19:17 Instrument ID: LC_LCMS7

Lims ID: LCS 280-406765/2-A

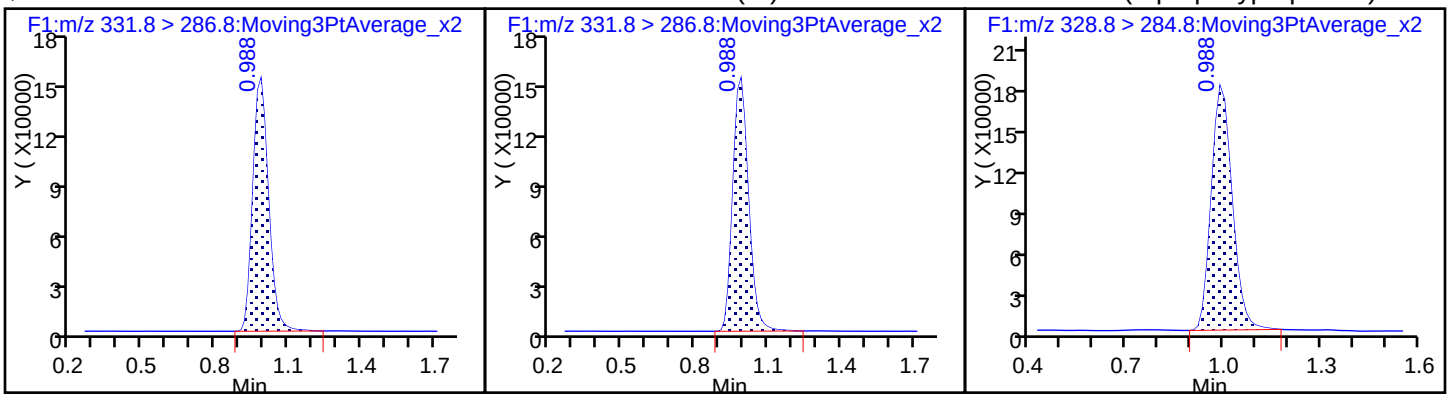
Client ID:

Operator ID: JBH ALS Bottle#: 19 Worklist Smp#: 20

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12020.d
Lims ID: LCS 280-406765/2-A
Client ID:
Sample Type: LCS
Inject. Date: 12-Mar-2018 09:19:17 ALS Bottle#: 19 Worklist Smp#: 20
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: LCS280-406765/2-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:32

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 8.96 | 89.58 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10862-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-406765/14-A

Matrix: Air | Lab File ID: hfpo718C12021.d

Analysis Method: 8321A | Date Collected:

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:22

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.05420 | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 92 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12021.d
Lims ID: LCSD 280-406765/14-A
Client ID:
Sample Type: LCSD
Inject. Date: 12-Mar-2018 09:22:32 ALS Bottle#: 20 Worklist Smp#: 21
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: LCSD280-406765/14-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:37

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | 1.000 | 683235 | 9.15 | 2358 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | | 683235 | 10.0 | 2358 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 790356 | 10.8 | 260 | |

Report Date: 12-Mar-2018 10:54:09 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12021.d

Injection Date: 12-Mar-2018 09:22:32 Instrument ID: LC_LCMS7

Lims ID: LCSD 280-406765/14-A

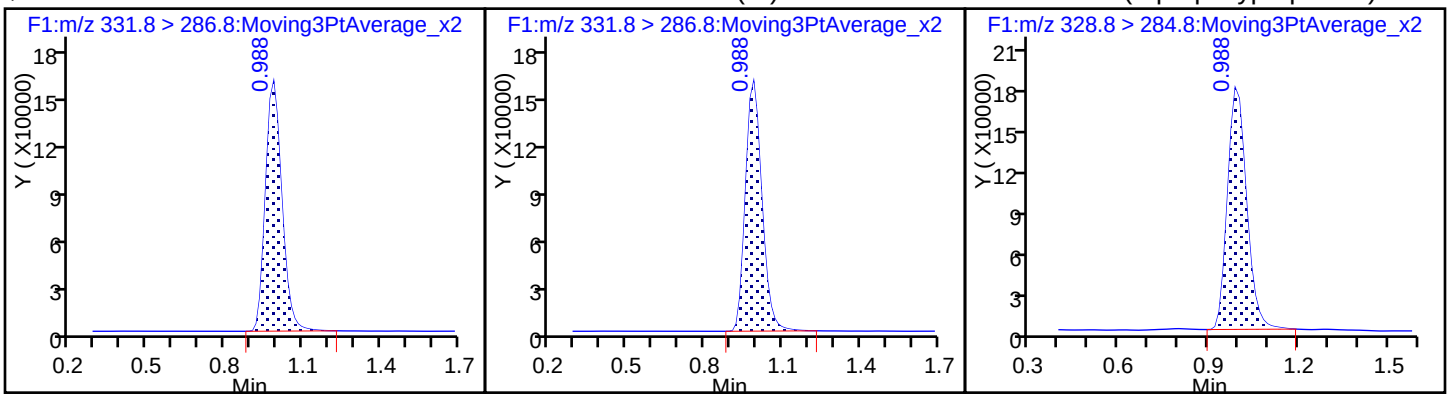
Client ID:

Operator ID: JBH ALS Bottle#: 20 Worklist Smp#: 21

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12021.d | | | | |
| Lims ID: | LCSD 280-406765/14-A | | | | |
| Client ID: | | | | | |
| Sample Type: | LCSD | | | | |
| Inject. Date: | 12-Mar-2018 09:22:32 | ALS Bottle#: | 20 | Worklist Smp#: | 21 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | LCSD280-406765/14-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:04 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:50:37 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 9.15 | 91.51 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10862-1

SDG No.:

Client Sample ID: | Lab Sample ID: LLCS 280-406765/15-A

Matrix: Air | Lab File ID: hfpo718C12022.d

Analysis Method: 8321A | Date Collected:

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:25

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.004384 | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 87 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12022.d
Lims ID: LLCS 280-406765/15-A
Client ID:
Sample Type: LLCS
Inject. Date: 12-Mar-2018 09:25:47 ALS Bottle#: 21 Worklist Smp#: 22
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: LLCS280-406765/15-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:40

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | 1.000 | 648824 | 8.69 | 2403 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | | 648824 | 10.0 | 2403 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 62868 | 0.8769 | 21.3 | |

Report Date: 12-Mar-2018 10:54:11 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12022.d

Injection Date: 12-Mar-2018 09:25:47 Instrument ID: LC_LCMS7

Lims ID: LLCS 280-406765/15-A

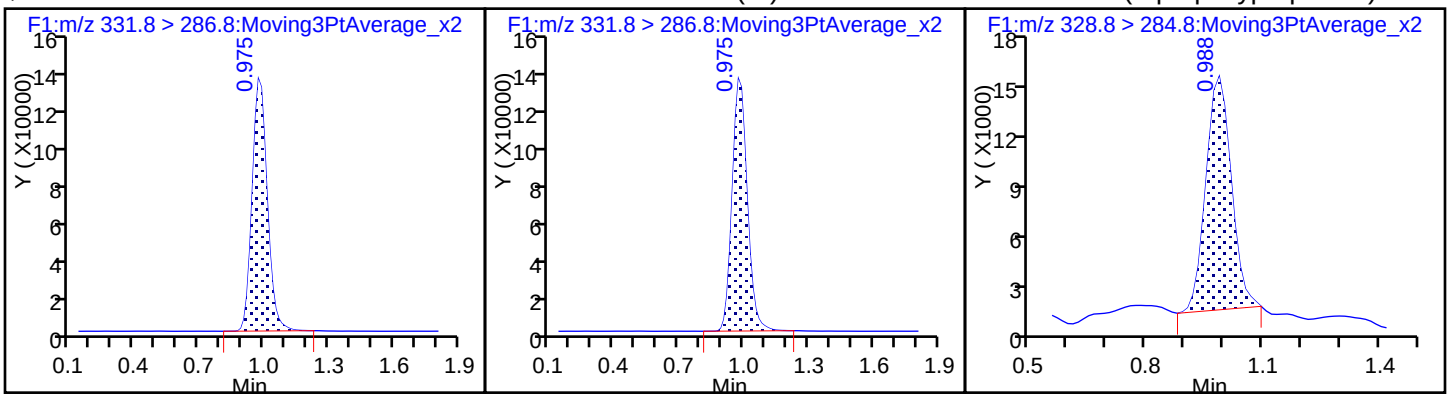
Client ID:

Operator ID: JBH ALS Bottle#: 21 Worklist Smp#: 22

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12022.d | | | | |
| Lims ID: | LLCS 280-406765/15-A | | | | |
| Client ID: | | | | | |
| Sample Type: | LLCS | | | | |
| Inject. Date: | 12-Mar-2018 09:25:47 | ALS Bottle#: | 21 | Worklist Smp#: | 22 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | LLCS280-406765/15-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:04 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:50:40 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 8.69 | 86.90 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 140-10862-1

SDG No.:

Instrument ID: LC_LCMS7 Start Date: 02/08/2018 13:05

Analysis Batch Number: 404345 End Date: 02/08/2018 13:31

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---|---|---|---|---|---|
| STD001 280-404345/3 IC | | 02/08/2018 13:05 | 1 | hfpo718B08034.d | Synergi Hydro |
| STD002 280-404345/4 IC | | 02/08/2018 13:08 | 1 | hfpo718B08035.d | Synergi Hydro |
| STD003 280-404345/5 IC | | 02/08/2018 13:12 | 1 | hfpo718B08036.d | Synergi Hydro |
| STD004 280-404345/6 IC | | 02/08/2018 13:15 | 1 | hfpo718B08037.d | Synergi Hydro |
| STD005 280-404345/7 IC | | 02/08/2018 13:18 | 1 | hfpo718B08038.d | Synergi Hydro |
| STD006 280-404345/8 IC | | 02/08/2018 13:21 | 1 | hfpo718B08039.d | Synergi Hydro |
| STD007 280-404345/9 IC | | 02/08/2018 13:25 | 1 | hfpo718B08040.d | Synergi Hydro |
| STD008 280-404345/10 IC | | 02/08/2018 13:28 | 1 | hfpo718B08041.d | Synergi Hydro |
| STD009 280-404345/11 IC | | 02/08/2018 13:31 | 1 | hfpo718B08042.d | Synergi Hydro |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver  Job No.: 140-10862-1

SDG No.:

Instrument ID: LC_LCMS7  Start Date: 03/12/2018 09:12

Analysis Batch Number: 407567  End Date: 03/12/2018 10:08

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---|---|---|---|---|---|
| CCV 280-407567/18 | | 03/12/2018 09:12 | 1 | hfpo718C12018.d | Synergi Hydro |
| MB 280-406765/1-A | | 03/12/2018 09:16 | 1 | hfpo718C12019.d | Synergi Hydro |
| LCS 280-406765/2-A | | 03/12/2018 09:19 | 1 | hfpo718C12020.d | Synergi Hydro |
| LCSD 280-406765/14-A | | 03/12/2018 09:22 | 1 | hfpo718C12021.d | Synergi Hydro |
| LLCS 280-406765/15-A | | 03/12/2018 09:25 | 1 | hfpo718C12022.d | Synergi Hydro |
| 140-10862-3 | | 03/12/2018 09:29 | 1 | hfpo718C12023.d | Synergi Hydro |
| 140-10862-7 | | 03/12/2018 09:32 | 1 | hfpo718C12024.d | Synergi Hydro |
| 140-10862-11 | | 03/12/2018 09:35 | 1 | hfpo718C12025.d | Synergi Hydro |
| 140-10862-15 | | 03/12/2018 09:38 | 1 | hfpo718C12026.d | Synergi Hydro |
| 140-10862-17 | | 03/12/2018 09:42 | 1 | hfpo718C12027.d | Synergi Hydro |
| CCV 280-407567/28 | | 03/12/2018 09:45 | 1 | hfpo718C12028.d | Synergi Hydro |
| ZZZZZ | | 03/12/2018 09:48 | 1 | | Synergi Hydro |
| ZZZZZ | | 03/12/2018 09:51 | 1 | | Synergi Hydro |
| ZZZZZ | | 03/12/2018 09:55 | 1 | | Synergi Hydro |
| ZZZZZ | | 03/12/2018 09:58 | 1 | | Synergi Hydro |
| ZZZZZ | | 03/12/2018 10:01 | 1 | | Synergi Hydro |
| ZZZZZ | | 03/12/2018 10:04 | 1 | | Synergi Hydro |
| CCV 280-407567/35 | | 03/12/2018 10:08 | 1 | | Synergi Hydro |

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 140-10862-1

SDG No.:

Batch Number: 406765  Batch Start Date: 03/11/18 10:52  Batch Analyst: Atkinson, Hannah M

Batch Method: None  Batch End Date: 03/11/18 14:19

| Lab Sample ID | Client Sample ID | Method Chain | Basis | VolumeCollect | VolCondUsed | InitialAmount | FinalAmount | HFPO I.S. 00009 | HFPO Spike 00004 |
|---|---|---|---|---|---|---|---|---|---|
| MB 280-406765/1 | | None, 8321A | | | | 1 Sample | 5 mL | 0.1 mL | |
| LCS 280-406765/2 | | None, 8321A | | | | 1 Sample | 5 mL | 0.1 mL | 0.1 mL |
| 140-10862-A-3 | C-2805 R1 M0010 IMP COND | None, 8321A | T | 200 mL | 10 mL | 0.05 Sample | 5 mL | 0.1 mL | |
| 140-10862-A-7 | C-2812 R2 M0010 IMP COND | None, 8321A | T | 190 mL | 9.5 mL | 0.05 Sample | 5 mL | 0.1 mL | |
| 140-10862-A-11 | C-2819 R3 M0010 IMP COND | None, 8321A | T | 250 mL | 250 mL | 1 Sample | 5 mL | 0.1 mL | |
| 140-10862-A-15 | C-2826 R QC M0010 IMP COND BT | None, 8321A | T | 250 mL | 250 mL | 1 Sample | 5 mL | 0.1 mL | |
| 140-10862-A-17 | C-2829 R QC M0010 DI WATER RB | None, 8321A | T | 250 mL | 250 mL | 1 Sample | 5 mL | 0.1 mL | |
| LCSD 280-406765/14 | | None, 8321A | | | | 1 Sample | 5 mL | 0.1 mL | 0.1 mL |
| LLCS 280-406765/15 | | None, 8321A | | | | 1 Sample | 5 mL | 0.1 mL | 0.01 mL |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | AnalysisComment | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MB 280-406765/1 | | None, 8321A | | 250 mL | | | | | |
| LCS 280-406765/2 | | None, 8321A | | 250 mL | | | | | |
| 140-10862-A-3 | C-2805 R1 M0010 IMP COND | None, 8321A | T | brought up to 250mL for Denver lab to extract Gross weight-270.7g, tare weight-27.0g | | | | | |
| 140-10862-A-7 | C-2812 R2 M0010 IMP COND | None, 8321A | T | brought up to 250mL for Denver lab to extract Gross weight-272.4g,tare weight- 26.5g | | | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 140-10862-1

SDG No.:

Batch Number: 406765  Batch Start Date: 03/11/18 10:52  Batch Analyst: Atkinson, Hannah M

Batch Method: None  Batch End Date: 03/11/18 14:19

| Lab Sample ID | Client Sample ID | Method Chain | Basis | AnalysisComment | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 140-10862-A-11 | C-2819 R3 M0010 IMP COND | None, 8321A | T | brought up to 250mL for Denver lab to extract Gross weight-271.9g, tare weight-26.5g | | | | | |
| 140-10862-A-15 | C-2826 R QC M0010 IMP COND BT | None, 8321A | T | brought up to 250mL for Denver lab to extract, Gross weight- 266.4g, tare weight-27.8g | | | | | |
| 140-10862-A-17 | C-2829 R QC M0010 DI WATER RB | None, 8321A | T | brought up to 250mL for Denver lab to extract, Gross weight- 277.2g, tare weight-38.1g | | | | | |
| LCSD 280-406765/14 | | None, 8321A | | 250 mL | | | | | |
| LLCS 280-406765/15 | | None, 8321A | | 250 mL | | | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 140-10862-1

SDG No.:

Batch Number: 406765  Batch Start Date: 03/11/18 10:52  Batch Analyst: Atkinson, Hannah M

Batch Method: None  Batch End Date: 03/11/18 14:19

| Batch Notes | |
|---|---|
| Acid ID | 2%FormicAcid_147 |
| Balance ID | 24350888(Denver) |
| Batch Comment | Batch originated by David Stout who brought samples to 250mL Reviewer:HA |
| Elution Solution ID | 10%NH4OH_123 |
| Extraction End time | 12:40 |
| Extraction End Date | 03/11/2018 |
| Extraction Start time | 11:22 |
| Extraction Start Date | 03/11/2018 |
| H2O ID | HPLC_water_867 |
| Pipette/Syringe/Dispenser ID | m2. spe-1, syringe |
| Solvent | Methanol_196 |
| SPE Cartridge Lot ID | S308-0079 |
| SPE Cartridge Type | strata-x-aw-8BSO38FCH |
| Analyst ID - Spike Analyst | HA |
| Analyst ID - Spike Witness Analyst | HA |

| Basis | Basis Description |
|---|---|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Reagent ID: HFPO_CAL-5_00083

| | | | |
|---|---|---|---|
| Description: | level5 | Expiration Date: | 03/21/2018 |
| No. of Bottles: | 1 | Laboratory: | TestAmerica Denver |
| Storage Location: | LCMS | Prepared By: | Meyer, Andrew GC |
| Reagent Volume: | 1.000 mL | Solvent: | 80:20 Methanol : H2O |
| Creation Date: | 03/07/2018 | Solvent Lot: | 00016 |
| Open Date: | | | |
| Container(s): | 4991513 | | |
| Comment: | level-5 | | |

## Reagent Analyte Information

| Analyte | Source ID | Source Exp. Date | Source Conc. | Source Conc. Units | Final Conc. | Final Conc. Units |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | HFPO I.S._00010 | 03/06/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |
| 13C3 HFPO-DA (IS) | HFPO I.S._00010 | 03/06/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |
| Perfluoro(2-propoxypropanoic) acid | HFPO Spike_00005 | 03/07/2019 | 0.50000 | ug/mL | 5.00000 | ug/L |

## Source Reagents

| Reagent | Description | Type | Expiration | Vendor | Vendor Lot # | Vendor Cat Lot # | Volume Used | Volume Units |
|---|---|---|---|---|---|---|---|---|
| HFPO I.S._00010 | Internal Standard for HFPO 0.5ug/ml | | 03/06/19 | | | | 20.00000 | uL |
| HFPO Spike_00005 | HFPO LCS/Calibration Spike 0.5ug/ml | | 03/07/19 | | | | 10.00000 | uL |

Jwdapam
3/13/18

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Reagent ID: HFPO_CAL-6_00083

| | | | |
|---|---|---|---|
| Description: | level6 | Expiration Date: | 03/21/2018 |
| No. of Bottles: | 1 | Laboratory: | TestAmerica Denver |
| Storage Location: | LCMS | Prepared By: | Meyer, Andrew GC |
| Reagent Volume: | 1.000 mL | Solvent: | 80:20 Methanol : H2O |
| Creation Date: | 03/07/2018 | Solvent Lot: | 00018 |
| Open Date: | | | |
| Container(s): | 4991514 | | |
| Comment: | level-6 | | |

## Reagent Analyte Information

| Analyte | Source ID | Source Exp. Date | Source Conc. | Source Conc. Units | Final Conc. | Final Conc. Units |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | HFPO I.S._00010 | 03/06/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |
| 13C3 HFPO-DA (IS) | HFPO I.S._00010 | 03/06/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |
| Perfluoro(2-propoxypropanoic) acid | HFPO Spike_00005 | 03/07/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |

## Source Reagents

| Reagent | Description | Type | Expiration | Vendor | Vendor Lot # | Vendor Cat Lot # | Volume Used | Volume Units |
|---|---|---|---|---|---|---|---|---|
| HFPO I.S._00010 | Internal Standard for HFPO 0.5ug/ml | | 03/06/19 | | | | 20.00000 | uL |
| HFPO Spike_00005 | HFPO LCS/Calibration Spike 0.5ug/ml | | 03/07/19 | | | | 20.00000 | uL |

chudgrom
3/13/18

03/07/2018 16:11

Page 1 of 1

# ANALYTICAL REPORT

Job Number: 140-10863-1

Job Description: Polymer Processing Area Emissions Test

Contract Number: LBIO-67048

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

Attention: Michael Aucoin

Approved for release.
Courtney M Adkins
Project Manager I
3/26/2018 8:55 AM

Courtney M Adkins, Project Manager I
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
courtney.adkins@testamericainc.com
03/26/2018

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## Qualifiers

### LCMS

| Qualifier | Qualifier Description |
|---|---|
| X | Surrogate is outside control limits |
| E | Result exceeded calibration range. |
| D | Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

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

# Method Summary

Client: Chemours Company FC, LLC The
Project/Site: Polymer Processing Aid  Emissions Test

TestAmerica Job ID: 140-10863-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 8321A | PFOA and PFOS | SW846 | TAL DEN |
| 8321A | HFPO-DA | SW846 | TAL DEN |

**Protocol References:**

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

**Laboratory References:**

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

# Sample Summary

Client: Chemours Company FC, LLC The
Project/Site: Polymer Processing Aid  Emissions Test

TestAmerica Job ID: 140-10863-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 140-10863-1 | H-2201,2202 R1 M0010 FH | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-2 | H-2203,2204,2206 R1 M0010 BH | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-3 | H-2205 R1 M0010 IMP COND | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-4 | H-2207 R1 M0010 XAD-2 | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-5 | H-2208,2209 R2 M0010 FH | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10863-6 | H-2210,2211,2213 R2 M0010 BH | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10863-7 | H-2212 R2 M0010 IMP COND | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10863-8 | H-2214 R2 M0010 XAD-2 | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10863-9 | H-2222,2223 R4 M0010 FH | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-10 | H-2224,2225,2227 R4 M0010 BH | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-11 | H-2226 R4 M0010 IMP COND | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-12 | H-2228 R4 M0010 XAD-2 | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-13 | H-2229,2230 R5 M0010 FH | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-14 | H-2231,2232,2234 R5 M0010 BH | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-15 | H-2233 R5 M0010 IMP COND | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-16 | H-2235 R5 M0010 XAD-2 | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-17 | H-2243,2244 R QC M0010 FH BT | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10863-18 | H-2245,2246,2248 R QC M0010 BH BT | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10863-19 | H-2247 R QC M0010 IMP COND BT | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10863-20 | H-2249 R QC M0010 XAD-2 BT | Air | 03/02/18 00:00 | 03/03/18 08:00 |
| 140-10863-21 | H-2250 R QC M0010 DI WATER RB | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-22 | H-2251 R QC M0010 MEOH WITH 5% NH4OH RB | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-23 | H-2252 R QC M0010 XAD-2 RB | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-24 | H-2253 R QC M0010 MEOH WITH 5% HN4OH TB | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-25 | H-2254 R QC M0010 XAD-2 TB | Air | 03/01/18 00:00 | 03/03/18 08:00 |
| 140-10863-26 | H-2255,2256,2257 R QC M0010 PROOF BLANK | Air | 03/01/18 00:00 | 03/03/18 08:00 |

# Job Narrative
# 140-10863-1

**Sample Receipt**

The samples were received on March 3, 2018 at 8:00 AM in good condition and properly preserved. The temperatures of the 5 coolers at receipt time were 1.3º C, 1.7º C, 2.3º C, 2.7º C and 2.9º 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 Denver laboratory for HFPO-DA analysis. All results are reported in "Total ug" per sample.

**LCMS**

Samples associated with this analytical batch were originally analyzed with an "E" flag to indicate that the HFPO-DA exceeded the calibration curve of the method. Project specific calculations are provided as an addendum to this narrative.

**Organic Prep**

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

**Comments**

Reporting Limits (RLs) and Method Detection Limits (MDLs) for the HFPO-DA used in this report were derived in Denver for reporting soils and water samples. Method 0010 sampling train matrix specific RLs and MDLs have not been established for HFPO-DA. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

The expanded deliverable section of the package is split into two sections: 8321A_HFPO_DU is specific to condensates, and Method DV-LC-0012 contains the XAD and Filter data. Both methods share the same calibration on 10/10/17. A single instance of this calibration and the associated detection limit check (DLCK) and Initial calibration verification (ICV) can be found in the 8321A_HFPO_DU section of the package as part of our automated package generation procedures.

**Chemours PPA Stack Test Analytical Report**
**TestAmerica Job No. 140-10863-1**
**March 23, 2018**

The following samples exceeded the Method 8321A calibration range for HFPO-DA and required that dilution of the extracts be performed:

- H-2203, H-2204 and H-2206 (PPA Stack) Run #1 Back-Half Composite (XAD-2 Resin and Glassware Rinses)
- H-2210, H-2211 and H-2213 (PPA Stack) Run #2 Back-Half Composite (XAD-2 Resin and Glassware Rinses)

The original analysis concentration which displays the "E" flag is provided with the data set indicating that the value provided is estimated. The $^{13}C_3$ – HFPO-DA isotope dilution internal standard (IDA) recovery percentage (%) however, is provided with this analysis run.

A second analysis concentration displays an accurate concentration of the HFPO-DA in the diluted sample extract, but the value is uncorrected for the IDA recovery percentage from the original matrix. The recovery percentage presented with the second concentration represents a post-spike of IDA to benchmark the instrument quantification of native HFPO-DA.

Final recovery-corrected concentrations of the native HFPO-DA are provided by calculation using the original recovery value of the IDA and the diluted extract values of the native HFPO-DA. The final concentrations are calculated as follows:

- H-2203, H-2204 and H-2206 (PPA Stack) Run#1 Back-Half Composite (XAD-2 and Resin and Rinses)

$$(27{,}400\ ug)\ \times\ \left(\frac{70}{51}\right)\ =\ 37{,}600\ ug$$

- H-2210, H-2211 and H-2213 (PPA Stack) Run #2 Back-Half Composite (XAD-2 Resin and Glassware Rinses)

$$(41{,}600\ ug)\ \times\ \left(\frac{69}{54}\right)\ =\ 53{,}200\ ug$$

## LCMS

### Analysis Batch: 404345

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| DLCK 280-404345/13 | Lab Control Sample | Total/NA | Air | 8321A | |

### Prep Batch: 406763

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-1 | H-2201,2202 R1 M0010 FH | Total/NA | Air | None | |
| 140-10863-5 | H-2208,2209 R2 M0010 FH | Total/NA | Air | None | |
| 140-10863-9 | H-2222,2223 R4 M0010 FH | Total/NA | Air | None | |
| 140-10863-13 | H-2229,2230 R5 M0010 FH | Total/NA | Air | None | |
| 140-10863-17 | H-2243,2244 R QC M0010 FH BT | Total/NA | Air | None | |
| 140-10863-22 | H-2251 R QC M0010 MEOH WITH 5% NH4OH F | Total/NA | Air | None | |
| 140-10863-24 | H-2253 R QC M0010 MEOH WITH 5% HN4OH T | Total/NA | Air | None | |
| MB 280-406763/1-A | Method Blank | Total/NA | Air | None | |
| LCS 280-406763/2-A | Lab Control Sample | Total/NA | Air | None | |

### Prep Batch: 406764

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-2 | H-2203,2204,2206 R1 M0010 BH | Total/NA | Air | None | |
| 140-10863-2 - DL | H-2203,2204,2206 R1 M0010 BH | Total/NA | Air | None | |
| 140-10863-4 | H-2207 R1 M0010 XAD-2 | Total/NA | Air | None | |
| 140-10863-6 | H-2210,2211,2213 R2 M0010 BH | Total/NA | Air | None | |
| 140-10863-6 - DL | H-2210,2211,2213 R2 M0010 BH | Total/NA | Air | None | |
| 140-10863-8 | H-2214 R2 M0010 XAD-2 | Total/NA | Air | None | |
| 140-10863-10 | H-2224,2225,2227 R4 M0010 BH | Total/NA | Air | None | |
| 140-10863-12 | H-2228 R4 M0010 XAD-2 | Total/NA | Air | None | |
| 140-10863-14 | H-2231,2232,2234 R5 M0010 BH | Total/NA | Air | None | |
| 140-10863-16 | H-2235 R5 M0010 XAD-2 | Total/NA | Air | None | |
| 140-10863-18 | H-2245,2246,2248 R QC M0010 BH BT | Total/NA | Air | None | |
| 140-10863-20 | H-2249 R QC M0010 XAD-2 BT | Total/NA | Air | None | |
| 140-10863-23 | H-2252 R QC M0010 XAD-2 RB | Total/NA | Air | None | |
| 140-10863-25 | H-2254 R QC M0010 XAD-2 TB | Total/NA | Air | None | |
| 140-10863-26 | H-2255,2256,2257 R QC M0010 PROOF BLANK | Total/NA | Air | None | |
| MB 280-406764/1-A | Method Blank | Total/NA | Air | None | |
| LCS 280-406764/2-A | Lab Control Sample | Total/NA | Air | None | |

### Prep Batch: 406765

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-3 | H-2205 R1 M0010 IMP COND | Total/NA | Air | None | |
| 140-10863-7 | H-2212 R2 M0010 IMP COND | Total/NA | Air | None | |
| 140-10863-11 | H-2226 R4 M0010 IMP COND | Total/NA | Air | None | |
| 140-10863-15 | H-2233 R5 M0010 IMP COND | Total/NA | Air | None | |
| 140-10863-19 | H-2247 R QC M0010 IMP COND BT | Total/NA | Air | None | |
| 140-10863-21 | H-2250 R QC M0010 DI WATER RB | Total/NA | Air | None | |
| MB 280-406765/1-A | Method Blank | Total/NA | Air | None | |
| LCS 280-406765/2-A | Lab Control Sample | Total/NA | Air | None | |
| LCSD 280-406765/14-A | Lab Control Sample Dup | Total/NA | Air | None | |
| LLCS 280-406765/15-A | Lab Control Sample | Total/NA | Air | None | |

### Prep Batch: 407095

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-2 | H-2203,2204,2206 R1 M0010 BH | Total/NA | Air | None | |
| 140-10863-6 | H-2210,2211,2213 R2 M0010 BH | Total/NA | Air | None | |

## LCMS (Continued)

### Prep Batch: 407095 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-10 | H-2224,2225,2227 R4 M0010 BH | Total/NA | Air | None | |
| 140-10863-14 | H-2231,2232,2234 R5 M0010 BH | Total/NA | Air | None | |

### Analysis Batch: 407389

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-1 | H-2201,2202 R1 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10863-5 | H-2208,2209 R2 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10863-9 | H-2222,2223 R4 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10863-13 | H-2229,2230 R5 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10863-17 | H-2243,2244 R QC M0010 FH BT | Total/NA | Air | 8321A | 406763 |
| 140-10863-22 | H-2251 R QC M0010 MEOH WITH 5% NH4OH F | Total/NA | Air | 8321A | 406763 |
| 140-10863-24 | H-2253 R QC M0010 MEOH WITH 5% HN4OH T | Total/NA | Air | 8321A | 406763 |
| MB 280-406763/1-A | Method Blank | Total/NA | Air | 8321A | 406763 |
| LCS 280-406763/2-A | Lab Control Sample | Total/NA | Air | 8321A | 406763 |

### Analysis Batch: 407390

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-2 | H-2203,2204,2206 R1 M0010 BH | Total/NA | Air | 8321A | 406764 |
| 140-10863-6 | H-2210,2211,2213 R2 M0010 BH | Total/NA | Air | 8321A | 406764 |
| 140-10863-10 | H-2224,2225,2227 R4 M0010 BH | Total/NA | Air | 8321A | 406764 |
| 140-10863-12 | H-2228 R4 M0010 XAD-2 | Total/NA | Air | 8321A | 406764 |
| 140-10863-14 | H-2231,2232,2234 R5 M0010 BH | Total/NA | Air | 8321A | 406764 |
| 140-10863-16 | H-2235 R5 M0010 XAD-2 | Total/NA | Air | 8321A | 406764 |
| 140-10863-18 | H-2245,2246,2248 R QC M0010 BH BT | Total/NA | Air | 8321A | 406764 |
| 140-10863-20 | H-2249 R QC M0010 XAD-2 BT | Total/NA | Air | 8321A | 406764 |
| 140-10863-23 | H-2252 R QC M0010 XAD-2 RB | Total/NA | Air | 8321A | 406764 |
| 140-10863-25 | H-2254 R QC M0010 XAD-2 TB | Total/NA | Air | 8321A | 406764 |
| 140-10863-26 | H-2255,2256,2257 R QC M0010 PROOF BLANK | Total/NA | Air | 8321A | 406764 |
| MB 280-406764/1-A | Method Blank | Total/NA | Air | 8321A | 406764 |
| LCS 280-406764/2-A | Lab Control Sample | Total/NA | Air | 8321A | 406764 |

### Analysis Batch: 407391

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-2 | H-2203,2204,2206 R1 M0010 BH | Total/NA | Air | 8321A | 407095 |
| 140-10863-6 | H-2210,2211,2213 R2 M0010 BH | Total/NA | Air | 8321A | 407095 |
| 140-10863-10 | H-2224,2225,2227 R4 M0010 BH | Total/NA | Air | 8321A | 407095 |
| 140-10863-14 | H-2231,2232,2234 R5 M0010 BH | Total/NA | Air | 8321A | 407095 |

### Analysis Batch: 407565

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-1 | H-2201,2202 R1 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10863-5 | H-2208,2209 R2 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10863-9 | H-2222,2223 R4 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10863-13 | H-2229,2230 R5 M0010 FH | Total/NA | Air | 8321A | 406763 |
| 140-10863-17 | H-2243,2244 R QC M0010 FH BT | Total/NA | Air | 8321A | 406763 |

### Analysis Batch: 407566

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-2 | H-2203,2204,2206 R1 M0010 BH | Total/NA | Air | 8321A | 407095 |
| 140-10863-4 | H-2207 R1 M0010 XAD-2 | Total/NA | Air | 8321A | 406764 |
| 140-10863-6 | H-2210,2211,2213 R2 M0010 BH | Total/NA | Air | 8321A | 407095 |

## LCMS (Continued)

### Analysis Batch: 407566 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-8 | H-2214 R2 M0010 XAD-2 | Total/NA | Air | 8321A | 406764 |
| 140-10863-10 | H-2224,2225,2227 R4 M0010 BH | Total/NA | Air | 8321A | 406764 |
| 140-10863-18 | H-2245,2246,2248 R QC M0010 BH BT | Total/NA | Air | 8321A | 406764 |

### Analysis Batch: 407567

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-3 | H-2205 R1 M0010 IMP COND | Total/NA | Air | 8321A | 406765 |
| 140-10863-7 | H-2212 R2 M0010 IMP COND | Total/NA | Air | 8321A | 406765 |
| 140-10863-11 | H-2226 R4 M0010 IMP COND | Total/NA | Air | 8321A | 406765 |
| 140-10863-15 | H-2233 R5 M0010 IMP COND | Total/NA | Air | 8321A | 406765 |
| 140-10863-19 | H-2247 R QC M0010 IMP COND BT | Total/NA | Air | 8321A | 406765 |
| 140-10863-21 | H-2250 R QC M0010 DI WATER RB | Total/NA | Air | 8321A | 406765 |
| MB 280-406765/1-A | Method Blank | Total/NA | Air | 8321A | 406765 |
| LCS 280-406765/2-A | Lab Control Sample | Total/NA | Air | 8321A | 406765 |
| LCSD 280-406765/14-A | Lab Control Sample Dup | Total/NA | Air | 8321A | 406765 |
| LLCS 280-406765/15-A | Lab Control Sample | Total/NA | Air | 8321A | 406765 |

### Analysis Batch: 408337

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 140-10863-2 - DL | H-2203,2204,2206 R1 M0010 BH | Total/NA | Air | 8321A | 406764 |
| 140-10863-6 - DL | H-2210,2211,2213 R2 M0010 BH | Total/NA | Air | 8321A | 406764 |

## Client Sample ID: H-2201,2202 R1 M0010 FH

**Lab Sample ID: 140-10863-1**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 714 | E | 0.150 | 0.150 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:34 | 1 |
| HFPO-DA | 716 | | 7.50 | 7.50 | ug/Sample | | 03/05/18 14:00 | 03/12/18 08:33 | 50 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *30* | *X* | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:34* | *1* |
| *13C3 HFPO-DA* | *79* | *D* | *50 - 200* | *03/05/18 14:00* | *03/12/18 08:33* | *50* |

## Client Sample ID: H-2203,2204,2206 R1 M0010 BH

**Lab Sample ID: 140-10863-2**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 15100 | E | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:53 | 1 |
| HFPO-DA | 27000 | E | 100 | 100 | ug/Sample | | 03/07/18 09:47 | 03/09/18 14:42 | 1 |
| HFPO-DA | 27400 | | 200 | 200 | ug/Sample | | 03/07/18 09:47 | 03/12/18 09:06 | 2 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *4* | *X* | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:53* | *1* |
| *13C3 HFPO-DA* | *69* | | *50 - 200* | *03/07/18 09:47* | *03/09/18 14:42* | *1* |
| *13C3 HFPO-DA* | *70* | *D* | *50 - 200* | *03/07/18 09:47* | *03/12/18 09:06* | *2* |

### Method: 8321A - PFOA and PFOS - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 15300 | E | 10.0 | 10.0 | ug/Sample | | 03/05/18 04:38 | 03/19/18 13:23 | 50 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *51* | *D* | *50 - 200* | *03/05/18 04:38* | *03/19/18 13:23* | *50* |

## Client Sample ID: H-2205 R1 M0010 IMP COND

**Lab Sample ID: 140-10863-3**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.118 | J | 0.125 | 0.00638 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:48 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *91* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 09:48* | *1* |

## Client Sample ID: H-2207 R1 M0010 XAD-2

**Lab Sample ID: 140-10863-4**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/12/18 08:53 | 1 |

## Client Sample ID: H-2207 R1 M0010 XAD-2

**Lab Sample ID: 140-10863-4**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 61 | | 50 - 200 | 03/05/18 04:38 | 03/12/18 08:53 | 1 |

## Client Sample ID: H-2208,2209 R2 M0010 FH

**Lab Sample ID: 140-10863-5**

**Date Collected: 03/02/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 611 | E | 0.100 | 0.100 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:41 | 1 |
| HFPO-DA | 557 | | 5.00 | 5.00 | ug/Sample | | 03/05/18 14:00 | 03/12/18 08:37 | 50 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 26 | X | 50 - 200 | 03/05/18 14:00 | 03/09/18 12:41 | 1 |
| 13C3 HFPO-DA | 86 | D | 50 - 200 | 03/05/18 14:00 | 03/12/18 08:37 | 50 |

## Client Sample ID: H-2210,2211,2213 R2 M0010 BH

**Lab Sample ID: 140-10863-6**

**Date Collected: 03/02/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 19200 | E | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:59 | 1 |
| HFPO-DA | 41700 | E | 100 | 100 | ug/Sample | | 03/07/18 09:47 | 03/09/18 14:45 | 1 |
| HFPO-DA | 41600 | | 400 | 400 | ug/Sample | | 03/07/18 09:47 | 03/12/18 09:09 | 4 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 4 | X | 50 - 200 | 03/05/18 04:38 | 03/09/18 13:59 | 1 |
| 13C3 HFPO-DA | 66 | | 50 - 200 | 03/07/18 09:47 | 03/09/18 14:45 | 1 |
| 13C3 HFPO-DA | 69 | D | 50 - 200 | 03/07/18 09:47 | 03/12/18 09:09 | 4 |

### Method: 8321A - PFOA and PFOS - DL

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 16800 | E | 10.0 | 10.0 | ug/Sample | | 03/05/18 04:38 | 03/19/18 13:26 | 50 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 54 | D | 50 - 200 | 03/05/18 04:38 | 03/19/18 13:26 | 50 |

## Client Sample ID: H-2212 R2 M0010 IMP COND

**Lab Sample ID: 140-10863-7**

**Date Collected: 03/02/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.125 | 0.00638 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:51 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | 89 | | 50 - 200 | 03/11/18 10:52 | 03/12/18 09:51 | 1 |

## Client Sample ID: H-2214 R2 M0010 XAD-2

**Lab Sample ID: 140-10863-8**

**Date Collected: 03/02/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.399 | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/12/18 08:56 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *72* | | *50 - 200* | *03/05/18 04:38* | *03/12/18 08:56* | *1* |

## Client Sample ID: H-2222,2223 R4 M0010 FH

**Lab Sample ID: 140-10863-9**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 690 | E | 0.100 | 0.100 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:44 | 1 |
| HFPO-DA | 682 | | 5.00 | 5.00 | ug/Sample | | 03/05/18 14:00 | 03/12/18 08:40 | 50 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *24* | *X* | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:44* | *1* |
| *13C3 HFPO-DA* | *76* | *D* | *50 - 200* | *03/05/18 14:00* | *03/12/18 08:40* | *50* |

## Client Sample ID: H-2224,2225,2227 R4 M0010 BH

**Lab Sample ID: 140-10863-10**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 137 | E | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 14:06 | 1 |
| HFPO-DA | 212 | | 100 | 100 | ug/Sample | | 03/07/18 09:47 | 03/09/18 14:48 | 1 |
| HFPO-DA | 139 | | 1.00 | 1.00 | ug/Sample | | 03/05/18 04:38 | 03/12/18 08:59 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *58* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 14:06* | *1* |
| *13C3 HFPO-DA* | *75* | | *50 - 200* | *03/07/18 09:47* | *03/09/18 14:48* | *1* |
| *13C3 HFPO-DA* | *64* | *D* | *50 - 200* | *03/05/18 04:38* | *03/12/18 08:59* | *5* |

## Client Sample ID: H-2226 R4 M0010 IMP COND

**Lab Sample ID: 140-10863-11**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.227 | | 0.125 | 0.00638 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:55 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *92* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 09:55* | *1* |

## Client Sample ID: H-2228 R4 M0010 XAD-2
**Lab Sample ID: 140-10863-12**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 1.90 | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 14:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *63* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 14:09* | *1* |

## Client Sample ID: H-2229,2230 R5 M0010 FH
**Lab Sample ID: 140-10863-13**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 539 | E | 0.100 | 0.100 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:47 | 1 |
| HFPO-DA | 534 | | 5.00 | 5.00 | ug/Sample | | 03/05/18 14:00 | 03/12/18 08:43 | 50 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *28* | *X* | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:47* | *1* |
| *13C3 HFPO-DA* | *77* | *D* | *50 - 200* | *03/05/18 14:00* | *03/12/18 08:43* | *50* |

## Client Sample ID: H-2231,2232,2234 R5 M0010 BH
**Lab Sample ID: 140-10863-14**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 11.3 | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 14:16 | 1 |
| HFPO-DA | ND | | 100 | 100 | ug/Sample | | 03/07/18 09:47 | 03/09/18 14:51 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *71* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 14:16* | *1* |
| *13C3 HFPO-DA* | *75* | | *50 - 200* | *03/07/18 09:47* | *03/09/18 14:51* | *1* |

## Client Sample ID: H-2233 R5 M0010 IMP COND
**Lab Sample ID: 140-10863-15**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.250 | | 0.125 | 0.00638 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:58 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *88* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 09:58* | *1* |

## Client Sample ID: H-2235 R5 M0010 XAD-2

**Lab Sample ID: 140-10863-16**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.362 | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 14:19 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *66* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 14:19* | *1* |

## Client Sample ID: H-2243,2244 R QC M0010 FH BT

**Lab Sample ID: 140-10863-17**

**Date Collected: 03/02/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 6.11 | E | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:51 | 1 |
| HFPO-DA | 5.89 | | 0.0500 | 0.0500 | ug/Sample | | 03/05/18 14:00 | 03/12/18 08:46 | 2 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *66* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:51* | *1* |
| *13C3 HFPO-DA* | *70* | *D* | *50 - 200* | *03/05/18 14:00* | *03/12/18 08:46* | *2* |

## Client Sample ID: H-2245,2246,2248 R QC M0010 BH BT

**Lab Sample ID: 140-10863-18**

**Date Collected: 03/02/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 50.6 | E | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 14:22 | 1 |
| HFPO-DA | 52.4 | | 0.400 | 0.400 | ug/Sample | | 03/05/18 04:38 | 03/12/18 09:03 | 2 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *70* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 14:22* | *1* |
| *13C3 HFPO-DA* | *66* | *D* | *50 - 200* | *03/05/18 04:38* | *03/12/18 09:03* | *2* |

## Client Sample ID: H-2247 R QC M0010 IMP COND BT

**Lab Sample ID: 140-10863-19**

**Date Collected: 03/02/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.0106 | | 0.00250 | 0.000128 | ug/Sample | | 03/11/18 10:52 | 03/12/18 10:01 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *69* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 10:01* | *1* |

## Client Sample ID: H-2249 R QC M0010 XAD-2 BT
**Lab Sample ID: 140-10863-20**

**Date Collected: 03/02/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 14:25 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *67* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 14:25* | *1* |

## Client Sample ID: H-2250 R QC M0010 DI WATER RB
**Lab Sample ID: 140-10863-21**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - HFPO-DA

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.00250 | 0.000128 | ug/Sample | | 03/11/18 10:52 | 03/12/18 10:04 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *81* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 10:04* | *1* |

## Client Sample ID: H-2251 R QC M0010 MEOH WITH 5% NH4OH RB
**Lab Sample ID: 140-10863-22**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:54 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *73* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:54* | *1* |

## Client Sample ID: H-2252 R QC M0010 XAD-2 RB
**Lab Sample ID: 140-10863-23**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **HFPO-DA** | **0.291** | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 14:29 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *27* | *X* | *50 - 200* | *03/05/18 04:38* | *03/09/18 14:29* | *1* |

## Client Sample ID: H-2253 R QC M0010 MEOH WITH 5% HN4OH TB

**Lab Sample ID: 140-10863-24**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:57 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *74* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:57* | *1* |

## Client Sample ID: H-2254 R QC M0010 XAD-2 TB

**Lab Sample ID: 140-10863-25**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 14:32 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *74* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 14:32* | *1* |

## Client Sample ID: H-2255,2256,2257 R QC M0010 PROOF BLANK

**Lab Sample ID: 140-10863-26**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**
**Sample Container: Air Train**

### Method: 8321A - PFOA and PFOS

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **HFPO-DA** | **0.0948** | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 04:38 | 03/09/18 14:35 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *88* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 14:35* | *1* |

# Default Detection Limits

Client: Chemours Company FC, LLC The
Project/Site: Polymer Processing Aid  Emissions Test

TestAmerica Job ID: 140-10863-1

## Method: 8321A - HFPO-DA

### Prep: None

| Analyte | RL | MDL | Units | Method |
|---|---|---|---|---|
| HFPO-DA | 0.00250 | 0.00128 | ug/Sample | 8321A |

## Method: 8321A - PFOA and PFOS

### Prep: None

| Analyte | RL | MDL | Units | Method |
|---|---|---|---|---|
| HFPO-DA | 0.0250 | 0.0250 | ug/Sample | 8321A |
| HFPO-DA | 0.100 | 0.100 | ug/Sample | 8321A |

# Surrogate Summary

Client: Chemours Company FC, LLC The
Project/Site: Polymer Processing Aid Emissions Test

TestAmerica Job ID: 140-10863-1

## Method: 8321A - HFPO-DA

**Matrix: Air** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) |
|---|---|---|
| Lab Sample ID | Client Sample ID | HFPODA (50-200) |
| 140-10863-3 | H-2205 R1 M0010 IMP COND | 91 |
| 140-10863-7 | H-2212 R2 M0010 IMP COND | 89 |
| 140-10863-11 | H-2226 R4 M0010 IMP COND | 92 |
| 140-10863-15 | H-2233 R5 M0010 IMP COND | 88 |
| 140-10863-19 | H-2247 R QC M0010 IMP CONI | 69 |
| 140-10863-21 | H-2250 R QC M0010 DI WATEF | 81 |
| LCS 280-406765/2-A | Lab Control Sample | 90 |
| LCSD 280-406765/14-A | Lab Control Sample Dup | 92 |
| LLCS 280-406765/15-A | Lab Control Sample | 87 |
| MB 280-406765/1-A | Method Blank | 94 |

**Surrogate Legend**

HFPODA = 13C3 HFPO-DA

## Method: 8321A - PFOA and PFOS

**Matrix: Air** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) |
|---|---|---|
| Lab Sample ID | Client Sample ID | HFPODA (50-200) |
| 140-10863-1 | H-2201,2202 R1 M0010 FH | 30 X |
| 140-10863-1 | H-2201,2202 R1 M0010 FH | 79 D |
| 140-10863-2 | H-2203,2204,2206 R1 M0010 BI | 4 X |
| 140-10863-2 | H-2203,2204,2206 R1 M0010 BI | 69 |
| 140-10863-2 | H-2203,2204,2206 R1 M0010 BI | 70 D |
| 140-10863-2 - DL | H-2203,2204,2206 R1 M0010 BI | 51 D |
| 140-10863-4 | H-2207 R1 M0010 XAD-2 | 61 |
| 140-10863-5 | H-2208,2209 R2 M0010 FH | 26 X |
| 140-10863-5 | H-2208,2209 R2 M0010 FH | 86 D |
| 140-10863-6 | H-2210,2211,2213 R2 M0010 BI | 4 X |
| 140-10863-6 | H-2210,2211,2213 R2 M0010 BI | 66 |
| 140-10863-6 | H-2210,2211,2213 R2 M0010 BI | 69 D |
| 140-10863-6 - DL | H-2210,2211,2213 R2 M0010 BI | 54 D |
| 140-10863-8 | H-2214 R2 M0010 XAD-2 | 72 |
| 140-10863-9 | H-2222,2223 R4 M0010 FH | 24 X |
| 140-10863-9 | H-2222,2223 R4 M0010 FH | 76 D |
| 140-10863-10 | H-2224,2225,2227 R4 M0010 BI | 58 |
| 140-10863-10 | H-2224,2225,2227 R4 M0010 BI | 75 |
| 140-10863-10 | H-2224,2225,2227 R4 M0010 BI | 64 D |
| 140-10863-12 | H-2228 R4 M0010 XAD-2 | 63 |
| 140-10863-13 | H-2229,2230 R5 M0010 FH | 28 X |
| 140-10863-13 | H-2229,2230 R5 M0010 FH | 77 D |
| 140-10863-14 | H-2231,2232,2234 R5 M0010 BI | 71 |
| 140-10863-14 | H-2231,2232,2234 R5 M0010 BI | 75 |
| 140-10863-16 | H-2235 R5 M0010 XAD-2 | 66 |
| 140-10863-17 | H-2243,2244 R QC M0010 FH E | 66 |
| 140-10863-17 | H-2243,2244 R QC M0010 FH E | 70 D |
| 140-10863-18 | H-2245,2246,2248 R QC M0010 | 70 |
| 140-10863-18 | H-2245,2246,2248 R QC M0010 | 66 D |

# Surrogate Summary

Client: Chemours Company FC, LLC The
Project/Site: Polymer Processing Aid Emissions Test

TestAmerica Job ID: 140-10863-1

## Method: 8321A - PFOA and PFOS (Continued)

**Matrix: Air**

**Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) |
|---|---|---|
| Lab Sample ID | Client Sample ID | HFPODA (50-200) |
| 140-10863-20 | H-2249 R QC M0010 XAD-2 BT | 67 |
| 140-10863-22 | H-2251 R QC M0010 MEOH WI | 73 |
| 140-10863-23 | H-2252 R QC M0010 XAD-2 RB | 27 X |
| 140-10863-24 | H-2253 R QC M0010 MEOH WI | 74 |
| 140-10863-25 | H-2254 R QC M0010 XAD-2 TB | 74 |
| 140-10863-26 | H-2255,2256,2257 R QC M0010 | 88 |
| DLCK 280-404345/13 | Lab Control Sample | 104 |
| LCS 280-406763/2-A | Lab Control Sample | 77 |
| LCS 280-406764/2-A | Lab Control Sample | 72 |
| MB 280-406763/1-A | Method Blank | 69 |
| MB 280-406764/1-A | Method Blank | 64 |

**Surrogate Legend**

HFPODA = 13C3 HFPO-DA

## Method: 8321A - HFPO-DA

**Lab Sample ID: MB 280-406765/1-A**
**Matrix: Air**
**Analysis Batch: 407567**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 406765**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.00250 | 0.000128 | ug/Sample | | 03/11/18 10:52 | 03/12/18 09:16 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *94* | | *50 - 200* | *03/11/18 10:52* | *03/12/18 09:16* | *1* |

**Lab Sample ID: LCS 280-406765/2-A**
**Matrix: Air**
**Analysis Batch: 407567**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 406765**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.0500 | 0.05486 | | ug/Sample | | 110 | 50 - 150 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *90* | | *50 - 200* |

**Lab Sample ID: LCSD 280-406765/14-A**
**Matrix: Air**
**Analysis Batch: 407567**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 406765**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.0500 | 0.05420 | | ug/Sample | | 108 | 50 - 150 | 1 | 35 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *92* | | *50 - 200* |

**Lab Sample ID: LLCS 280-406765/15-A**
**Matrix: Air**
**Analysis Batch: 407567**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 406765**

| Analyte | | | Spike Added | LLCS Result | LLCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.00500 | 0.004384 | | ug/Sample | | 88 | 50 - 150 | | |

| *Surrogate* | *LLCS %Recovery* | *LLCS Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *87* | | *50 - 200* |

## Method: 8321A - PFOA and PFOS

**Lab Sample ID: DLCK 280-404345/13**
**Matrix: Air**
**Analysis Batch: 404345**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | DLCK Result | DLCK Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.250 | 0.2255 | | ug/L | | 90 | 70 - 130 | | |

| *Surrogate* | *DLCK %Recovery* | *DLCK Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *104* | | *50 - 200* |

## Method: 8321A - PFOA and PFOS (Continued)

**Lab Sample ID: MB 280-406763/1-A**
**Matrix: Air**
**Analysis Batch: 407389**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 406763**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.0250 | 0.0250 | ug/Sample | | 03/05/18 14:00 | 03/09/18 12:05 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *69* | | *50 - 200* | *03/05/18 14:00* | *03/09/18 12:05* | *1* |

**Lab Sample ID: LCS 280-406763/2-A**
**Matrix: Air**
**Analysis Batch: 407389**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 406763**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 0.500 | 0.4835 | | ug/Sample | | 97 | 50 - 150 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *77* | | *50 - 200* |

**Lab Sample ID: MB 280-406764/1-A**
**Matrix: Air**
**Analysis Batch: 407390**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 406764**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | ND | | 0.200 | 0.200 | ug/Sample | | 03/05/18 04:38 | 03/09/18 13:04 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 HFPO-DA* | *64* | | *50 - 200* | *03/05/18 04:38* | *03/09/18 13:04* | *1* |

**Lab Sample ID: LCS 280-406764/2-A**
**Matrix: Air**
**Analysis Batch: 407390**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 406764**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | | | 4.00 | 3.498 | | ug/Sample | | 87 | 50 - 150 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *13C3 HFPO-DA* | *72* | | *50 - 200* |

## Client Sample ID: H-2201,2202 R1 M0010 FH

**Lab Sample ID: 140-10863-1**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 300 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:34 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 1 Sample | 300 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 50 | | | 407565 | 03/12/18 08:33 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2203,2204,2206 R1 M0010 BH

**Lab Sample ID: 140-10863-2**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:53 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 0.00025 Sample | 50 mL | 407095 | 03/07/18 09:47 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407391 | 03/09/18 14:42 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 0.00025 Sample | 50 mL | 407095 | 03/07/18 09:47 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 2 | | | 407566 | 03/12/18 09:06 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | DL | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | DL | 50 | | | 408337 | 03/19/18 13:23 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2205 R1 M0010 IMP COND

**Lab Sample ID: 140-10863-3**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 0.02 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:48 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2207 R1 M0010 XAD-2

**Lab Sample ID: 140-10863-4**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407566 | 03/12/18 08:53 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2208,2209 R2 M0010 FH

**Lab Sample ID: 140-10863-5**

**Date Collected: 03/02/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 200 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:41 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 1 Sample | 200 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 50 | | | 407565 | 03/12/18 08:37 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2210,2211,2213 R2 M0010 BH

**Lab Sample ID: 140-10863-6**

**Date Collected: 03/02/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:59 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 0.00025 Sample | 50 mL | 407095 | 03/07/18 09:47 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407391 | 03/09/18 14:45 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 0.00025 Sample | 50 mL | 407095 | 03/07/18 09:47 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 4 | | | 407566 | 03/12/18 09:09 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | DL | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | DL | 50 | | | 408337 | 03/19/18 13:26 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2212 R2 M0010 IMP COND

**Lab Sample ID: 140-10863-7**

**Date Collected: 03/02/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 0.02 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:51 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2214 R2 M0010 XAD-2

**Lab Sample ID: 140-10863-8**

**Date Collected: 03/02/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407566 | 03/12/18 08:56 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2222,2223 R4 M0010 FH

**Lab Sample ID: 140-10863-9**

**Date Collected: 03/01/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 200 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:44 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 1 Sample | 200 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 50 | | | 407565 | 03/12/18 08:40 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2224,2225,2227 R4 M0010 BH

**Lab Sample ID: 140-10863-10**

**Date Collected: 03/01/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 14:06 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 0.00025 Sample | 50 mL | 407095 | 03/07/18 09:47 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407391 | 03/09/18 14:48 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 5 | | | 407566 | 03/12/18 08:59 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2226 R4 M0010 IMP COND

**Lab Sample ID: 140-10863-11**

**Date Collected: 03/01/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 0.02 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:55 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2228 R4 M0010 XAD-2

**Lab Sample ID: 140-10863-12**

**Date Collected: 03/01/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 14:09 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2229,2230 R5 M0010 FH

**Lab Sample ID: 140-10863-13**

**Date Collected: 03/01/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 200 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:47 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 1 Sample | 200 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 50 | | | 407565 | 03/12/18 08:43 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2231,2232,2234 R5 M0010 BH

**Lab Sample ID: 140-10863-14**

**Date Collected: 03/01/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 14:16 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 0.00025 Sample | 50 mL | 407095 | 03/07/18 09:47 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407391 | 03/09/18 14:51 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2233 R5 M0010 IMP COND

**Lab Sample ID: 140-10863-15**

**Date Collected: 03/01/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 0.02 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:58 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2235 R5 M0010 XAD-2

**Lab Sample ID: 140-10863-16**

**Date Collected: 03/01/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 14:19 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2243,2244 R QC M0010 FH BT

**Lab Sample ID: 140-10863-17**

**Date Collected: 03/02/18 00:00**

**Matrix: Air**

**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |

## Client Sample ID: H-2243,2244 R QC M0010 FH BT — Lab Sample ID: 140-10863-17

**Date Collected: 03/02/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:51 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 2 | | | 407565 | 03/12/18 08:46 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2245,2246,2248 R QC M0010 BH BT — Lab Sample ID: 140-10863-18

**Date Collected: 03/02/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 14:22 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 2 | | | 407566 | 03/12/18 09:03 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2247 R QC M0010 IMP COND BT — Lab Sample ID: 140-10863-19

**Date Collected: 03/02/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 10:01 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2249 R QC M0010 XAD-2 BT — Lab Sample ID: 140-10863-20

**Date Collected: 03/02/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 14:25 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2250 R QC M0010 DI WATER RB — Lab Sample ID: 140-10863-21

**Date Collected: 03/01/18 00:00** — **Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |

## Client Sample ID: H-2250 R QC M0010 DI WATER RB

**Lab Sample ID: 140-10863-21**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 10:04 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2251 R QC M0010 MEOH WITH 5% NH4OH RB

**Lab Sample ID: 140-10863-22**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:54 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2252 R QC M0010 XAD-2 RB

**Lab Sample ID: 140-10863-23**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 14:29 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2253 R QC M0010 MEOH WITH 5% HN4OH TB

**Lab Sample ID: 140-10863-24**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:57 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2254 R QC M0010 XAD-2 TB

**Lab Sample ID: 140-10863-25**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 14:32 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: H-2255,2256,2257 R QC M0010 PROOF BLANK

**Lab Sample ID: 140-10863-26**

**Date Collected: 03/01/18 00:00**
**Matrix: Air**
**Date Received: 03/03/18 08:00**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 14:35 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Method Blank

**Lab Sample ID: MB 280-406763/1-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:05 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Method Blank

**Lab Sample ID: MB 280-406764/1-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:04 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Method Blank

**Lab Sample ID: MB 280-406765/1-A**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:16 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample

**Lab Sample ID: DLCK 280-404345/13**

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

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8321A | | 1 | | | 404345 | 02/08/18 13:38 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample
**Lab Sample ID: LCS 280-406763/2-A**
**Date Collected: N/A**
**Matrix: Air**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 50 mL | 406763 | 03/05/18 14:00 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407389 | 03/09/18 12:08 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample
**Lab Sample ID: LCS 280-406764/2-A**
**Date Collected: N/A**
**Matrix: Air**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 400 mL | 406764 | 03/05/18 04:38 | | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407390 | 03/09/18 13:07 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample
**Lab Sample ID: LCS 280-406765/2-A**
**Date Collected: N/A**
**Matrix: Air**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:19 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample Dup
**Lab Sample ID: LCSD 280-406765/14-A**
**Date Collected: N/A**
**Matrix: Air**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:22 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

## Client Sample ID: Lab Control Sample
**Lab Sample ID: LLCS 280-406765/15-A**
**Date Collected: N/A**
**Matrix: Air**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | None | | | 1 Sample | 5 mL | 406765 | 03/11/18 10:52 | HMA | TAL DEN |
| Total/NA | Analysis | 8321A | | 1 | | | 407567 | 03/12/18 09:25 | AGCM | TAL DEN |
| | Instrument ID: LC_LCMS7 | | | | | | | | | |

**Laboratory References:**
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

# Accreditation/Certification Summary

Client: Chemours Company FC, LLC The
TestAmerica Job ID: 140-10863-1
Project/Site: Polymer Processing Aid Emissions Test

## Laboratory: TestAmerica Knoxville

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| | AFCEE | | N/A | |
| ANAB | DoD ELAP | | L2311 | 02-13-19 |
| Arkansas DEQ | State Program | 6 | 88-0688 | 06-16-18 |
| California | State Program | 9 | 2423 | 06-30-18 |
| Colorado | State Program | 8 | TN00009 | 02-28-19 |
| Connecticut | State Program | 1 | PH-0223 | 09-30-19 |
| Florida | NELAP | 4 | E87177 | 06-30-18 |
| Georgia | State Program | 4 | 906 | 04-13-20 |
| Hawaii | State Program | 9 | N/A | 04-13-18 |
| Kansas | NELAP | 7 | E-10349 | 10-31-18 |
| Kentucky (DW) | State Program | 4 | 90101 | 12-31-18 |
| Louisiana | NELAP | 6 | 83979 | 06-30-18 |
| Louisiana (DW) | NELAP | 6 | LA160005 | 12-31-18 |
| Maryland | State Program | 3 | 277 | 03-31-19 |
| Michigan | State Program | 5 | 9933 | 04-13-20 |
| Nevada | State Program | 9 | TN00009 | 07-31-18 |
| New Jersey | NELAP | 2 | TN001 | 06-30-18 |
| New York | NELAP | 2 | 10781 | 03-31-18 |
| North Carolina (DW) | State Program | 4 | 21705 | 07-31-18 |
| North Carolina (WW/SW) | State Program | 4 | 64 | 12-31-18 |
| Ohio VAP | State Program | 5 | CL0059 | 11-22-18 |
| Oklahoma | State Program | 6 | 9415 | 08-31-18 |
| Oregon | NELAP | 10 | TNI0189 | 01-01-19 |
| Pennsylvania | NELAP | 3 | 68-00576 | 12-31-18 |
| Tennessee | State Program | 4 | 2014 | 04-13-20 |
| Texas | NELAP | 6 | T104704380-16-9 | 08-31-18 |
| US Fish & Wildlife | Federal | | LE-058448-0 | 07-31-18 |
| USDA | Federal | | P330-16-00262 | 08-20-19 |
| Utah | NELAP | 8 | TN00009 | 07-31-18 |
| Virginia | NELAP | 3 | 460176 | 09-14-18 |
| Washington | State Program | 10 | C593 | 01-19-19 |
| West Virginia (DW) | State Program | 3 | 9955C | 12-31-18 |
| West Virginia DEP | State Program | 3 | 345 | 04-30-18 |
| Wisconsin | State Program | 5 | 998044300 | 08-31-18 |

## Laboratory: TestAmerica Denver

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| A2LA | DoD ELAP | | 2907.01 | 10-31-19 |
| A2LA | ISO/IEC 17025 | | 2907.01 | 10-31-19 |
| Alabama | State Program | 4 | 40730 | 09-30-12 * |
| Alaska (UST) | State Program | 10 | UST-30 | 01-08-19 |
| Arizona | State Program | 9 | AZ0713 | 12-20-18 |
| Arkansas DEQ | State Program | 6 | 88-0687 | 06-01-18 |
| California | State Program | 9 | 2513 | 01-18-19 |
| Connecticut | State Program | 1 | PH-0686 | 09-30-18 |
| Florida | NELAP | 4 | E87667 | 06-30-18 |
| Georgia | State Program | 4 | N/A | 01-08-18 * |
| Illinois | NELAP | 5 | 200017 | 04-30-18 |

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

## Laboratory: TestAmerica Denver (Continued)

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|---|---|---|---|---|
| Iowa | State Program | 7 | 370 | 12-01-18 |
| Kansas | NELAP | 7 | E-10166 | 04-30-18 |
| Louisiana | NELAP | 6 | 02096 | 06-30-18 |
| Maine | State Program | 1 | CO0002 | 03-03-19 |
| Minnesota | NELAP | 5 | 8-999-405 | 12-31-18 |
| Nevada | State Program | 9 | CO0026 | 07-31-18 |
| New Hampshire | NELAP | 1 | 205310 | 04-28-18 |
| New Jersey | NELAP | 2 | CO004 | 06-30-18 |
| New York | NELAP | 2 | 11964 | 04-01-18 |
| North Carolina (WW/SW) | State Program | 4 | 358 | 12-31-18 |
| North Dakota | State Program | 8 | R-034 | 01-08-19 |
| Oklahoma | State Program | 6 | 8614 | 08-31-18 |
| Oregon | NELAP | 10 | 4025 | 01-08-19 |
| Pennsylvania | NELAP | 3 | 68-00664 | 07-31-18 |
| South Carolina | State Program | 4 | 72002001 | 01-08-19 |
| Texas | NELAP | 6 | T104704183-17-14 | 09-30-18 |
| USDA | Federal | | P330-16-00397 | 12-15-19 |
| Utah | NELAP | 8 | CO00026 | 07-31-18 |
| Virginia | NELAP | 3 | 460232 | 06-14-18 |
| Washington | State Program | 10 | C583 | 08-03-18 |
| West Virginia DEP | State Program | 3 | 354 | 12-31-18 |
| Wisconsin | State Program | 5 | 999615430 | 08-31-18 |
| Wyoming (UST) | A2LA | 8 | 2907.01 | 10-31-19 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Instrument ID: LC_LCMS7 Analysis Batch Number: 404345

Lab Sample ID: STD001 280-404345/3 IC Client Sample ID:

Date Analyzed: 02/08/18 13:05 Lab File ID: hfpo718B08034.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.06 | Assign Peak | meyera | 02/08/18 15:19 |

Lab Sample ID: STD002 280-404345/4 IC Client Sample ID:

Date Analyzed: 02/08/18 13:08 Lab File ID: hfpo718B08035.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.06 | Baseline | meyera | 02/08/18 15:19 |

Lab Sample ID: DLCK 280-404345/13 Client Sample ID:

Date Analyzed: 02/08/18 13:38 Lab File ID: hfpo718B08044.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.06 | Baseline | meyera | 02/08/18 15:20 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Instrument ID: LC_LCMS7 Analysis Batch Number: 407389

Lab Sample ID: 140-10863-22 Client Sample ID: H-2251 R QC M0010 MEOH WITH 5% NH4OH RB

Date Analyzed: 03/09/18 12:54 Lab File ID: hfpo718C09086.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.04 | Assign Peak | meyera | 03/09/18 13:17 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Instrument ID: LC_LCMS7 Analysis Batch Number: 407390

Lab Sample ID: 140-10863-2 Client Sample ID: H-2203,2204,2206 R1 M0010 BH

Date Analyzed: 03/09/18 13:53 Lab File ID: hfpo718C09104.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.08 | Baseline | meyera | 03/12/18 07:23 |
| 13C3 HFPO-DA | 1.10 | Baseline | meyera | 03/12/18 07:23 |

Lab Sample ID: 140-10863-6 Client Sample ID: H-2210,2211,2213 R2 M0010 BH

Date Analyzed: 03/09/18 13:59 Lab File ID: hfpo718C09106.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| 13C3 HFPO-DA | 1.08 | Baseline | meyera | 03/12/18 07:23 |
| HFPO-DA | 1.10 | Baseline | meyera | 03/12/18 07:23 |

Lab Sample ID: 140-10863-12 Client Sample ID: H-2228 R4 M0010 XAD-2

Date Analyzed: 03/09/18 14:09 Lab File ID: hfpo718C09109.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.06 | Baseline | meyera | 03/12/18 07:24 |

Lab Sample ID: 140-10863-16 Client Sample ID: H-2235 R5 M0010 XAD-2

Date Analyzed: 03/09/18 14:19 Lab File ID: hfpo718C09112.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.04 | Assign Peak | meyera | 03/12/18 07:24 |

Lab Sample ID: 140-10863-20 Client Sample ID: H-2249 R QC M0010 XAD-2 BT

Date Analyzed: 03/09/18 14:25 Lab File ID: hfpo718C09114.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.03 | Assign Peak | meyera | 03/12/18 07:25 |

8321A

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Instrument ID: LC_LCMS7 Analysis Batch Number: 407390

Lab Sample ID: 140-10863-23 Client Sample ID: H-2252 R QC M0010 XAD-2 RB

Date Analyzed: 03/09/18 14:29 Lab File ID: hfpo718C09115.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.03 | Assign Peak | meyera | 03/12/18 07:25 |

Lab Sample ID: 140-10863-25 Client Sample ID: H-2254 R QC M0010 XAD-2 TB

Date Analyzed: 03/09/18 14:32 Lab File ID: hfpo718C09116.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.03 | Assign Peak | meyera | 03/12/18 07:25 |

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Instrument ID: LC_LCMS7 Analysis Batch Number: 407391

Lab Sample ID: 140-10863-14 Client Sample ID: H-2231,2232,2234 R5 M0010 BH

Date Analyzed: 03/09/18 14:51 Lab File ID: hfpo718C09122.d GC Column: Synergi Hydro ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| HFPO-DA | 1.03 | Baseline | meyera | 03/12/18 07:26 |

# 8321A_HFPO_Du

**HFPO-DA**

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Matrix: Air Level: Low

GC Column (1): Synergi Hyd ID:

| Client Sample ID | Lab Sample ID | HFPODA # |
|---|---|---|
| H-2205 R1 M0010 IMP COND | 140-10863-3 | 91 |
| H-2212 R2 M0010 IMP COND | 140-10863-7 | 89 |
| H-2226 R4 M0010 IMP COND | 140-10863-11 | 92 |
| H-2233 R5 M0010 IMP COND | 140-10863-15 | 88 |
| H-2247 R QC M0010 IMP COND BT | 140-10863-19 | 69 |
| H-2250 R QC M0010 DI WATER RB | 140-10863-21 | 81 |
| | MB 280-406765/1-A | 94 |
| | LCS 280-406765/2-A | 90 |
| | LCSD 280-406765/14-A | 92 |
| | LLCS 280-406765/15-A | 87 |

| | QC LIMITS |
|---|---|
| HFPODA = 13C3 HFPO-DA | 50-200 |

# Column to be used to flag recovery values

FORM II 8321A

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Matrix: Air Level: Low Lab File ID: hfpo718C12020.d

Lab ID: LCS 280-406765/2-A Client ID:

| COMPOUND | SPIKE ADDED (ug/Sample) | LCS CONCENTRATION (ug/Sample) | LCS % REC | QC LIMITS REC | # |
|---|---|---|---|---|---|
| HFPO-DA | 0.0500 | 0.05486 | 110 | 50-150 | |

# Column to be used to flag recovery and RPD values

FORM III 8321A

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Matrix: Air Level: Low Lab File ID: hfpo718C12021.d

Lab ID: LCSD 280-406765/14-A Client ID:

| COMPOUND | SPIKE ADDED (ug/Sample) | LCSD CONCENTRATION (ug/Sample) | LCSD % REC | % RPD | QC LIMITS RPD | QC LIMITS REC | # |
|---|---|---|---|---|---|---|---|
| HFPO-DA | 0.0500 | 0.05420 | 108 | 1 | 35 | 50-150 | |

# Column to be used to flag recovery and RPD values

FORM III 8321A

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Matrix: Air Level: Low Lab File ID: hfpo718C12022.d

Lab ID: LLCS 280-406765/15-A Client ID:

| COMPOUND | SPIKE ADDED (ug/Sample) | LLCS CONCENTRATION (ug/Sample) | LLCS % REC | QC LIMITS REC | # |
|---|---|---|---|---|---|
| HFPO-DA | 0.00500 | 0.004384 | 88 | 50-150 | |

# Column to be used to flag recovery and RPD values

FORM III 8321A

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver  Job No.: 140-10863-1

SDG No.:

Lab File ID: hfpo718C12019.d  Lab Sample ID: MB 280-406765/1-A

Matrix: Air  Date Extracted: 03/11/2018 10:52

Instrument ID: LC_LCMS7  Date Analyzed: 03/12/2018 09:16

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|
| | LCS 280-406765/2-A | hfpo718C12020.d | 03/12/2018 09:19 |
| | LCSD 280-406765/14-A | hfpo718C12021.d | 03/12/2018 09:22 |
| | LLCS 280-406765/15-A | hfpo718C12022.d | 03/12/2018 09:25 |
| H-2205 R1 M0010 IMP COND | 140-10863-3 | hfpo718C12029.d | 03/12/2018 09:48 |
| H-2212 R2 M0010 IMP COND | 140-10863-7 | hfpo718C12030.d | 03/12/2018 09:51 |
| H-2226 R4 M0010 IMP COND | 140-10863-11 | hfpo718C12031.d | 03/12/2018 09:55 |
| H-2233 R5 M0010 IMP COND | 140-10863-15 | hfpo718C12032.d | 03/12/2018 09:58 |
| H-2247 R QC M0010 IMP COND BT | 140-10863-19 | hfpo718C12033.d | 03/12/2018 10:01 |
| H-2250 R QC M0010 DI WATER RB | 140-10863-21 | hfpo718C12034.d | 03/12/2018 10:04 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: H-2205 R1 M0010 IMP COND | Lab Sample ID: 140-10863-3

Matrix: Air | Lab File ID: hfpo718C12029.d

Analysis Method: 8321A | Date Collected: 03/01/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 0.02(Sample) | Date Analyzed: 03/12/2018 09:48

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.118 | J | 0.125 | 0.00638 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 91 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12029.d
Lims ID: 140-10863-A-3-A
Client ID: H-2205 R1 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:48:32 ALS Bottle#: 27 Worklist Smp#: 29
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10863-A-3-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:53:00

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | 1.000 | 676950 | 9.07 | 3280 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | | 676950 | 10.0 | 3280 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.029 | 1.056 | -0.027 | 1.000 | 36295 | 0.4700 | 9.0 | |

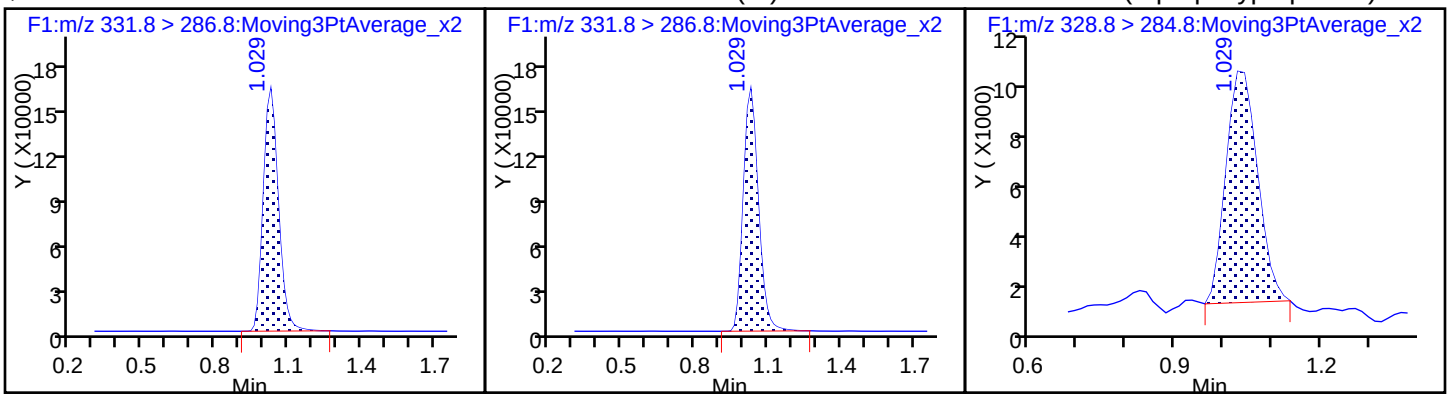
Report Date: 12-Mar-2018 10:54:22 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12029.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 09:48:32 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10863-A-3-A | Lab Sample ID: | 280-10863-3 | | |
| Client ID: | H-2205 R1 M0010 IMP COND | | | | |
| Operator ID: | JBH | ALS Bottle#: | 27 | Worklist Smp#: | 29 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12029.d | | | | |
| Lims ID: | 140-10863-A-3-A | | | | |
| Client ID: | H-2205 R1 M0010 IMP COND | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 12-Mar-2018 09:48:32 | ALS Bottle#: | 27 | Worklist Smp#: | 29 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 140-10863-A-3-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:21 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:53:00 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 9.07 | 90.67 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: H-2212 R2 M0010 IMP COND | Lab Sample ID: 140-10863-7

Matrix: Air | Lab File ID: hfpo718C12030.d

Analysis Method: 8321A | Date Collected: 03/02/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 0.02(Sample) | Date Analyzed: 03/12/2018 09:51

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | ND | | 0.125 | 0.00638 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 89 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12030.d
Lims ID: 140-10863-A-7-A
Client ID: H-2212 R2 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:51:46 ALS Bottle#: 28 Worklist Smp#: 30
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10863-A-7-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:53:03

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | 1.000 | 667447 | 8.94 | 2962 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | | 667447 | 10.0 | 2962 | |

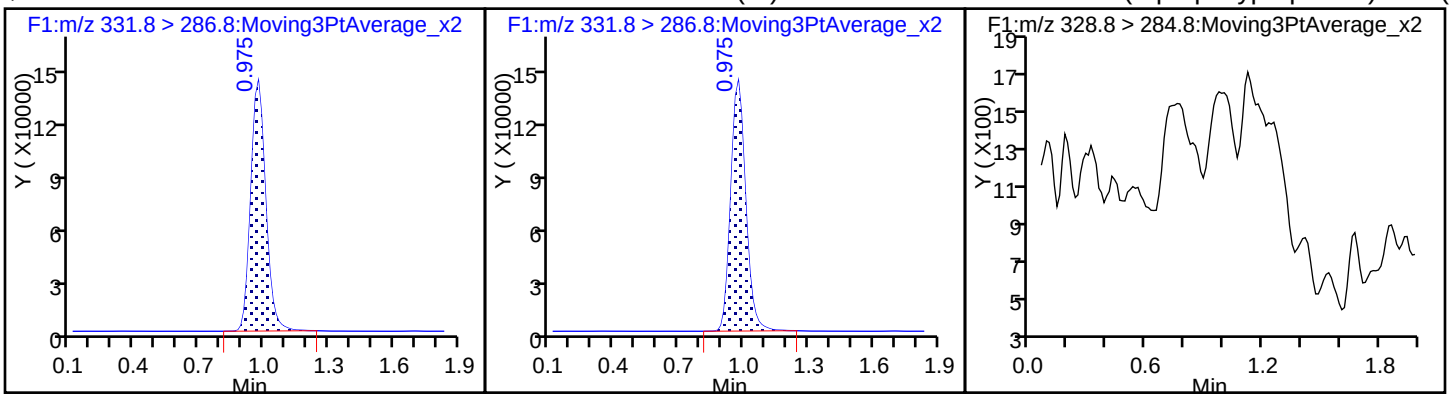
Report Date: 12-Mar-2018 10:54:23 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12030.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 09:51:46 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10863-A-7-A | Lab Sample ID: | 280-10863-7 | | |
| Client ID: | H-2212 R2 M0010 IMP COND | | | | |
| Operator ID: | JBH | ALS Bottle#: | 28 | Worklist Smp#: | 30 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid (ND)



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12030.d | | | | |
| Lims ID: | 140-10863-A-7-A | | | | |
| Client ID: | H-2212 R2 M0010 IMP COND | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 12-Mar-2018 09:51:46 | ALS Bottle#: | 28 | Worklist Smp#: | 30 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 140-10863-A-7-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:21 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:53:03 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 8.94 | 89.40 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: H-2226 R4 M0010 IMP COND | Lab Sample ID: 140-10863-11

Matrix: Air | Lab File ID: hfpo718C12031.d

Analysis Method: 8321A | Date Collected: 03/01/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 0.02(Sample) | Date Analyzed: 03/12/2018 09:55

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.227 | | 0.125 | 0.00638 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 92 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12031.d
Lims ID: 140-10863-A-11-A
Client ID: H-2226 R4 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:55:02 ALS Bottle#: 29 Worklist Smp#: 31
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10863-A-11-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:53:07

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | 1.000 | 685103 | 9.18 | 3116 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | | 685103 | 10.0 | 3116 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 68666 | 0.9082 | 25.2 | |

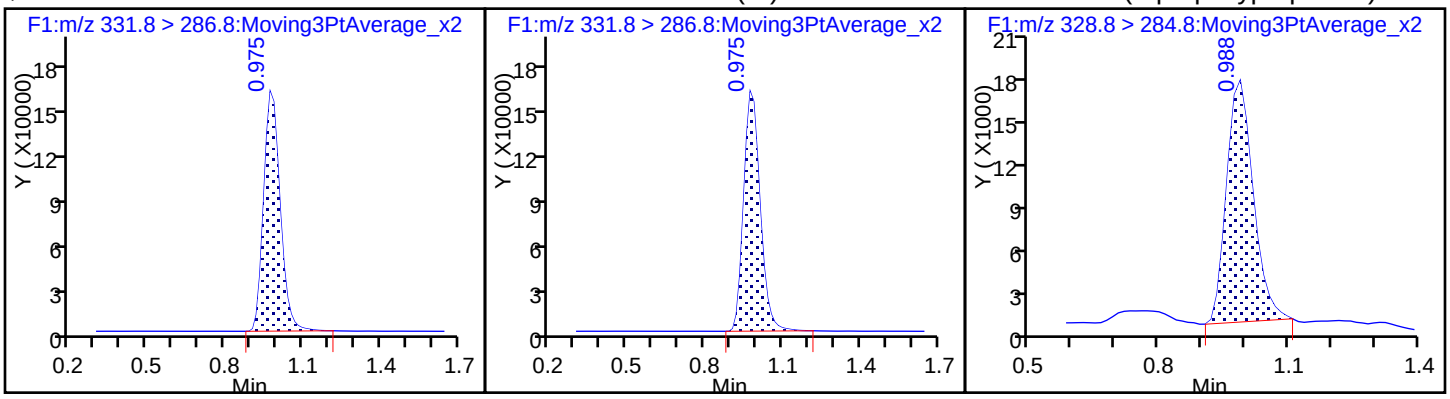
Report Date: 12-Mar-2018 10:54:24 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12031.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 09:55:02 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10863-A-11-A | Lab Sample ID: | 280-10863-11 | | |
| Client ID: | H-2226 R4 M0010 IMP COND | | | | |
| Operator ID: | JBH | ALS Bottle#: | 29 | Worklist Smp#: | 31 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12031.d
Lims ID: 140-10863-A-11-A
Client ID: H-2226 R4 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:55:02 ALS Bottle#: 29 Worklist Smp#: 31
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10863-A-11-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:53:07

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 9.18 | 91.76 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: H-2233 R5 M0010 IMP COND | Lab Sample ID: 140-10863-15

Matrix: Air | Lab File ID: hfpo718C12032.d

Analysis Method: 8321A | Date Collected: 03/01/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 0.02(Sample) | Date Analyzed: 03/12/2018 09:58

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.250 | | 0.125 | 0.00638 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 88 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12032.d
Lims ID: 140-10863-A-15-A
Client ID: H-2233 R5 M0010 IMP COND
Sample Type: Client
Inject. Date: 12-Mar-2018 09:58:18 ALS Bottle#: 30 Worklist Smp#: 32
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10863-A-15-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:53:10

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | 1.000 | 659295 | 8.83 | 2446 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | | 659295 | 10.0 | 2446 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.002 | 1.056 | -0.054 | 1.000 | 72566 | 1.00 | 26.4 | |

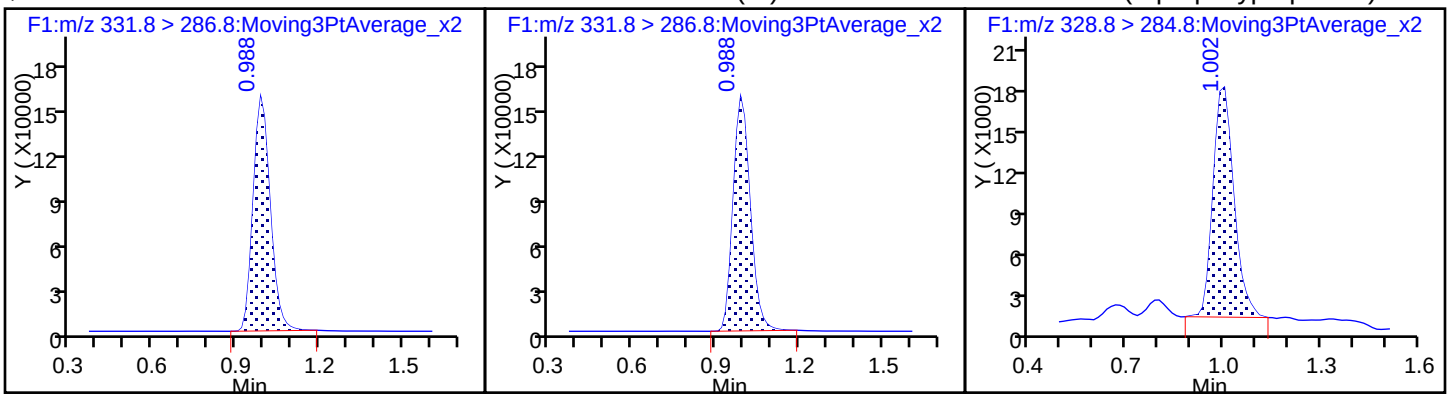
Report Date: 12-Mar-2018 10:54:26 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12032.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 09:58:18 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10863-A-15-A | Lab Sample ID: | 280-10863-15 | | |
| Client ID: | H-2233 R5 M0010 IMP COND | | | | |
| Operator ID: | JBH | ALS Bottle#: | 30 | Worklist Smp#: | 32 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12032.d | | | | |
| Lims ID: | 140-10863-A-15-A | | | | |
| Client ID: | H-2233 R5 M0010 IMP COND | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 12-Mar-2018 09:58:18 | ALS Bottle#: | 30 | Worklist Smp#: | 32 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 140-10863-A-15-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:21 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:53:10 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 8.83 | 88.31 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: H-2247 R QC M0010 IMP COND BT | Lab Sample ID: 140-10863-19

Matrix: Air | Lab File ID: hfpo718C12033.d

Analysis Method: 8321A | Date Collected: 03/02/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 10:01

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.0106 | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 69 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12033.d
Lims ID: 140-10863-A-19-A
Client ID: H-2247 R QC M0010 IMP COND BT
Sample Type: Client
Inject. Date: 12-Mar-2018 10:01:34 ALS Bottle#: 31 Worklist Smp#: 33
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10863-A-19-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:53:14

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | 1.000 | 513558 | 6.88 | 1874 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | | 513558 | 10.0 | 1874 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.002 | 1.056 | -0.054 | 1.000 | 117337 | 2.11 | 38.5 | |

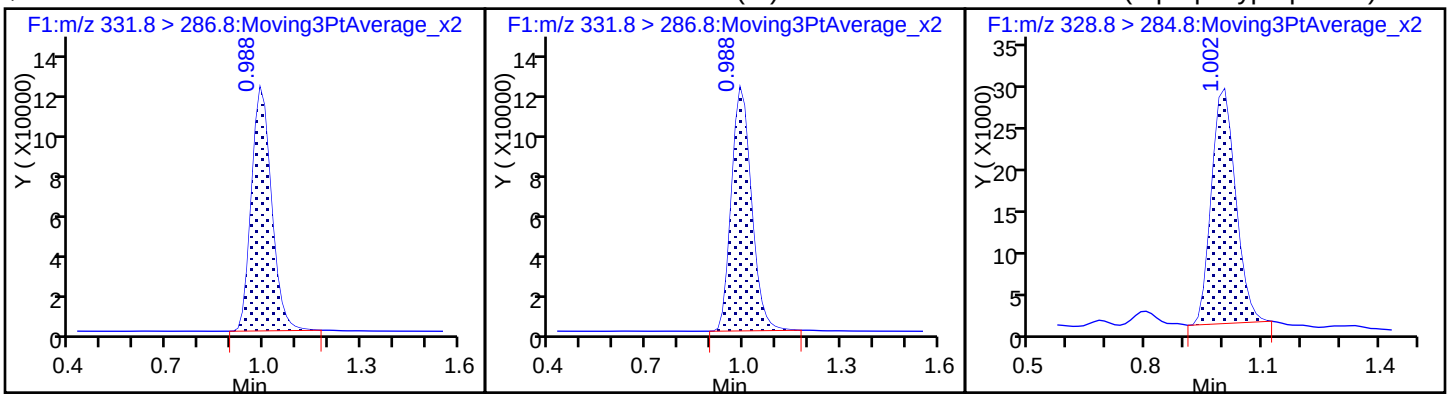
Report Date: 12-Mar-2018 10:54:27 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12033.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 10:01:34 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10863-A-19-A | Lab Sample ID: | 280-10863-19 | | |
| Client ID: | H-2247 R QC M0010 IMP COND BT | | | | |
| Operator ID: | JBH | ALS Bottle#: | 31 | Worklist Smp#: | 33 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12033.d | | | | |
| Lims ID: | 140-10863-A-19-A | | | | |
| Client ID: | H-2247 R QC M0010 IMP COND BT | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 12-Mar-2018 10:01:34 | ALS Bottle#: | 31 | Worklist Smp#: | 33 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 140-10863-A-19-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:21 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:53:14 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 6.88 | 68.79 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: H-2250 R QC M0010 DI WATER RB | Lab Sample ID: 140-10863-21

Matrix: Air | Lab File ID: hfpo718C12034.d

Analysis Method: 8321A | Date Collected: 03/01/2018 00:00

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 10:04

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | ND | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 81 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12034.d
Lims ID: 140-10863-A-21-A
Client ID: H-2250 R QC M0010 DI WATER RB
Sample Type: Client
Inject. Date: 12-Mar-2018 10:04:50 ALS Bottle#: 32 Worklist Smp#: 34
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10863-A-21-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:53:18

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | 1.000 | 605199 | 8.11 | 2271 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | | 605199 | 10.0 | 2271 | |

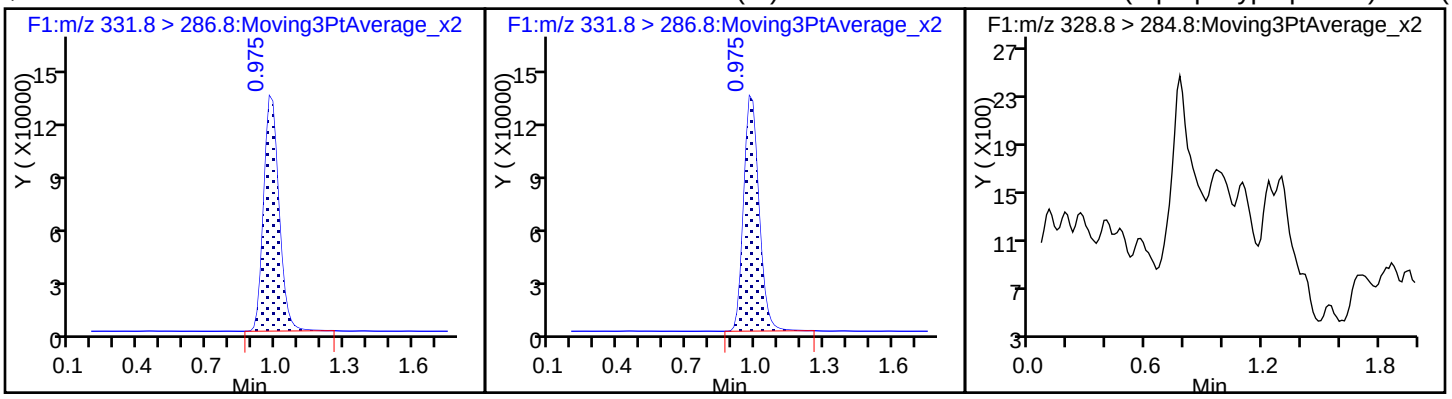
Report Date: 12-Mar-2018 10:54:28 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12034.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 12-Mar-2018 10:04:50 | Instrument ID: | LC_LCMS7 | | |
| Lims ID: | 140-10863-A-21-A | Lab Sample ID: | 280-10863-21 | | |
| Client ID: | H-2250 R QC M0010 DI WATER RB | | | | |
| Operator ID: | JBH | ALS Bottle#: | 32 | Worklist Smp#: | 34 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | HFPO | Limit Group: | LC - 8321A_HFPO_Du | | |

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid (ND)



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12034.d
Lims ID: 140-10863-A-21-A
Client ID: H-2250 R QC M0010 DI WATER RB
Sample Type: Client
Inject. Date: 12-Mar-2018 10:04:50 ALS Bottle#: 32 Worklist Smp#: 34
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: 140-10863-A-21-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:53:18

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 8.11 | 81.06 |

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 140-10863-1 Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7 GC Column: Synergi Hyd ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05 Calibration End Date: 02/08/2018 13:31 Calibration ID: 31612

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | STD001 280-404345/3 | hfpo718B08034.d |
| Level 2 | STD002 280-404345/4 | hfpo718B08035.d |
| Level 3 | STD003 280-404345/5 | hfpo718B08036.d |
| Level 4 | STD004 280-404345/6 | hfpo718B08037.d |
| Level 5 | STD005 280-404345/7 | hfpo718B08038.d |
| Level 6 | STD006 280-404345/8 | hfpo718B08039.d |
| Level 7 | STD007 280-404345/9 | hfpo718B08040.d |
| Level 8 | STD008 280-404345/10 | hfpo718B08041.d |
| Level 9 | STD009 280-404345/11 | hfpo718B08042.d |

| ANALYTE | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | LVL 8 | LVL 9 | | RT WINDOW | AVG RT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HFPO-DA | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | 1.056 | | 0.556 - 1.556 | 1.056 |
| 13C3 HFPO-DA | 1.042 | 1.042 | 1.042 | 1.042 | 1.042 | 1.042 | 1.042 | 1.056 | 1.056 | | 0.545 - 1.545 | 1.045 |

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 140-10863-1 Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7 GC Column: Synergi Hyd ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05 Calibration End Date: 02/08/2018 13:31 Calibration ID: 31612

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | STD001 280-404345/3 | hfpo718B08034.d |
| Level 2 | STD002 280-404345/4 | hfpo718B08035.d |
| Level 3 | STD003 280-404345/5 | hfpo718B08036.d |
| Level 4 | STD004 280-404345/6 | hfpo718B08037.d |
| Level 5 | STD005 280-404345/7 | hfpo718B08038.d |
| Level 6 | STD006 280-404345/8 | hfpo718B08039.d |
| Level 7 | STD007 280-404345/9 | hfpo718B08040.d |
| Level 8 | STD008 280-404345/10 | hfpo718B08041.d |
| Level 9 | STD009 280-404345/11 | hfpo718B08042.d |

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LVL 1 LVL 5 LVL 9 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 LVL 8 | | B | M1 | M2 | | | | | | | | |
| 13C3 HFPO-DA | 75771 75244 71284 | 75964 75940 | 72010 75039 | 77000 73687 | Ave | | 74659.8778 | | | | 2.6 | | 30.0 | | | |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 140-10863-1 Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7 GC Column: Synergi Hyd ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05 Calibration End Date: 02/08/2018 13:31 Calibration ID: 31612

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| HFPO-DA | 1.1630<br>1.1128 | 1.1250<br>1.0911 | 1.0756<br>1.0665 | 1.0527<br>1.0507 | 1.1211 | Lin1 | 0.0361 | 1.0638 | | | | | | | 1.0000 | | 0.9900 |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 140-10863-1 Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7 GC Column: Synergi Hyd ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05 Calibration End Date: 02/08/2018 13:31 Calibration ID: 31612

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | STD001 280-404345/3 | hfpo718B08034.d |
| Level 2 | STD002 280-404345/4 | hfpo718B08035.d |
| Level 3 | STD003 280-404345/5 | hfpo718B08036.d |
| Level 4 | STD004 280-404345/6 | hfpo718B08037.d |
| Level 5 | STD005 280-404345/7 | hfpo718B08038.d |
| Level 6 | STD006 280-404345/8 | hfpo718B08039.d |
| Level 7 | STD007 280-404345/9 | hfpo718B08040.d |
| Level 8 | STD008 280-404345/10 | hfpo718B08041.d |
| Level 9 | STD009 280-404345/11 | hfpo718B08042.d |

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (UG/L) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 |
| 13C3 HFPO-DA | Ave | 757714<br>759397 | 759642<br>750388 | 720099<br>736869 | 769995<br>712841 | 752444 | 10.0<br>10.0 | 10.0<br>10.0 | 10.0<br>10.0 | 10.0<br>10.0 | 10.0 |

Curve Type Legend:
Ave = Average

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver  Job No.: 140-10863-1  Analy Batch No.: 404345

SDG No.:

Instrument ID: LC_LCMS7  GC Column: Synergi Hyd ID:  Heated Purge: (Y/N) N

Calibration Start Date: 02/08/2018 13:05  Calibration End Date: 02/08/2018 13:31  Calibration ID: 31612

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | STD001 280-404345/3 | hfpo718B08034.d |
| Level 2 | STD002 280-404345/4 | hfpo718B08035.d |
| Level 3 | STD003 280-404345/5 | hfpo718B08036.d |
| Level 4 | STD004 280-404345/6 | hfpo718B08037.d |
| Level 5 | STD005 280-404345/7 | hfpo718B08038.d |
| Level 6 | STD006 280-404345/8 | hfpo718B08039.d |
| Level 7 | STD007 280-404345/9 | hfpo718B08040.d |
| Level 8 | STD008 280-404345/10 | hfpo718B08041.d |
| Level 9 | STD009 280-404345/11 | hfpo718B08042.d |

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (UG/L) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3<br>LVL 8 | LVL 4<br>LVL 9 | LVL 5 |
| HFPO-DA | 13CP<br>ODA | Lin1 | 22031<br>845082 | 42730<br>2046873 | 77455<br>3929397 | 162117<br>7489478 | 421775 | 0.250<br>10.0 | 0.500<br>25.0 | 1.00<br>50.0 | 2.00<br>100 | 5.00 |

Curve Type Legend:
Lin1 = Linear 1/conc ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08034.d
Lims ID: std001
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 08-Feb-2018 13:05:38 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L1
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:13 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:04

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 757714 | 10.0 | 1562 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 757714 | 10.1 | 1562 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | M |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 22031 | 0.2394 | 4.4 | M |

## QC Flag Legend

Review Flags
M - Manually Integrated

## Reagents:

HFPO_CAL-1_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:13 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08034.d

Injection Date: 08-Feb-2018 13:05:38 Instrument ID: LC_LCMS7

Lims ID: std001

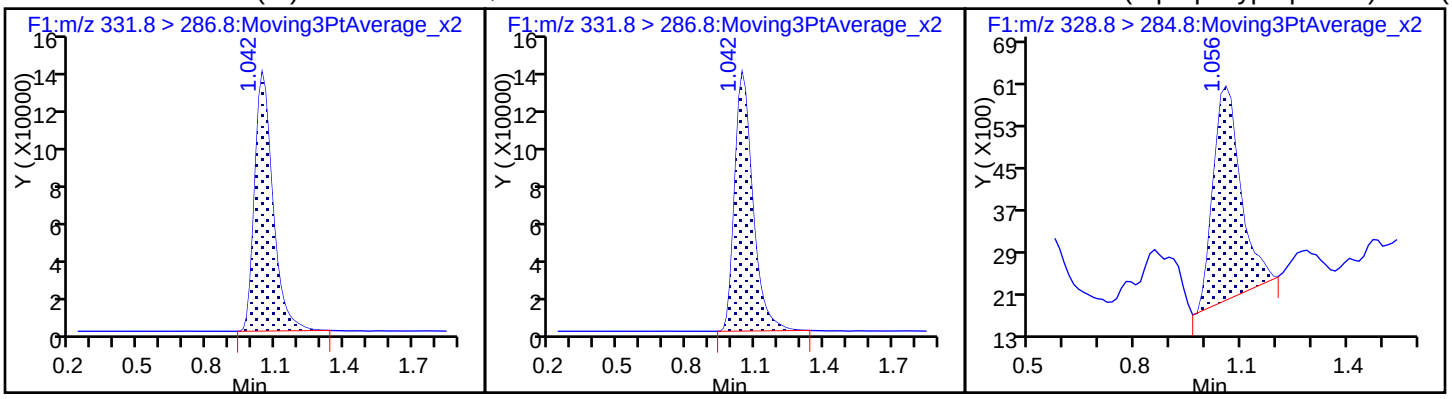
Client ID:

Operator ID: JBH ALS Bottle#: 2 Worklist Smp#: 3

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid (M)



Manual Integration/User Assign Peak Report

TestAmerica Denver

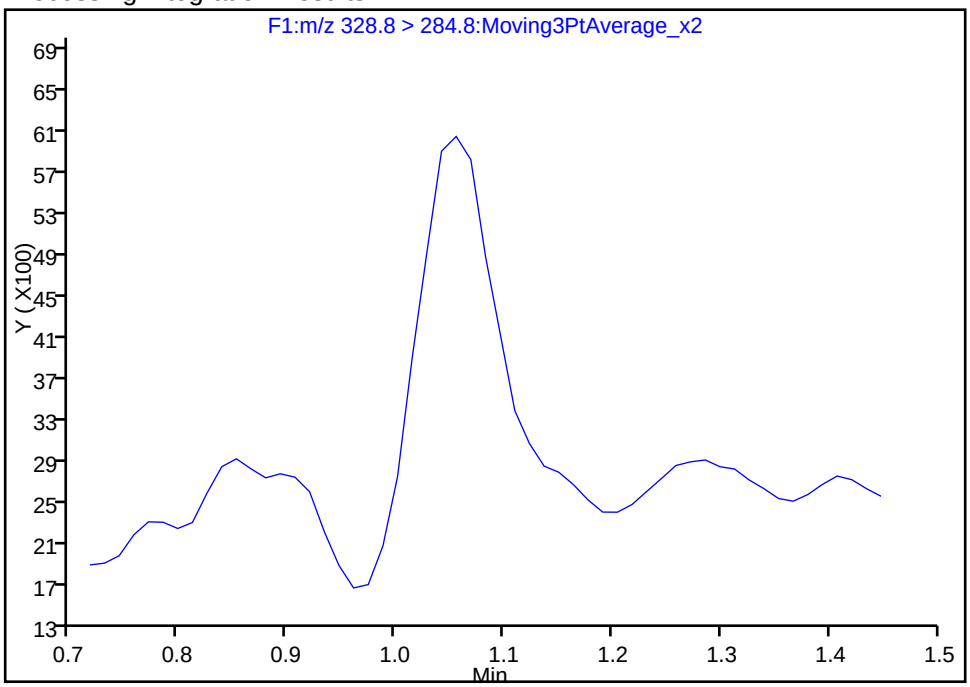
Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08034.d
Injection Date: 08-Feb-2018 13:05:38 Instrument ID: LC_LCMS7
Lims ID: std001
Client ID:
Operator ID: JBH ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: HFPO Limit Group: LC - 8321A_HFPO_Du
Column: Detector F1:MRM

## 1 Perfluoro(2-propoxypropanoic) acid, CAS: 13252-13-6

Signal: 1

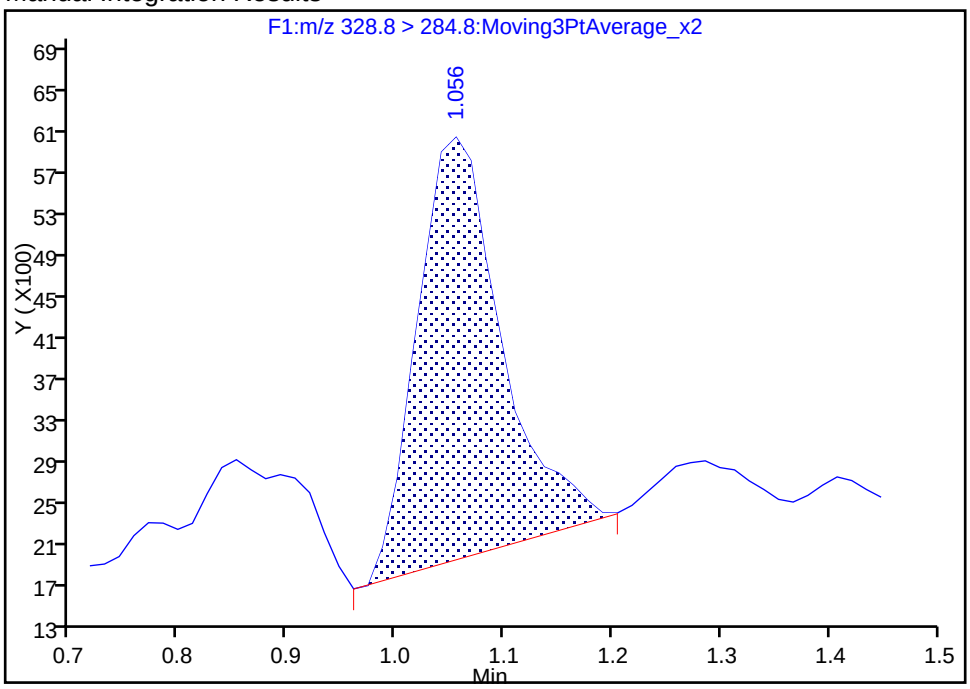
Not Detected
Expected RT: 1.06

Processing Integration Results




Manual Integration Results

RT: 1.06
Area: 22031
Amount: 0.239356
Amount Units: ug/l




Reviewer: meyera, 08-Feb-2018 15:19:01
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08035.d
Lims ID: std002
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 08-Feb-2018 13:08:52 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L2
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:14 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:16

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 759642 | 10.2 | 1267 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 759642 | 10.0 | 1267 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | M |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 42730 | 0.4948 | 6.5 | M |

## QC Flag Legend

Review Flags
M - Manually Integrated

## Reagents:

HFPO_CAL-2_00033 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:14 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08035.d

Injection Date: 08-Feb-2018 13:08:52 Instrument ID: LC_LCMS7

Lims ID: std002

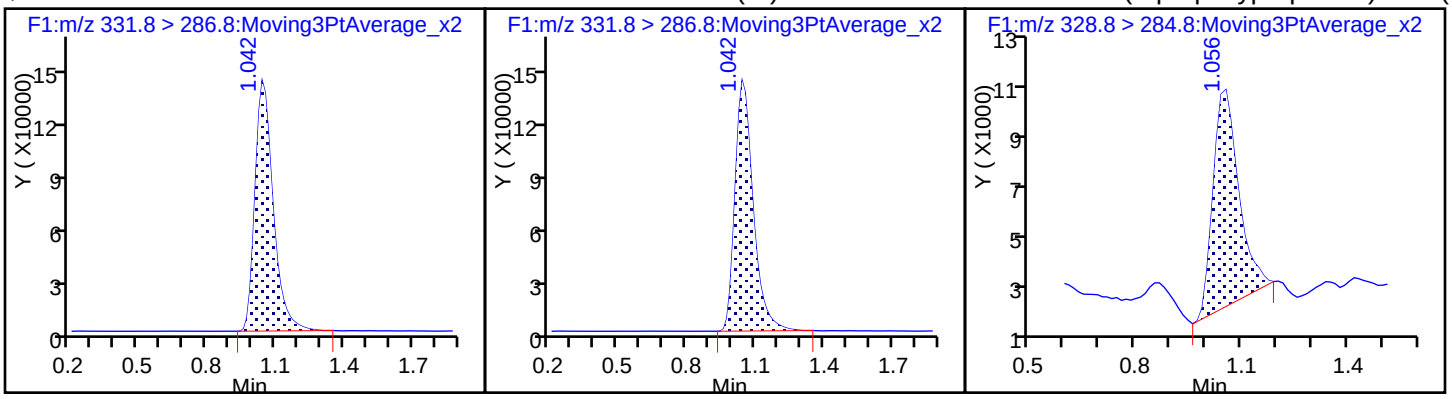
Client ID:

Operator ID: JBH ALS Bottle#: 3 Worklist Smp#: 4

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid (M)



Manual Integration/User Assign Peak Report

TestAmerica Denver

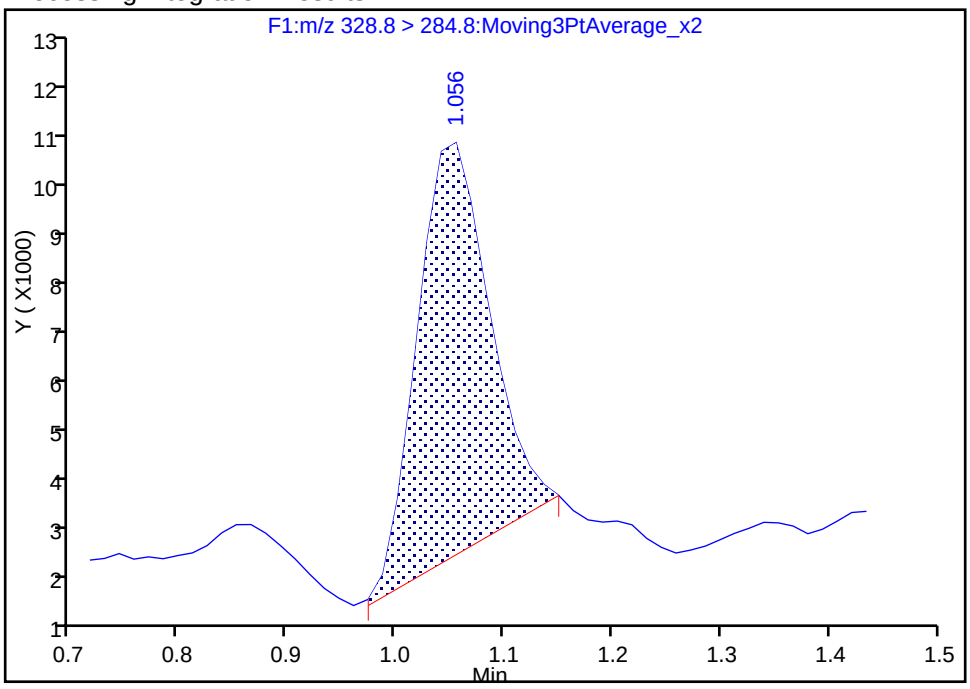
Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08035.d
Injection Date: 08-Feb-2018 13:08:52 Instrument ID: LC_LCMS7
Lims ID: std002
Client ID:
Operator ID: JBH ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: HFPO Limit Group: LC - 8321A_HFPO_Du
Column: Detector F1:MRM

## 1 Perfluoro(2-propoxypropanoic) acid, CAS: 13252-13-6

Signal: 1

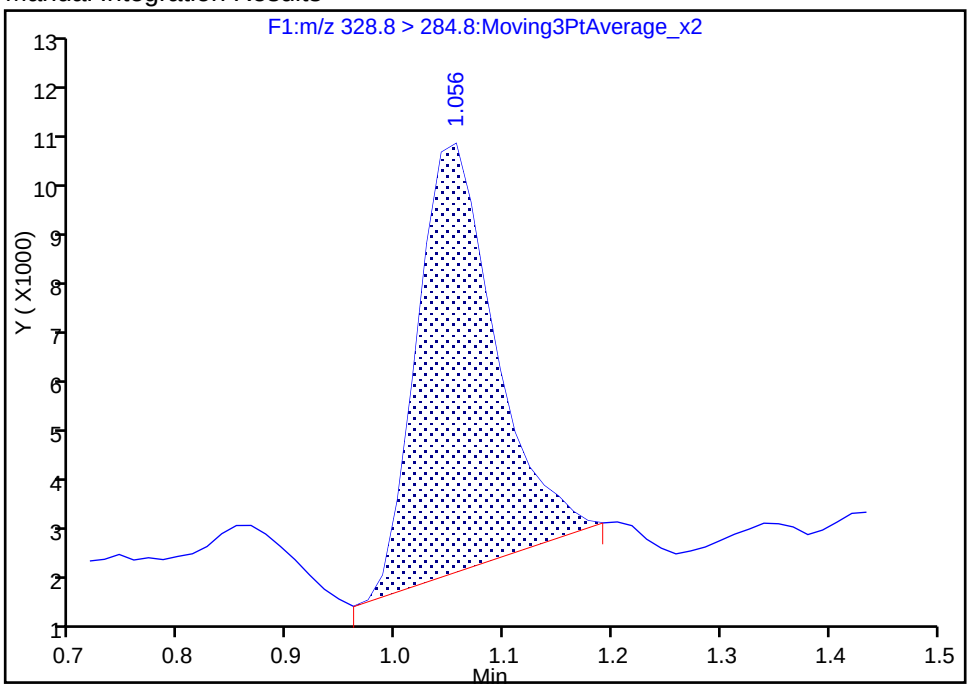
Processing Integration Results

RT: 1.06
Area: 38092
Amount: 0.452274
Amount Units: ug/l




Manual Integration Results

RT: 1.06
Area: 42730
Amount: 0.494804
Amount Units: ug/l




Reviewer: meyera, 08-Feb-2018 15:19:12
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08036.d
Lims ID: std003
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 08-Feb-2018 13:12:06 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L3
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:14 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:19

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 720099 | 10.0 | 956 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 720099 | 9.65 | 956 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 77455 | 0.9771 | 10.6 | |

## Reagents:

HFPO_CAL-3_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:15 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08036.d

Injection Date: 08-Feb-2018 13:12:06 Instrument ID: LC_LCMS7

Lims ID: std003

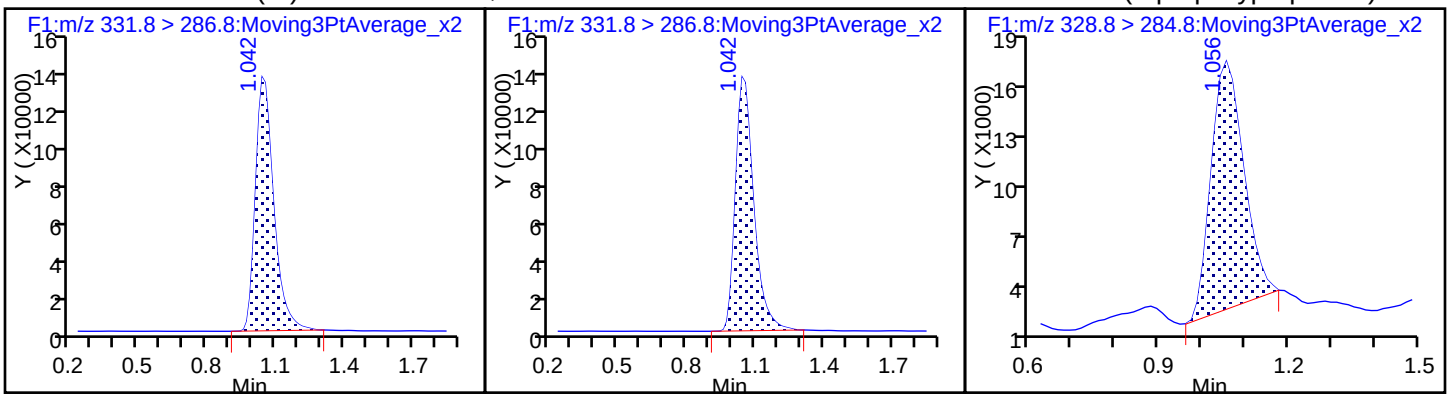
Client ID:

Operator ID: JBH ALS Bottle#: 4 Worklist Smp#: 5

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08037.d
Lims ID: std004
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 08-Feb-2018 13:15:21 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L4
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:15 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:22

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 769995 | 10.3 | 1154 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 769995 | 10.0 | 1154 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 162117 | 1.95 | 26.1 | |

## Reagents:

HFPO_CAL-4_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:15 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08037.d

Injection Date: 08-Feb-2018 13:15:21 Instrument ID: LC_LCMS7

Lims ID: std004

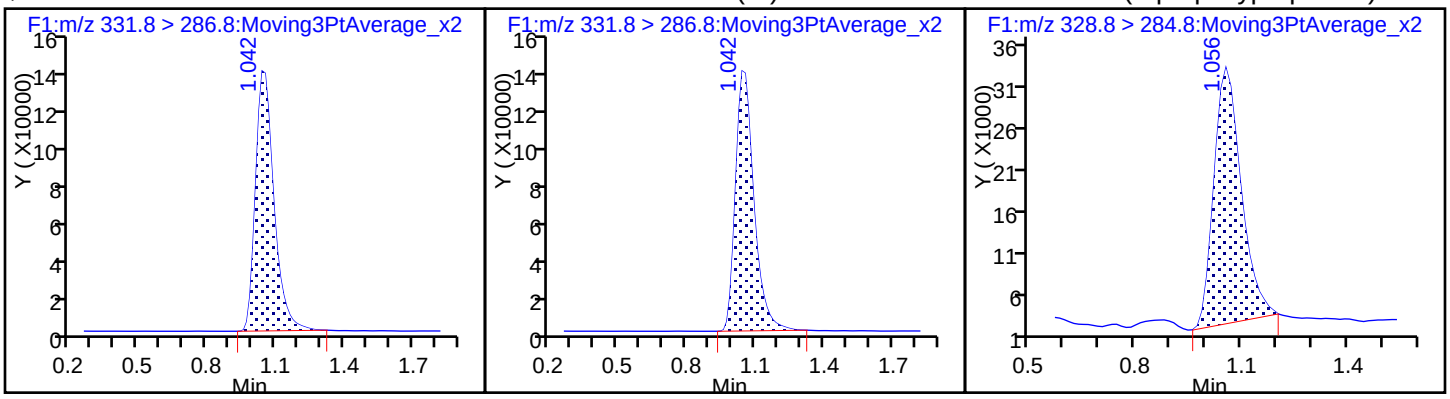
Client ID:

Operator ID: JBH ALS Bottle#: 5 Worklist Smp#: 6

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08038.d
Lims ID: std005
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 08-Feb-2018 13:18:35 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L5
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:15 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:24

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 752444 | 10.0 | 1072 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 752444 | 10.1 | 1072 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 421775 | 5.24 | 66.0 | |

## Reagents:

HFPO_CAL-5_00080 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:16 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08038.d

Injection Date: 08-Feb-2018 13:18:35 Instrument ID: LC_LCMS7

Lims ID: std005

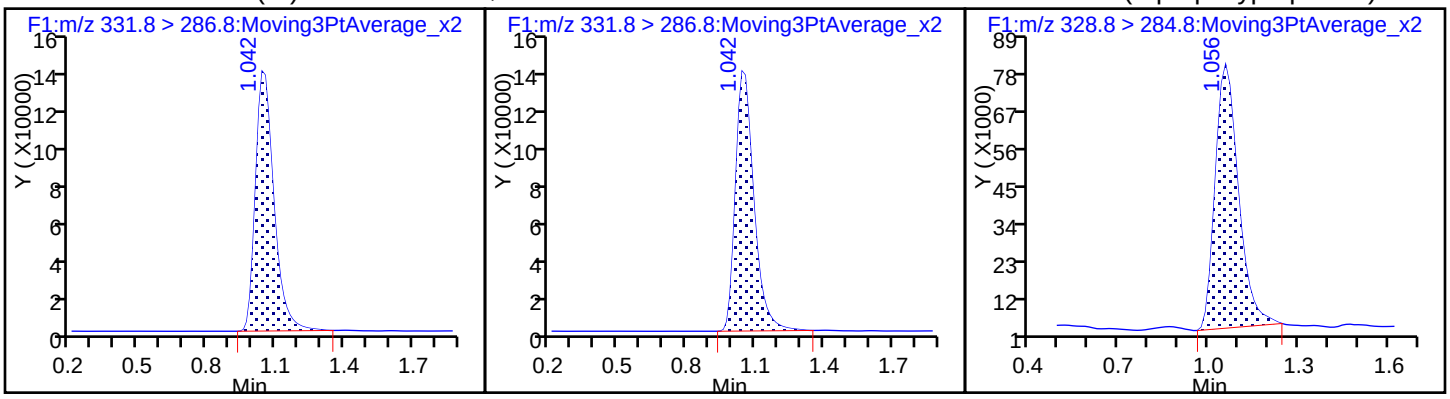
Client ID:

Operator ID: JBH ALS Bottle#: 6 Worklist Smp#: 7

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08039.d
Lims ID: std006
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 08-Feb-2018 13:21:49 ALS Bottle#: 7 Worklist Smp#: 8
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L6
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:16 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:26

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 759397 | 10.2 | 1193 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 759397 | 10.0 | 1193 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 845082 | 10.4 | 146 | |

## Reagents:

HFPO_CAL-6_00080 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:16 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08039.d

Injection Date: 08-Feb-2018 13:21:49 Instrument ID: LC_LCMS7

Lims ID: std006

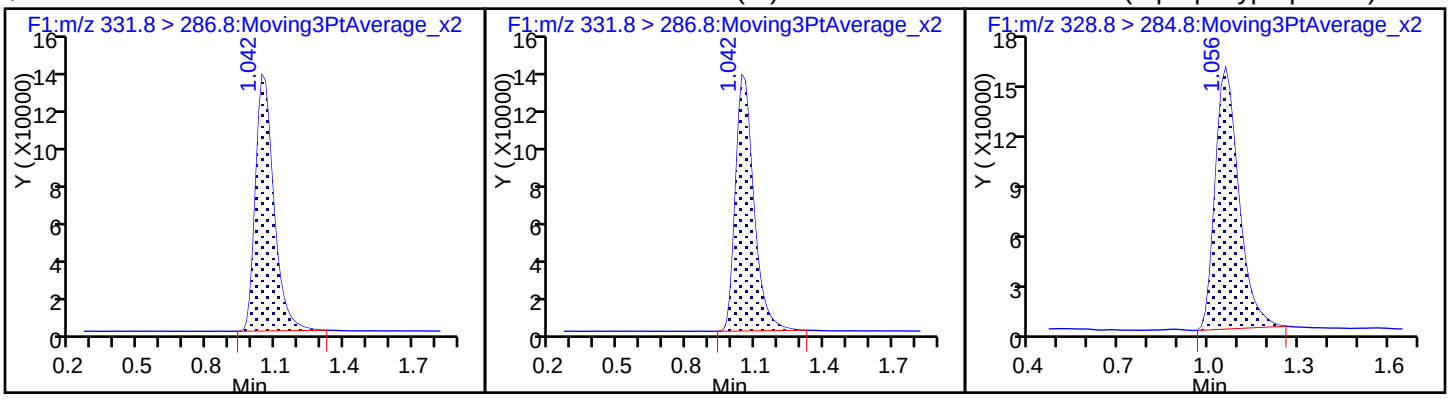
Client ID:

Operator ID: JBH ALS Bottle#: 7 Worklist Smp#: 8

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08040.d
Lims ID: std007
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 08-Feb-2018 13:25:03 ALS Bottle#: 8 Worklist Smp#: 9
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L7
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:16 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:28

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | | 750388 | 10.0 | 1247 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.042 | 1.045 | -0.003 | 1.000 | 750388 | 10.1 | 1247 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 2046873 | 25.6 | 246 | |

## Reagents:

HFPO_CAL-7_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:17 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08040.d

Injection Date: 08-Feb-2018 13:25:03 Instrument ID: LC_LCMS7

Lims ID: std007

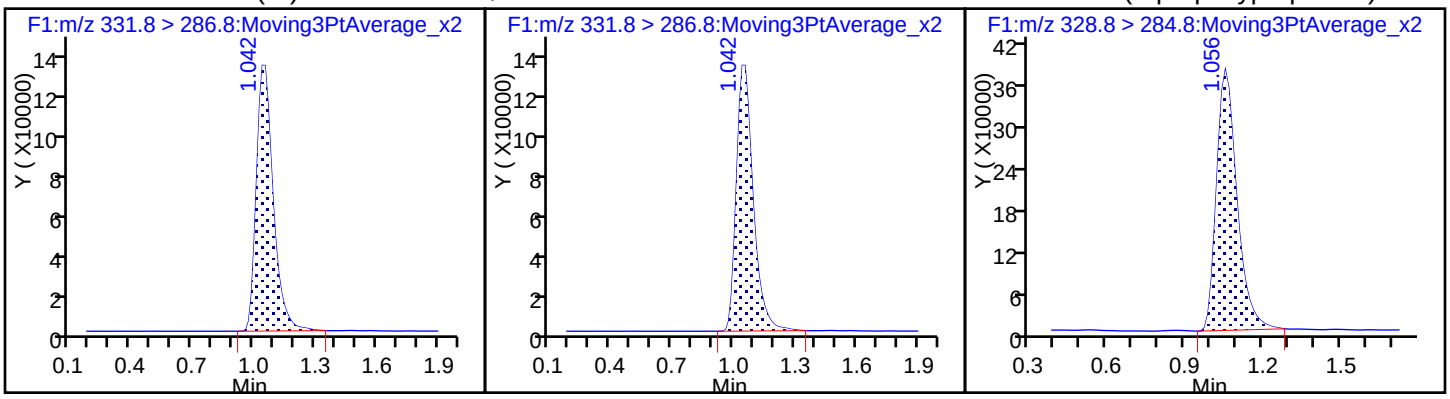
Client ID:

Operator ID: JBH ALS Bottle#: 8 Worklist Smp#: 9

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08041.d
Lims ID: std008
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 08-Feb-2018 13:28:18 ALS Bottle#: 9 Worklist Smp#: 10
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L8
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:17 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:30

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.056 | 1.045 | 0.011 | 1.000 | 736869 | 9.87 | 1055 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.056 | 1.045 | 0.011 | | 736869 | 10.0 | 1055 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 3929397 | 50.1 | 416 | |

## Reagents:

HFPO_CAL-8_00032 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:17 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08041.d

Injection Date: 08-Feb-2018 13:28:18 Instrument ID: LC_LCMS7

Lims ID: std008

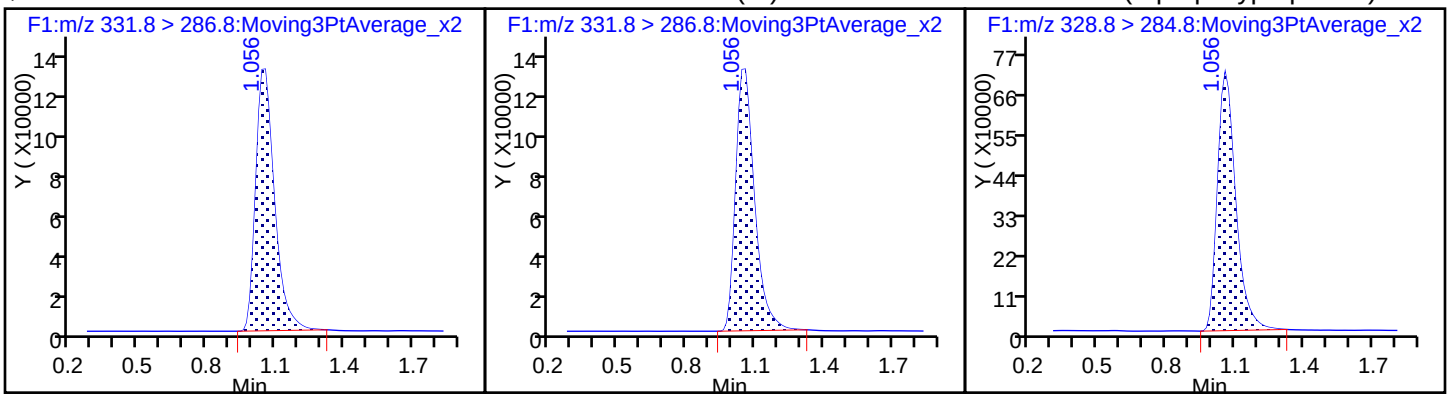
Client ID:

Operator ID: JBH ALS Bottle#: 9 Worklist Smp#: 10

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d
Lims ID: std009
Client ID:
Sample Type: IC Calib Level: 9
Inject. Date: 08-Feb-2018 13:31:32 ALS Bottle#: 10 Worklist Smp#: 11
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: L9
Misc. Info.: HFPO18B08
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 08-Feb-2018 15:24:17 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK015

First Level Reviewer: meyera Date: 08-Feb-2018 15:19:38

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.056 | 1.045 | 0.011 | | 712841 | 10.0 | 1141 | |
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.056 | 1.045 | 0.011 | 1.000 | 712841 | 9.55 | 1141 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.056 | 1.056 | 0.0 | 1.000 | 7489478 | 98.7 | 561 | |

## Reagents:

HFPO_CAL-9_00001 Amount Added: 1.00 Units: mL

Report Date: 08-Feb-2018 15:24:18 Chrom Revision: 2.2 24-Jan-2018 15:37:30

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Injection Date: 08-Feb-2018 13:31:32 Instrument ID: LC_LCMS7

Lims ID: std009

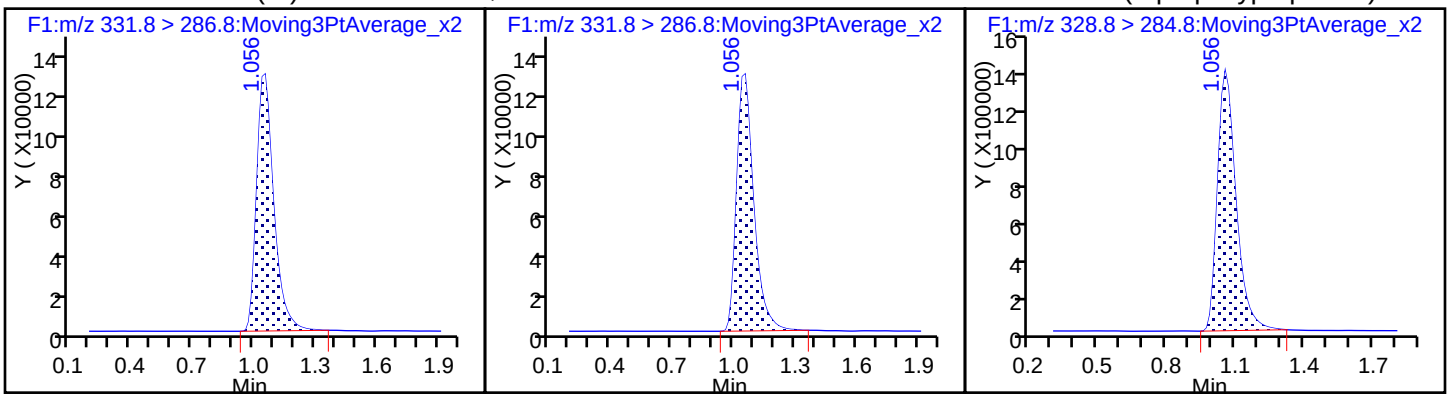
Client ID:

Operator ID: JBH ALS Bottle#: 10 Worklist Smp#: 11

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS) $ 3 13C3 HFPO-DA 1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Lab Sample ID: CCV 280-407567/18 Calibration Date: 03/12/2018 09:12

Instrument ID: LC_LCMS7 Calib Start Date: 02/08/2018 13:05

GC Column: Synergi Hydro ID: Calib End Date: 02/08/2018 13:31

Lab File ID: hfpo718C12018.d Conc. Units: ug/L

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|---|---|---|---|---|---|---|---|---|
| HFPO-DA | Lin1 | | 0.9658 | | 9.04 | 10.0 | -9.6 | 20.0 |
| 13C3 HFPO-DA | Ave | 74660 | 55461 | | 7.43 | 10.0 | -25.7 | |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12018.d
Lims ID: CCV L6
Client ID:
Sample Type: CCV
Inject. Date: 12-Mar-2018 09:12:45 ALS Bottle#: 4 Worklist Smp#: 18
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: CCV L6
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:25

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | 1.000 | 554608 | 7.43 | 2070 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | | 554608 | 10.0 | 2070 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.042 | 1.056 | -0.014 | 1.000 | 535617 | 9.04 | 147 | |

## Reagents:

HFPO_CAL-6_00083 Amount Added: 1.00 Units: mL

Report Date: 12-Mar-2018 10:54:05 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12018.d

Injection Date: 12-Mar-2018 09:12:45 Instrument ID: LC_LCMS7

Lims ID: CCV L6

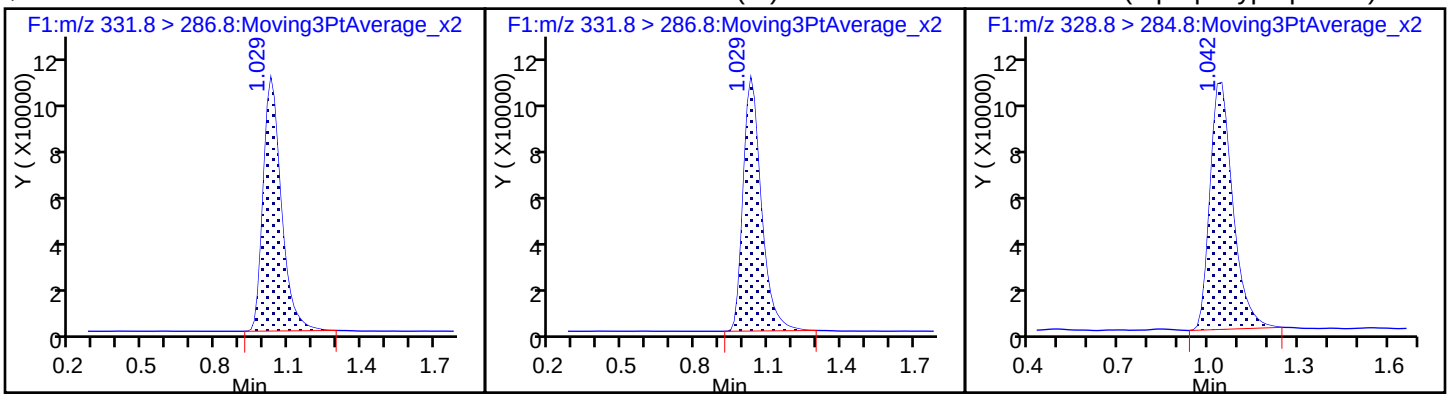
Client ID:

Operator ID: JBH ALS Bottle#: 4 Worklist Smp#: 18

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Lab Sample ID: CCV 280-407567/28 Calibration Date: 03/12/2018 09:45

Instrument ID: LC_LCMS7 Calib Start Date: 02/08/2018 13:05

GC Column: Synergi Hydro ID: Calib End Date: 02/08/2018 13:31

Lab File ID: hfpo718C12028.d Conc. Units: ug/L

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|---|---|---|---|---|---|---|---|---|
| HFPO-DA | Lin1 | | 1.105 | | 5.16 | 5.00 | 3.2 | 20.0 |
| 13C3 HFPO-DA | Ave | 74660 | 55461 | | 7.43 | 10.0 | -25.7 | |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12028.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 12-Mar-2018 09:45:17 ALS Bottle#: 3 Worklist Smp#: 28
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:21 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:52:55

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.015 | 1.045 | -0.030 | 1.000 | 554610 | 7.43 | 1522 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.015 | 1.045 | -0.030 | | 554610 | 10.0 | 1522 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.015 | 1.056 | -0.041 | 1.000 | 306348 | 5.16 | 91.8 | |

## Reagents:

HFPO_CAL-5_00083 Amount Added: 1.00 Units: mL

Report Date: 12-Mar-2018 10:54:21 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12028.d

Injection Date: 12-Mar-2018 09:45:17 Instrument ID: LC_LCMS7

Lims ID: CCV L5

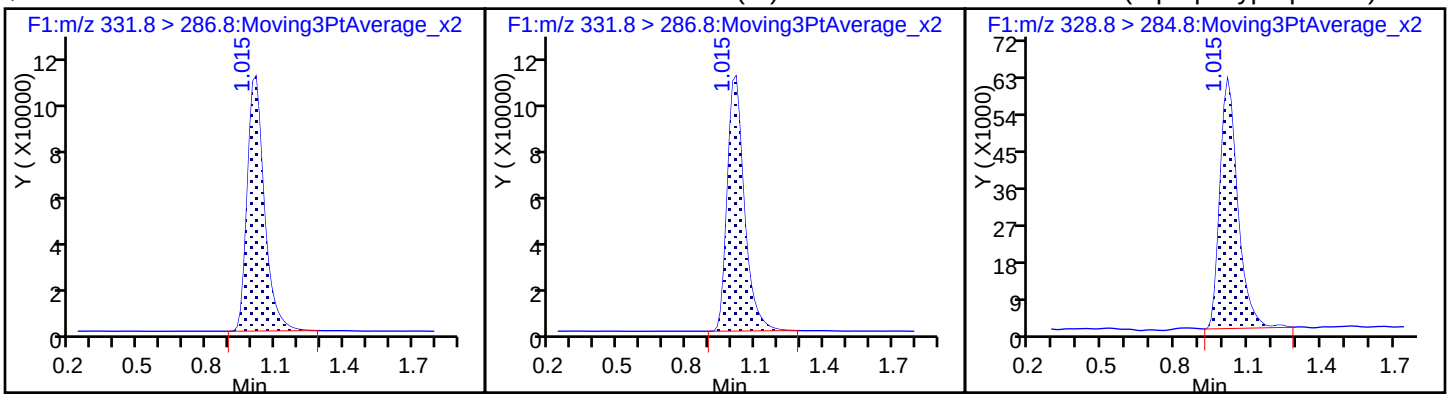
Client ID:

Operator ID: JBH ALS Bottle#: 3 Worklist Smp#: 28

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Lab Sample ID: CCV 280-407567/35 Calibration Date: 03/12/2018 10:08

Instrument ID: LC_LCMS7 Calib Start Date: 02/08/2018 13:05

GC Column: Synergi Hydro ID: Calib End Date: 02/08/2018 13:31

Lab File ID: hfpo718C12035.d Conc. Units: ug/L

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|---|---|---|---|---|---|---|---|---|
| HFPO-DA | Lin1 | | 0.9781 | | 9.16 | 10.0 | -8.4 | 20.0 |
| 13C3 HFPO-DA | Ave | 74660 | 55347 | | 7.41 | 10.0 | -25.9 | |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12035.d
Lims ID: CCV L6
Client ID:
Sample Type: CCV
Inject. Date: 12-Mar-2018 10:08:06 ALS Bottle#: 4 Worklist Smp#: 35
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: CCV L6
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7
Sublist: chrom-HFPO*sub1

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:29 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:53:22

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.002 | 1.045 | -0.043 | 1.000 | 553470 | 7.41 | 1641 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.002 | 1.045 | -0.043 | | 553470 | 10.0 | 1641 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 1.015 | 1.056 | -0.041 | 1.000 | 541321 | 9.16 | 150 | |

## Reagents:

HFPO_CAL-6_00083 Amount Added: 1.00 Units: mL

Report Date: 12-Mar-2018 10:54:29 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12035.d

Injection Date: 12-Mar-2018 10:08:06 Instrument ID: LC_LCMS7

Lims ID: CCV L6

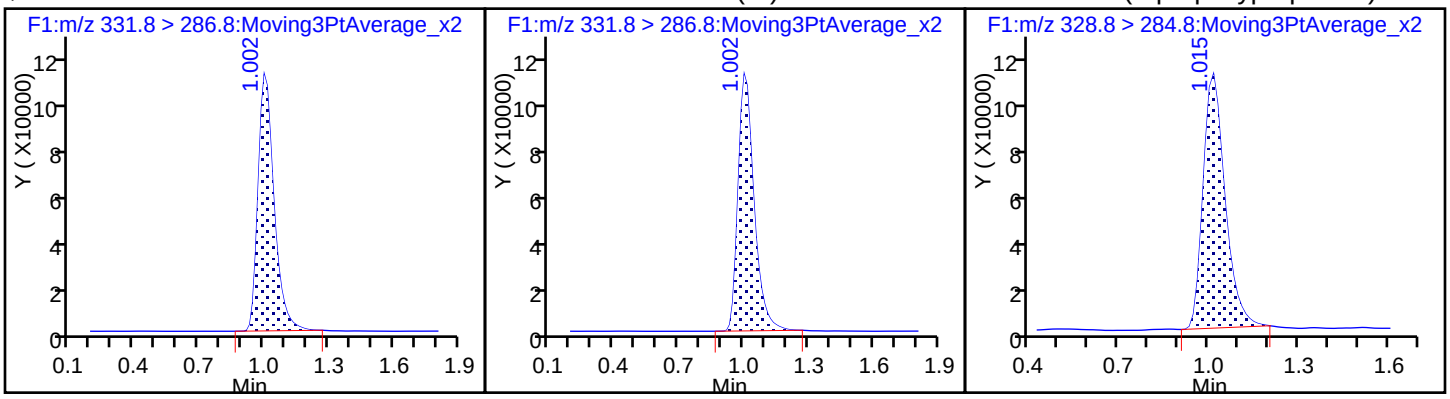
Client ID:

Operator ID: JBH ALS Bottle#: 4 Worklist Smp#: 35

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid

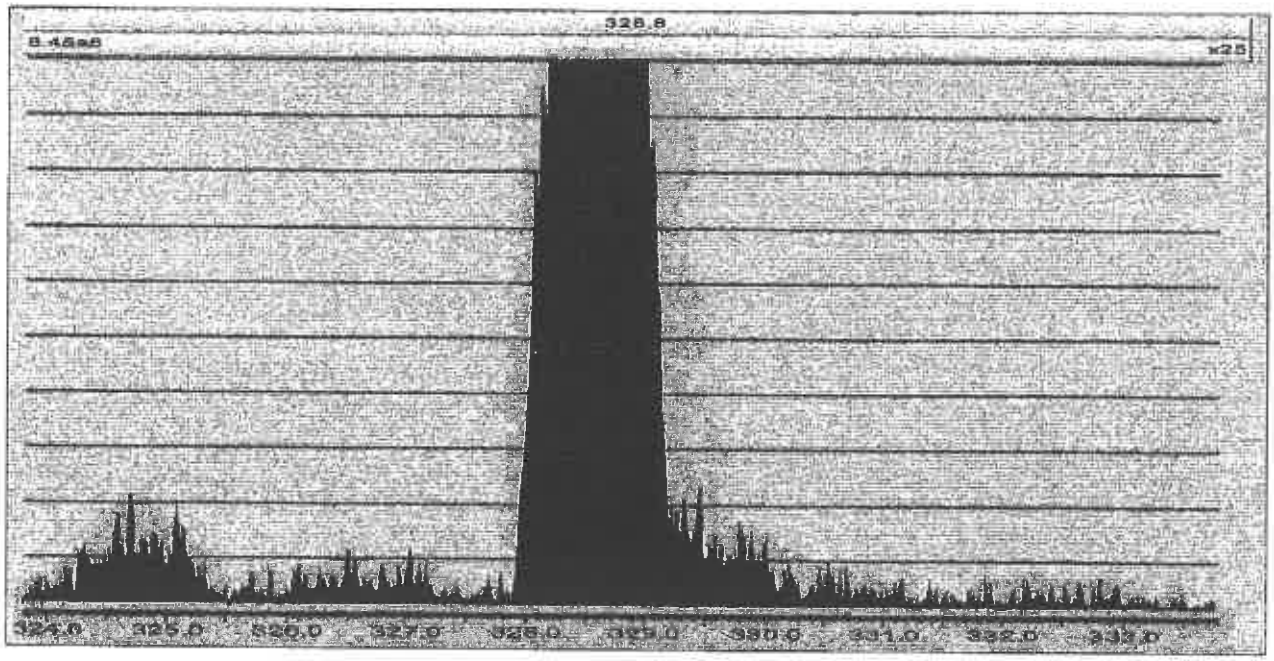


**Waters Xevo TQ MS Detector Tune Parameters - MassLynx 4.1 SCN 843**

File: C:\MassLynx\8321.PRO\ACQUDB\HFPOMRM.ipr

Instrument: XEVO-TQMS#VBA453

Printed: Monday, March 12, 2018 08:05:24 Mountain Daylight Time




| Type | Start Mass | End Mass | Set Mass |
|---|---|---|---|
| MS1 Scan | 323.80 | 333.80 | |

| Source (ES-) | Settings | Readbacks |
|---|---|---|
| Capillary (kV) | 0.50 | 0.53 |
| Cone (V) | 10.00 | -21.06 |
| Extractor (V) | 3.00 | -10.61 |
| Source Temperature (°C) | 120 | 120 |
| Desolvation Temperature (°C) | 200 | 200 |
| Cone Gas Flow (L/Hr) | 50 | 49 |
| Desolvation Gas Flow (L/Hr) | 800 | 795 |
| Collision Gas Flow (mL/Min) | 0.15 | 0.04 |

| Analyser | Settings | Readbacks |
|---|---|---|
| LM 1 Resolution | 2.8 | |
| HM 1 Resolution | 14.6 | |
| Ion Energy 1 | 0.7 | |
| MS Mode Collision Energy | 7.00 | |
| MSMS Mode Collision Energy | 20.00 | |
| MS Mode Entrance | 0.50 | |
| MS Mode Exit | 0.50 | |
| Gas On MS Mode Entrance | 0.50 | |
| Gas On MS Mode Exit | 0.50 | |
| Gas On MSMS Mode Entrance | 0.50 | |
| Gas On MSMS Mode Exit | 0.50 | |
| Gas Off MS Mode Entrance | 30.00 | |
| Gas Off MS Mode Exit | 30.00 | |
| Gas Off MSMS Mode Entrance | 2.00 | |
| Gas Off MSMS Mode Exit | 2.00 | |
| ScanWave MS Mode Entrance | 0.50 | |
| ScanWave MS Mode Exit | 0.50 | |
| ScanWave MSMS Mode Entrance | 0.50 | |
| ScanWave MSMS Mode Exit | 0.50 | |
| LM 2 Resolution | 2.9 | |
| HM 2 Resolution | 14.7 | |
| Ion Energy 2 | 0.3 | |

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File: C:\MassLynx\8321.PRO\ACQUDB\HFPOMRM.ipr

Instrument: XEVO-TQMS#VBA453

Printed: Monday, March 12, 2018 08:05:24 Mountain Daylight Time

| | |
|---|---|
| Multiplier | 523.81 |
| Active Reservoir | A |

**Pressure Gauges**

| | |
|---|---|
| Collision Cell Pressure (mbar) | 7.830201e-005 |

**Instrument Configuration**

Automatic Mode

| | | |
|---|---|---|
| MS Inter-scan delay (secs) | 0.005 | |
| Polarity/Mode switch Inter-scan delay (secs) | | 0.020 |
| Enhanced Inter-scan delay (secs) | | 0.020 |

Inter-channel delay - See Tables

MS 1 Delay Table:

| R | delay |
|---|---|
| <= 0.500 | 0.005 |
| <= 2.000 | 0.008 |
| <= 4.000 | 0.010 |
| <= 11.000 | 0.012 |
| > 11.000 | 0.014 |

MS 2 Delay Table:

| R | delay |
|---|---|
| <= 8.000 | 0.005 |
| <= 25.000 | 0.005 |
| > 25.000 | 0.007 |

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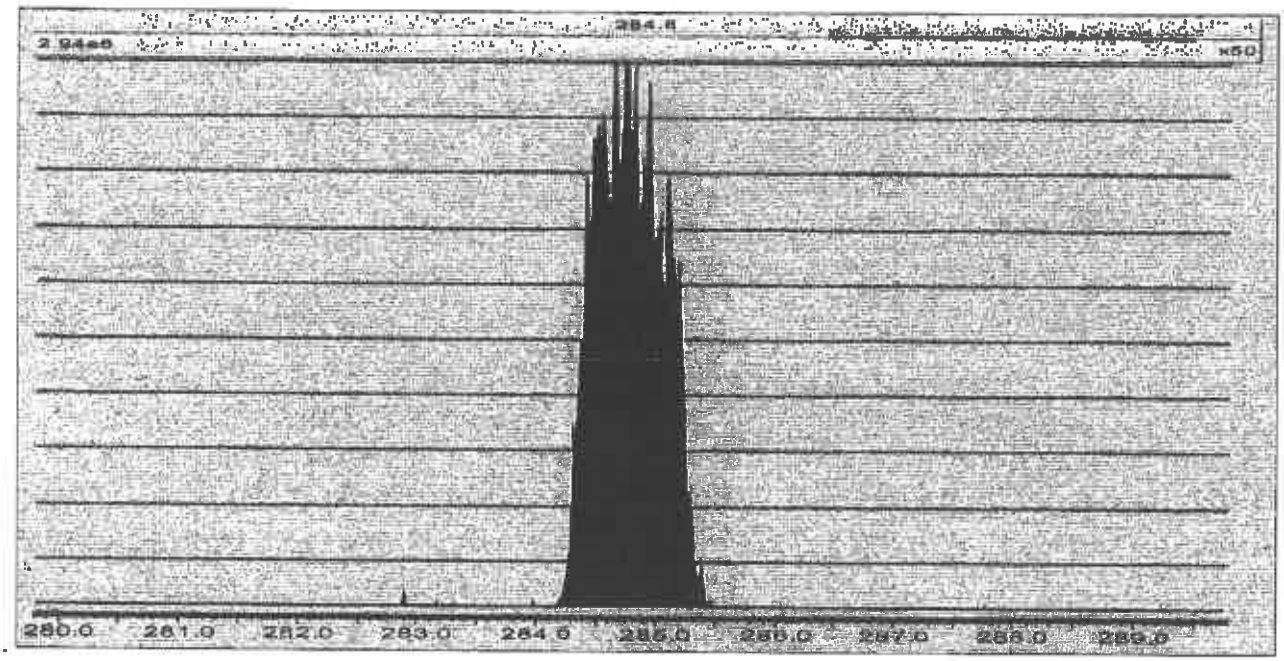
File: C:\MassLynx\8321.PRO\ACQUDB\HFPOMRM.lpr

Instrument: XEVO-TQMS#VBA453

Printed: Monday, March 12, 2018 08:06:05 Mountain Daylight Time




| Type | Start Mass | End Mass | Set Mass |
|---|---|---|---|
| Daughter Scan | 279.80 | 289.80 | 328.80 |

| Source (ES-) | Settings | Readbacks |
|---|---|---|
| Capillary (kV) | 0.50 | 0.52 |
| Cone (V) | 10.00 | -21.06 |
| Extractor (V) | 3.00 | -10.61 |
| Source Temperature (°C) | 120 | 120 |
| Desolvation Temperature (°C) | 200 | 200 |
| Cone Gas Flow (L/Hr) | 50 | 50 |
| Desolvation Gas Flow (L/Hr) | 800 | 791 |
| Collision Gas Flow (mL/Min) | 0.15 | 0.14 |

| Analyser | Settings | Readbacks |
|---|---|---|
| LM 1 Resolution | 2.8 | |
| HM 1 Resolution | 14.8 | |
| Ion Energy 1 | 0.7 | |
| MS Mode Collision Energy | 7.00 | |
| MSMS Mode Collision Energy | 20.00 | |
| MS Mode Entrance | 0.50 | |
| MS Mode Exit | 0.50 | |
| Gas On MS Mode Entrance | 0.50 | |
| Gas On MS Mode Exit | 0.50 | |
| Gas On MSMS Mode Entrance | 0.50 | |
| Gas On MSMS Mode Exit | 0.50 | |
| Gas Off MS Mode Entrance | 30.00 | |
| Gas Off MS Mode Exit | 30.00 | |
| Gas Off MSMS Mode Entrance | 2.00 | |
| Gas Off MSMS Mode Exit | 2.00 | |
| ScanWave MS Mode Entrance | 0.50 | |
| ScanWave MS Mode Exit | 0.50 | |
| ScanWave MSMS Mode Entrance | 0.50 | |
| ScanWave MSMS Mode Exit | 0.50 | |
| LM 2 Resolution | 2.9 | |
| HM 2 Resolution | 14.7 | |
| Ion Energy 2 | 0.3 | |

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File: C:\MassLynx\8321.PRO\ACQUDB\HFPOMRM.ipr

Instrument: XEVO-TQMS#VBA453

Printed: Monday, March 12, 2018 08:06:05 Mountain Daylight Time

| | |
|---|---|
| Multiplier | 523.81 |
| Active Reservoir | A |

**Pressure Gauges**

| | |
|---|---|
| Collision Cell Pressure (mbar) | 1.119026e-003 |

**Instrument Configuration**

Automatic Mode

| | | |
|---|---|---|
| MS Inter-scan delay (secs) | 0.005 | |
| Polarity/Mode switch inter-scan delay (secs) | | 0.020 |
| Enhanced inter-scan delay (secs) | | 0.020 |

Inter-channel delay - See Tables

MS 1 Delay Table:

| R | delay |
|---|---|
| <= 0.500 | 0.005 |
| <= 2.000 | 0.008 |
| <= 4.000 | 0.010 |
| <= 11.000 | 0.012 |
| > 11.000 | 0.014 |

MS 2 Delay Table:

| R | delay |
|---|---|
| <= 8.000 | 0.005 |
| <= 25.000 | 0.005 |
| > 25.000 | 0.007 |

dmdapam
3/13/18

File: c:\masslynx\8321.pro\acqudb\hfpo.exp

Printed: Monday, March 12, 2018 10:32:13 Mountain Daylight Time

| | |
|---|---|
| Creation Time | Fri 18 Nov 2016 09:08:40 |
| Instrument Identifier | XEVO-TQMS#VBA453 |
| Version Number | 1.0 |
| Duration (min) | 2.0 |
| Calibration Filename | C:\MassLynx\IntelliStart\Results\Unit Mass Resolution\Calibration_20100811_2.cal |
| Solvent Delay Divert Valve Enabled | 0 |
| Number Of Functions | 1 |

**Function 1 : MRM of 2 mass pairs, Time 0.00 to 2.00, ES-**

| | |
|---|---|
| Type | MRM |
| Ion Mode | ES- |
| Inter Channel Delay (sec) | -1.000 |
| InterScan Time (sec) | -1.000 |
| Span (Da) | 0.5 |
| Start Time (min) | 0.0 |
| End Time (min) | 2.0 |

| Ch | Prnt(Da) | Dau(Da) | Dwell(s) | Cone(V) | Coll(eV) | Delay(s) | Compound |
|---|---|---|---|---|---|---|---|
| 1 | 329.80 | 284.80 | 0.400 | 10.00 | 7.00 | -1.000 | HFPO |
| 2 | 331.80 | 286.80 | 0.400 | 10.00 | 7.00 | -1.000 | HFPO IS |

chudapan

3/13/18.

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-406765/1-A

Matrix: Air | Lab File ID: hfpo718C12019.d

Analysis Method: 8321A | Date Collected:

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:16

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | ND | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 94 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12019.d
Lims ID: MB 280-406765/1-A
Client ID:
Sample Type: MB
Inject. Date: 12-Mar-2018 09:16:02 ALS Bottle#: 18 Worklist Smp#: 19
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: MB280-406765/1-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:29

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | 1.000 | 701542 | 9.40 | 2791 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 1.029 | 1.045 | -0.016 | | 701542 | 10.0 | 2791 | |

Report Date: 12-Mar-2018 10:54:06 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12019.d

Injection Date: 12-Mar-2018 09:16:02 Instrument ID: LC_LCMS7

Lims ID: MB 280-406765/1-A

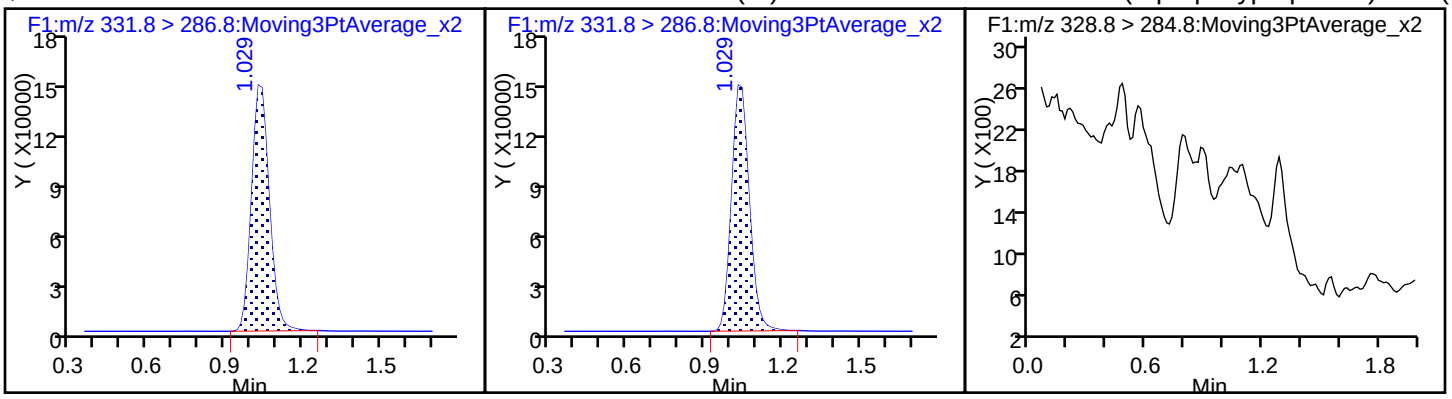
Client ID:

Operator ID: JBH ALS Bottle#: 18 Worklist Smp#: 19

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid (ND)



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12019.d | | | | |
| Lims ID: | MB 280-406765/1-A | | | | |
| Client ID: | | | | | |
| Sample Type: | MB | | | | |
| Inject. Date: | 12-Mar-2018 09:16:02 | ALS Bottle#: | 18 | Worklist Smp#: | 19 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | MB280-406765/1-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:04 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:50:29 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 9.40 | 93.97 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-406765/2-A

Matrix: Air | Lab File ID: hfpo718C12020.d

Analysis Method: 8321A | Date Collected:

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:19

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.05486 | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 90 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12020.d
Lims ID: LCS 280-406765/2-A
Client ID:
Sample Type: LCS
Inject. Date: 12-Mar-2018 09:19:17 ALS Bottle#: 19 Worklist Smp#: 20
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: LCS280-406765/2-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:32

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | 1.000 | 668790 | 8.96 | 3108 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | | 668790 | 10.0 | 3108 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 783092 | 11.0 | 306 | |

Report Date: 12-Mar-2018 10:54:08 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12020.d

Injection Date: 12-Mar-2018 09:19:17 Instrument ID: LC_LCMS7

Lims ID: LCS 280-406765/2-A

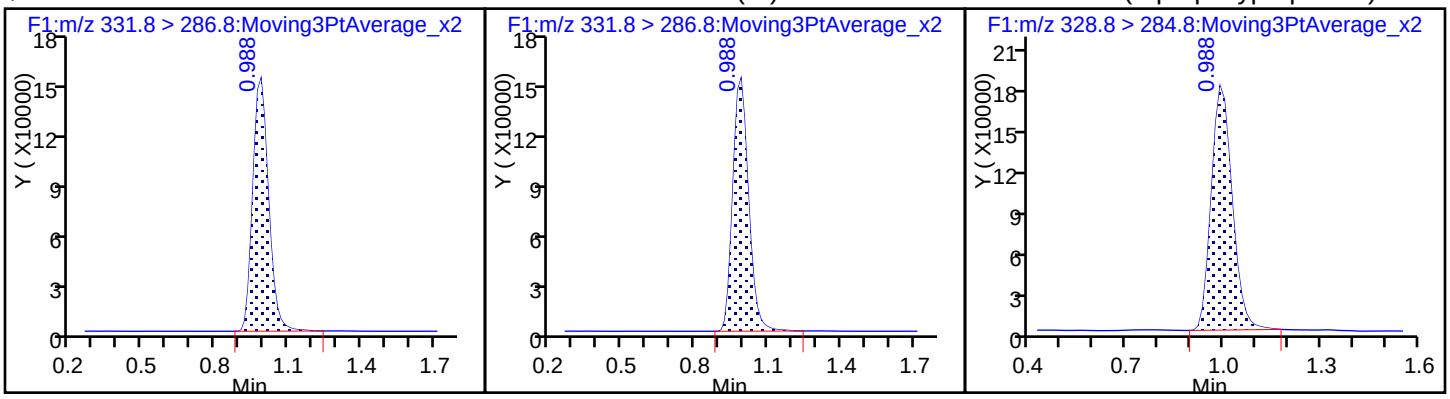
Client ID:

Operator ID: JBH ALS Bottle#: 19 Worklist Smp#: 20

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12020.d | | | | |
| Lims ID: | LCS 280-406765/2-A | | | | |
| Client ID: | | | | | |
| Sample Type: | LCS | | | | |
| Inject. Date: | 12-Mar-2018 09:19:17 | ALS Bottle#: | 19 | Worklist Smp#: | 20 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | LCS280-406765/2-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:04 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:50:32 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 8.96 | 89.58 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-406765/14-A

Matrix: Air | Lab File ID: hfpo718C12021.d

Analysis Method: 8321A | Date Collected:

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:22

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.05420 | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 92 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12021.d
Lims ID: LCSD 280-406765/14-A
Client ID:
Sample Type: LCSD
Inject. Date: 12-Mar-2018 09:22:32 ALS Bottle#: 20 Worklist Smp#: 21
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: LCSD280-406765/14-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:37

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | 1.000 | 683235 | 9.15 | 2358 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.988 | 1.045 | -0.057 | | 683235 | 10.0 | 2358 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 790356 | 10.8 | 260 | |

Report Date: 12-Mar-2018 10:54:09 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12021.d

Injection Date: 12-Mar-2018 09:22:32 Instrument ID: LC_LCMS7

Lims ID: LCSD 280-406765/14-A

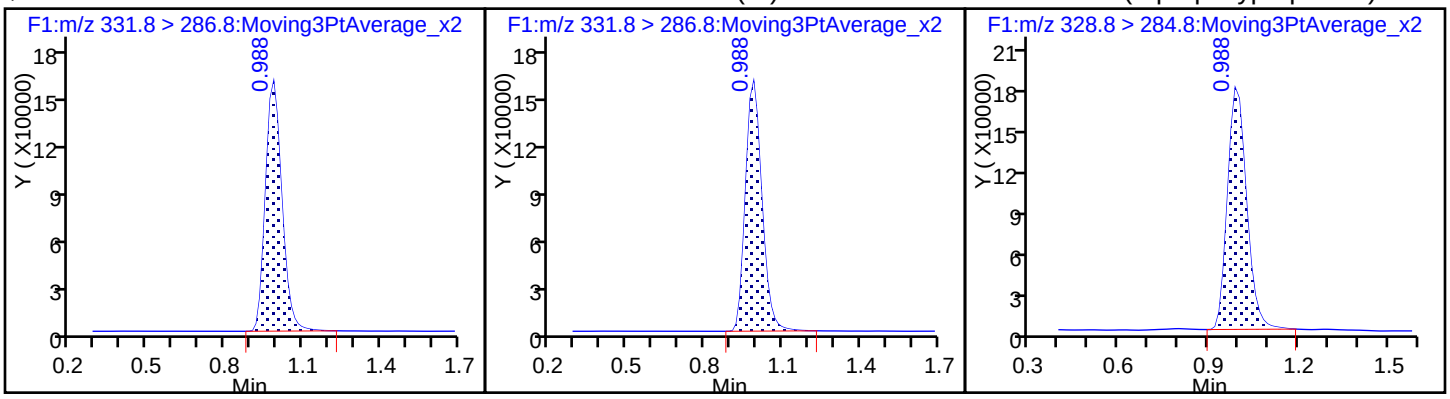
Client ID:

Operator ID: JBH ALS Bottle#: 20 Worklist Smp#: 21

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12021.d
Lims ID: LCSD 280-406765/14-A
Client ID:
Sample Type: LCSD
Inject. Date: 12-Mar-2018 09:22:32 ALS Bottle#: 20 Worklist Smp#: 21
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: LCSD280-406765/14-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:37

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 9.15 | 91.51 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 140-10863-1

SDG No.:

Client Sample ID: | Lab Sample ID: LLCS 280-406765/15-A

Matrix: Air | Lab File ID: hfpo718C12022.d

Analysis Method: 8321A | Date Collected:

Extraction Method: None | Date Extracted: 03/11/2018 10:52

Sample wt/vol: 1(Sample) | Date Analyzed: 03/12/2018 09:25

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Synergi Hydro ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 407567 | Units: ug/Sample

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|---|---|---|---|---|---|
| 13252-13-6 | HFPO-DA | 0.004384 | | 0.00250 | 0.000128 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02255 | 13C3 HFPO-DA | 87 | | 50-200 |

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12022.d
Lims ID: LLCS 280-406765/15-A
Client ID:
Sample Type: LLCS
Inject. Date: 12-Mar-2018 09:25:47 ALS Bottle#: 21 Worklist Smp#: 22
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Sample Info: LLCS280-406765/15-A
Misc. Info.: HFPO18C12
Operator ID: JBH Instrument ID: LC_LCMS7

Method: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 12-Mar-2018 10:54:04 Calib Date: 08-Feb-2018 13:31:32
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d

Column 1 : Det: F1:MRM
Process Host: XAWRK016

First Level Reviewer: meyera Date: 12-Mar-2018 10:50:40

| Signal | RT | EXP RT | DLT RT | REL RT | Response | Amount ug/l | S/N | Flags |
|---|---|---|---|---|---|---|---|---|
| $ 3 13C3 HFPO-DA | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | 1.000 | 648824 | 8.69 | 2403 | |
| * 2 13C3 HFPO-DA (IS) | | | | | | | | |
| 331.8 > 286.8 | 0.975 | 1.045 | -0.070 | | 648824 | 10.0 | 2403 | |
| 1 Perfluoro(2-propoxypropanoic) acid | | | | | | | | |
| 328.8 > 284.8 | 0.988 | 1.056 | -0.068 | 1.000 | 62868 | 0.8769 | 21.3 | |

Report Date: 12-Mar-2018 10:54:11 Chrom Revision: 2.2 08-Feb-2018 13:38:42

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12022.d

Injection Date: 12-Mar-2018 09:25:47 Instrument ID: LC_LCMS7

Lims ID: LLCS 280-406765/15-A

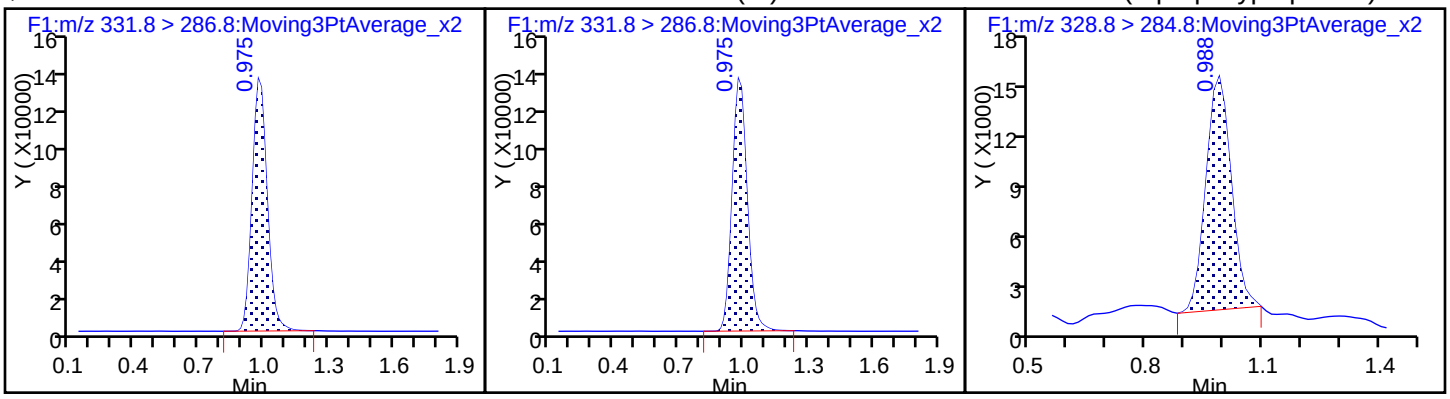
Client ID:

Operator ID: JBH ALS Bottle#: 21 Worklist Smp#: 22

Injection Vol: 20.0 ul Dil. Factor: 1.0000

Method: HFPO Limit Group: LC - 8321A_HFPO_Du

$ 3 13C3 HFPO-DA * 2 13C3 HFPO-DA (IS) 1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\hfpo718C12022.d | | | | |
| Lims ID: | LLCS 280-406765/15-A | | | | |
| Client ID: | | | | | |
| Sample Type: | LLCS | | | | |
| Inject. Date: | 12-Mar-2018 09:25:47 | ALS Bottle#: | 21 | Worklist Smp#: | 22 |
| Injection Vol: | 20.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | LLCS280-406765/15-A | | | | |
| Misc. Info.: | HFPO18C12 | | | | |
| Operator ID: | JBH | Instrument ID: | LC_LCMS7 | | |
| Method: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180312-67919.b\HFPO.m | | | | |
| Limit Group: | LC - 8321A_HFPO_Du | | | | |
| Last Update: | 12-Mar-2018 10:54:04 | Calib Date: | 08-Feb-2018 13:31:32 | | |
| Integrator: | Picker | | | | |
| Quant Method: | Internal/External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromNA\Denver\ChromData\LC_LCMS7\20180208-67079.b\hfpo718B08042.d | | | | |
| Column 1 : | | | Det: F1:MRM | | |
| Process Host: | XAWRK016 | | | | |
| First Level Reviewer: meyera | | Date: | 12-Mar-2018 10:50:40 | | |

| Compound | Amount Added | Amount Recovered | % Rec. |
|---|---|---|---|
| $ 3 13C3 HFPO-DA | 10.0 | 8.69 | 86.90 |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 140-10863-1

SDG No.:

Instrument ID: LC_LCMS7 Start Date: 02/08/2018 13:05

Analysis Batch Number: 404345 End Date: 02/08/2018 13:31

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---|---|---|---|---|---|
| STD001 280-404345/3 IC | | 02/08/2018 13:05 | 1 | hfpo718B08034.d | Synergi Hydro |
| STD002 280-404345/4 IC | | 02/08/2018 13:08 | 1 | hfpo718B08035.d | Synergi Hydro |
| STD003 280-404345/5 IC | | 02/08/2018 13:12 | 1 | hfpo718B08036.d | Synergi Hydro |
| STD004 280-404345/6 IC | | 02/08/2018 13:15 | 1 | hfpo718B08037.d | Synergi Hydro |
| STD005 280-404345/7 IC | | 02/08/2018 13:18 | 1 | hfpo718B08038.d | Synergi Hydro |
| STD006 280-404345/8 IC | | 02/08/2018 13:21 | 1 | hfpo718B08039.d | Synergi Hydro |
| STD007 280-404345/9 IC | | 02/08/2018 13:25 | 1 | hfpo718B08040.d | Synergi Hydro |
| STD008 280-404345/10 IC | | 02/08/2018 13:28 | 1 | hfpo718B08041.d | Synergi Hydro |
| STD009 280-404345/11 IC | | 02/08/2018 13:31 | 1 | hfpo718B08042.d | Synergi Hydro |

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver  Job No.: 140-10863-1

SDG No.:

Instrument ID: LC_LCMS7  Start Date: 03/12/2018 09:12

Analysis Batch Number: 407567  End Date: 03/12/2018 10:08

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---|---|---|---|---|---|
| CCV 280-407567/18 | | 03/12/2018 09:12 | 1 | hfpo718C12018.d | Synergi Hydro |
| MB 280-406765/1-A | | 03/12/2018 09:16 | 1 | hfpo718C12019.d | Synergi Hydro |
| LCS 280-406765/2-A | | 03/12/2018 09:19 | 1 | hfpo718C12020.d | Synergi Hydro |
| LCSD 280-406765/14-A | | 03/12/2018 09:22 | 1 | hfpo718C12021.d | Synergi Hydro |
| LLCS 280-406765/15-A | | 03/12/2018 09:25 | 1 | hfpo718C12022.d | Synergi Hydro |
| ZZZZZ | | 03/12/2018 09:29 | 1 | | Synergi Hydro |
| ZZZZZ | | 03/12/2018 09:32 | 1 | | Synergi Hydro |
| ZZZZZ | | 03/12/2018 09:35 | 1 | | Synergi Hydro |
| ZZZZZ | | 03/12/2018 09:38 | 1 | | Synergi Hydro |
| ZZZZZ | | 03/12/2018 09:42 | 1 | | Synergi Hydro |
| CCV 280-407567/28 | | 03/12/2018 09:45 | 1 | hfpo718C12028.d | Synergi Hydro |
| 140-10863-3 | | 03/12/2018 09:48 | 1 | hfpo718C12029.d | Synergi Hydro |
| 140-10863-7 | | 03/12/2018 09:51 | 1 | hfpo718C12030.d | Synergi Hydro |
| 140-10863-11 | | 03/12/2018 09:55 | 1 | hfpo718C12031.d | Synergi Hydro |
| 140-10863-15 | | 03/12/2018 09:58 | 1 | hfpo718C12032.d | Synergi Hydro |
| 140-10863-19 | | 03/12/2018 10:01 | 1 | hfpo718C12033.d | Synergi Hydro |
| 140-10863-21 | | 03/12/2018 10:04 | 1 | hfpo718C12034.d | Synergi Hydro |
| CCV 280-407567/35 | | 03/12/2018 10:08 | 1 | hfpo718C12035.d | Synergi Hydro |

# LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 140-10863-1

SDG No.:

Batch Number: 406765  Batch Start Date: 03/11/18 10:52  Batch Analyst: Atkinson, Hannah M

Batch Method: None  Batch End Date: 03/11/18 14:19

| Lab Sample ID | Client Sample ID | Method Chain | Basis | VolumeCollect | VolCondUsed | InitialAmount | FinalAmount | HFPO I.S. 00009 | HFPO Spike 00004 |
|---|---|---|---|---|---|---|---|---|---|
| MB 280-406765/1 | | None, 8321A | | | | 1 Sample | 5 mL | 0.1 mL | |
| LCS 280-406765/2 | | None, 8321A | | | | 1 Sample | 5 mL | 0.1 mL | 0.1 mL |
| 140-10863-A-3 | H-2205 R1 M0010 IMP COND | None, 8321A | T | 210 mL | 4.2 mL | 0.02 Sample | 5 mL | 0.1 mL | |
| 140-10863-A-7 | H-2212 R2 M0010 IMP COND | None, 8321A | T | 300 mL | 6.0 mL | 0.02 Sample | 5 mL | 0.1 mL | |
| 140-10863-A-11 | H-2226 R4 M0010 IMP COND | None, 8321A | T | 210 mL | 4.2 mL | 0.02 Sample | 5 mL | 0.1 mL | |
| 140-10863-A-15 | H-2233 R5 M0010 IMP COND | None, 8321A | T | 200 mL | 4.0 mL | 0.02 Sample | 5 mL | 0.1 mL | |
| 140-10863-A-19 | H-2247 R QC M0010 IMP COND BT | None, 8321A | T | 250 mL | 250 mL | 1 Sample | 5 mL | 0.1 mL | |
| 140-10863-A-21 | H-2250 R QC M0010 DI WATER RB | None, 8321A | T | 250 mL | 250 mL | 1 Sample | 5 mL | 0.1 mL | |
| LCSD 280-406765/14 | | None, 8321A | | | | 1 Sample | 5 mL | 0.1 mL | 0.1 mL |
| LLCS 280-406765/15 | | None, 8321A | | | | 1 Sample | 5 mL | 0.1 mL | 0.01 mL |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | AnalysisComment | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MB 280-406765/1 | | None, 8321A | | 250 mL | | | | | |
| LCS 280-406765/2 | | None, 8321A | | 250 mL | | | | | |
| 140-10863-A-3 | H-2205 R1 M0010 IMP COND | None, 8321A | T | brought up to 250mL for Denver lab to extract Gross weight- 269.6g, tare weight- 26.9g | | | | | |
| 140-10863-A-7 | H-2212 R2 M0010 IMP COND | None, 8321A | T | brought up to 250mL for Denver lab to extract Gross weight- 267.3g, tare weight- 26.5g | | | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 140-10863-1

SDG No.:

Batch Number: 406765  Batch Start Date: 03/11/18 10:52  Batch Analyst: Atkinson, Hannah M

Batch Method: None  Batch End Date: 03/11/18 14:19

| Lab Sample ID | Client Sample ID | Method Chain | Basis | AnalysisComment | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 140-10863-A-11 | H-2226 R4 M0010 IMP COND | None, 8321A | T | brought up to 250mL for Denver lab to extract Gross weight- 276.4g, tare weight- 27.5g | | | | | |
| 140-10863-A-15 | H-2233 R5 M0010 IMP COND | None, 8321A | T | brought up to 250mL for Denver lab to extract Gross weight- 272.5g, tare weight- 27.5g | | | | | |
| 140-10863-A-19 | H-2247 R QC M0010 IMP COND BT | None, 8321A | T | brought up to 250mL for Denver lab to extract Gross weight-267.4g, tare weight 27.1g | | | | | |
| 140-10863-A-21 | H-2250 R QC M0010 DI WATER RB | None, 8321A | T | brought up to 250mL for Denver lab to extract Gross weight- 276.4g, tare weight 35.1g | | | | | |
| LCSD 280-406765/14 | | None, 8321A | | 250 mL | | | | | |
| LLCS 280-406765/15 | | None, 8321A | | 250 mL | | | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver  Job No.: 140-10863-1

SDG No.:

Batch Number: 406765  Batch Start Date: 03/11/18 10:52  Batch Analyst: Atkinson, Hannah M

Batch Method: None  Batch End Date: 03/11/18 14:19

| Batch Notes | |
|---|---|
| Acid ID | 2%FormicAcid_147 |
| Balance ID | 24350888(Denver) |
| Batch Comment | Batch originated by David Stout who brought samples to 250mL Reviewer:HA |
| Elution Solution ID | 10%NH4OH_123 |
| Extraction End time | 12:40 |
| Extraction End Date | 03/11/2018 |
| Extraction Start time | 11:22 |
| Extraction Start Date | 03/11/2018 |
| H2O ID | HPLC_water_867 |
| Pipette/Syringe/Dispenser ID | m2. spe-1, syringe |
| Solvent | Methanol_196 |
| SPE Cartridge Lot ID | S308-0079 |
| SPE Cartridge Type | strata-x-aw-8BSO38FCH |
| Analyst ID - Spike Analyst | HA |
| Analyst ID - Spike Witness Analyst | HA |

| Basis | Basis Description |
|---|---|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Reagent ID: HFPO_CAL-5_00083

| | | | |
|---|---|---|---|
| Description: | level5 | Expiration Date: | 03/21/2018 |
| No. of Bottles: | 1 | Laboratory: | TestAmerica Denver |
| Storage Location: | LCMS | Prepared By: | Meyer, Andrew GC |
| Reagent Volume: | 1.000 mL | Solvent: | 80:20 Methanol : H2O |
| Creation Date: | 03/07/2018 | Solvent Lot: | 00016 |
| Open Date: | | | |
| Container(s): | 4991513 | | |
| Comment: | level-5 | | |

## Reagent Analyte Information

| Analyte | Source ID | Source Exp. Date | Source Conc. | Source Conc. Units | Final Conc. | Final Conc. Units |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | HFPO I.S._00010 | 03/06/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |
| 13C3 HFPO-DA (IS) | HFPO I.S._00010 | 03/06/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |
| Perfluoro(2-propoxypropanoic) acid | HFPO Spike_00005 | 03/07/2019 | 0.50000 | ug/mL | 5.00000 | ug/L |

## Source Reagents

| Reagent | Description | Type | Expiration | Vendor | Vendor Lot # | Vendor Cat Lot # | Volume Used | Volume Units |
|---|---|---|---|---|---|---|---|---|
| HFPO I.S._00010 | Internal Standard for HFPO 0.5ug/ml | | 03/06/19 | | | | 20.00000 | uL |
| HFPO Spike_00005 | HFPO LCS/Calibration Spike 0.5ug/ml | | 03/07/19 | | | | 10.00000 | uL |

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3/13/18

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# Reagent ID: HFPO_CAL-6_00083

| | | | |
|---|---|---|---|
| Description: | level6 | Expiration Date: | 03/21/2018 |
| No. of Bottles: | 1 | Laboratory: | TestAmerica Denver |
| Storage Location: | LCMS | Prepared By: | Meyer, Andrew GC |
| Reagent Volume: | 1.000 mL | Solvent: | 80:20 Methanol : H2O |
| Creation Date: | 03/07/2018 | Solvent Lot: | 00018 |
| Open Date: | | | |
| Container(s): | 4991514 | | |
| Comment: | level-6 | | |

## Reagent Analyte Information

| Analyte | Source ID | Source Exp. Date | Source Conc. | Source Conc. Units | Final Conc. | Final Conc. Units |
|---|---|---|---|---|---|---|
| 13C3 HFPO-DA | HFPO I.S._00010 | 03/06/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |
| 13C3 HFPO-DA (IS) | HFPO I.S._00010 | 03/06/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |
| Perfluoro(2-propoxypropanoic) acid | HFPO Spike_00005 | 03/07/2019 | 0.50000 | ug/mL | 10.00000 | ug/L |

## Source Reagents

| Reagent | Description | Type | Expiration | Vendor | Vendor Lot # | Vendor Cat Lot # | Volume Used | Volume Units |
|---|---|---|---|---|---|---|---|---|
| HFPO I.S._00010 | Internal Standard for HFPO 0.5ug/ml | | 03/06/19 | | | | 20.00000 | uL |
| HFPO Spike_00005 | HFPO LCS/Calibration Spike 0.5ug/ml | | 03/07/19 | | | | 20.00000 | uL |

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3/13/18

03/07/2018 16:11

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# APPENDIX D
# SAMPLE CALCULATIONS

SAMPLE CALCULATIONS FOR
FLOW, MOISTURE AND ISO

| | |
|---|---|
| Client: Chemours | Plant: Fayetteville, NC |
| Test Number: Run 1 - Hydrolysis | Test Date: 3/1/2018 |
| Test Location: PPA Stack | Test Period: 0920-1114 |

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

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

$$Vm(std) = \frac{17.64 \times 0.9916 \times 46.050 \times \left( 29.84 + \frac{0.864}{13.6} \right)}{65.92 + 460} = 45.801$$

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 calia!hration 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 x Vwc) + (0.04715 x Wwsg)

Vw(std) = ( 0.04707 x 11.0 ) + ( 0.04715 x 13.4 ) = 1.150

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

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

$$bws = \frac{1.150}{1.150 + 45.801} = 0.024$$

Where:

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

4. Mole fraction of dry gas.

$$Md = 1 - bws$$

$$Md = 1 - 0.024 = 0.976$$

Where:

Md = Mole fraction of dry gas, dimensionless.

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

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

$$MWd = ( 0.440 \times 0.0 ) + ( 0.320 \times 20.9 ) + (0.280 \times ( 79.1 + 0.00 ))$$

$$= 28.84$$

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 cara!bon 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 cara!bon monoxide, divided by 100.

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

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

$$MWs = ( 28.84 \times 0.976 ) +( 18 ( 1 - 0.976 )) = 28.57$$

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.

$$Vs = 85.49 \times Cp \times ((\text{delt } p)^{1/2})avg \times \left( \frac{Ts\ (avg)}{Ps \times MWs} \right)^{1/2}$$

$$Vs = 85.49 \times 0.84 \times 0.743942 \times \left( \frac{538}{29.63 \times 28.57} \right)^{\wedge}1/2 = 42.6$$

Where:

Vs = Average gas stream velocity, ft/sec.

85.49 = Pitot tube constant, ft/sec x $\frac{(lb/lb\text{-}mole)(in.\ Hg)^{1/2}}{(deg\ R)(in\ H_2O)}$

Cp = Pitot tube coefficient, dimensionless.

Ts = Absolute gas stream temperature, deg R = Ts, deg F + 460.

Ps = Absolute gas stack pressure, in. Hg. = $Pb + \frac{P(static)}{13.6}$

delta p = Velocity head of stack, in. $H_2O$

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

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

$$Qs(act) = 60 \times 42.6 \times 4.90 = 12516$$

Where:

Qs(act) = Volumetric flowrate 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 flowrate at staudard conditions, dscf/min.

$$Qs(std) = 17.64 \times Md \times \frac{Ps}{Ts} \times Qs(act)$$

$$Qs(std) = 17.64 \times 0.976 \times \frac{29.63}{538} \times 12516$$

$$= 11872$$

Where:

Qs(std) = Volumetric flowrate of dry stack gas at standard conditions, dscf/min.

10. Isokinetic variation calculated from intermediate values, percent.

$$I = \frac{17.327 \times Ts \times Vm(std)}{Vs \times O \times Ps \times Md \times (Dn)^2}$$

$$I = \frac{17.327 \times 538 \times 45.801}{42.6 \times 96 \times 29.63 \times 0.976 \times (0.189)^{\wedge}2} = 101.1$$

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 HFPO DIMER ACID (METHOD 0010)

**Client: Chemours** | **Plant: Fayetteville, NC**
**Test Number: Run 1** - **Hydolysis** | **Test Date: 3/1/2018**
**Test Location: PPA** | **Test Period: 0920-1114**

**1. HFPO Dimer Acid concentration, lbs/dscf.**

$$C_1 = \frac{W \times 2.2046 \times 10^{-9}}{Vm(std)}$$

$$C_1 = \frac{38316.1 \times 2.2046 \times 10\text{-}9}{45.801}$$

$$= 1.84E\text{-}06$$

Where:

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

$C_1$ = HFPO Dimer Acid concentration, lbs/dscf.

$2.2046 \times 10^{-9}$ = Conversion factor from ug to lbs.

**2. HFPO Dimer Acid concentration, ug/dscm.**

$C_2 = W / ( Vm(std) \times 0.02832)$

$C_2 = 38316.1 / ( 45.801 \times 0.02832 )$

$= 29537.4$

Where:

$C_2$ = HFPO Dimer Acid concentration, ug/dscm.

0.02832 = Conversion factor from cubic feet to cubic meters.

**3. HFPO Dimer Acid mass emission rate, lb/hr.**

PMR1 = $C_1$ x Qs(std) x 60 min/hr

PMR1 = 1.84E-06 x 11872 x 60

= 1.31E+00

Where:

PMR1 = HFPO Dimer Acid mass emission rate, lb/hr.

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

PMR2 = PMR1 x 453.59 / 3600

PMR2 = 1.31E+00 x 453.59 /3600

= 1.65E-01

Where:

PMR2 = HFPO Dimer Acid mass emission rate, g/sec.

454 = Conversion factor from pounds to grams.

3600 = Conversion factor from hours to seconds.

# APPENDIX E
# EQUIPMENT CALIBRATION RECORDS

# Long Cal and Temperature Cal Datasheet for Standard Dry Gas Meter Console

**Calibrator** PM **Meter Box Number** 31 **Ambient Temp** 71

**Date** 4-Feb-18 **Wet Test Meter Number** P-2952 **Temp Reference Source** Thermocouple Simulator (Accuracy +/- 1°F)

**Dry Gas Meter Number** 17485128

| Baro Press, in Hg ( Pb) | 29.79 |
|---|---|

| Setting | Gas Volume | | Temperatures | | | | | Calibration Results | |
|---|---|---|---|---|---|---|---|---|---|
| Orifice Manometer | Wet Test Meter | Dry gas Meter | Wet Test Meter | Dry Gas Meter | | | | | |
| in $H_2O$ (ΔH) | $ft^3$ (Vw) | $ft^3$ (Vd) | °F (Tw) | Outlet, °F ($Td_o$) | Inlet, °F ($Td_i$) | Average, °F (Td) | Time, min (O) | Y | ΔH |
| 0.5 | 5.0 | 449.372 | 70.0 | 69.00 | 69.00 | 70.0 | 13.0 | 0.9976 | 1.9063 |
| | | 454.378 | | 71.00 | 71.00 | | | | |
| | | 5.006 | | 70.00 | 70.00 | | | | |
| 1.0 | 5.0 | 454.378 | 70.0 | 71.00 | 71.00 | 71.5 | 9.5 | 0.9972 | 2.0302 |
| | | 459.394 | | 72.00 | 72.00 | | | | |
| | | 5.016 | | 71.50 | 71.50 | | | | |
| 1.5 | 10.07 | 459.394 | 70.0 | 74.00 | 74.00 | 74.0 | 16.0 | 0.9918 | 2.1197 |
| | | 469.586 | | 74.00 | 74.00 | | | | |
| | | 10.192 | | 74.00 | 74.00 | | | | |
| 2.0 | 10.0 | 469.586 | 70.0 | 74.00 | 74.00 | 74.5 | 13.7 | 0.9894 | 2.0992 |
| | | 479.729 | | 75.00 | 75.00 | | | | |
| | | 10.143 | | 74.50 | 74.50 | | | | |
| 3.0 | 10.0 | 479.729 | 70.0 | 75.00 | 75.00 | 75.5 | 11.3 | 0.9819 | 2.1383 |
| | | 489.943 | | 76.00 | 76.00 | | | | |
| | | 10.214 | | 75.50 | 75.50 | | | | |
| | | | | | | | **Average** | **0.9916** | **2.0587** |

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 | | 32.0 | 0.0% |
| 212 | 212 | 213 | 213 | 212 | 212 | | 212.4 | -0.1% |
| 932 | 932 | 933 | 933 | 932 | 932 | | 932.4 | 0.0% |
| 1832 | 1832 | 1833 | 1833 | 1832 | 1832 | | 1832.4 | 0.0% |

1 - Channel Temps must agree with +/- 5°F or 3°C

2 - Acceptable Temperature Difference less than 1.5 %

$$\text{Temp Diff} = \left[\frac{(\text{Reference Temp}(°F) + 460) - (\text{Test Temp}(°F) + 460)}{\text{Reference Temp}(°F) + 460}\right]$$

# Long Cal and Temperature Cal Datasheet for Standard Dry Gas Meter Console

**Calibrator** PM **Meter Box Number** 29 **Ambient Temp** 71

**Date** 20-Jan-18 **Wet Test Meter Number** P-2952 **Temp Reference Source** Thermocouple Simulator (Accuracy +/- 1°F)

**Dry Gas Meter Number** 17176777

| Baro Press, in Hg ( Pb) | 30.03 |
|---|---|

| Setting | Gas Volume | | Temperatures | | | | | Calibration Results | |
|---|---|---|---|---|---|---|---|---|---|
| Orifice Manometer | Wet Test Meter | Dry gas Meter | Wet Test Meter | Dry Gas Meter | | | | | |
| in $H_2O$ ($\Delta H$) | $ft^3$ (Vw) | $ft^3$ (Vd) | °F (Tw) | Outlet, °F ($Td_o$) | Inlet, °F ($Td_i$) | Average, °F (Td) | Time, min (O) | Y | $\Delta H$ |
| 0.5 | 5.0 | 739.961 | 70.0 | 67.00 | 67.00 | 68.0 | 13.0 | 0.9968 | 1.8982 |
| | | 744.952 | | 69.00 | 69.00 | | | | |
| | | 4.991 | | 68.00 | 68.00 | | | | |
| 1.0 | 10.0 | 744.952 | 70.0 | 70.00 | 70.00 | 71.5 | 18.40 | 0.9983 | 1.8888 |
| | | 754.973 | | 73.00 | 73.00 | | | | |
| | | 10.021 | | 71.50 | 71.50 | | | | |
| 1.5 | 11.0 | 754.973 | 70.0 | 73.00 | 73.00 | 74.0 | 17.3 | 0.9905 | 2.0602 |
| | | 766.121 | | 75.00 | 75.00 | | | | |
| | | 11.148 | | 74.00 | 74.00 | | | | |
| 2.0 | 10.1 | 766.121 | 70.0 | 75.00 | 75.00 | 76.0 | 13.6 | 0.9924 | 2.0061 |
| | | 776.363 | | 77.00 | 77.00 | | | | |
| | | 10.242 | | 76.00 | 76.00 | | | | |
| 3.0 | 10.4 | 776.363 | 70.0 | 77.00 | 77.00 | 78.0 | 11.5 | 0.9889 | 2.0217 |
| | | 786.961 | | 79.00 | 79.00 | | | | |
| | | 10.598 | | 78.00 | 78.00 | | | | |
| | | | | | | | **Average** | **0.9934** | **1.9750** |

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
$\Delta H$ - 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 | | 32.0 | 0.0% |
| 212 | 213 | 213 | 213 | 213 | 213 | | 213.0 | -0.1% |
| 932 | 933 | 933 | 933 | 933 | 933 | | 933.0 | -0.1% |
| 1832 | 1831 | 1831 | 1831 | 1831 | 1831 | | 1831.0 | 0.0% |

1 - Channel Temps must agree with +/- 5°F or 3°C

2 - Acceptable Temperature Difference less than 1.5 %

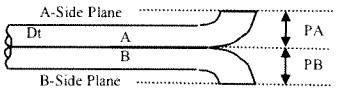
$$\text{Temp Diff} = \left[\frac{(\text{Reference Temp}(°F) + 460) - (\text{Test Temp}(°F) + 460)}{\text{Reference Temp}(°F) + 460}\right]$$

# Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: **P-563**

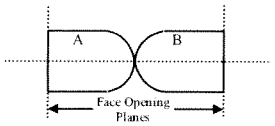
Inspection Date 2/19/18 Individual Conducting Inspection KS

If all Criteria PASS Cp is equal to 0.84

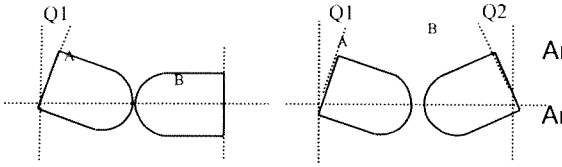



| | | PASS/FAIL |
|---|---|---|
| Distance to A Plane (PA) - inches | 0.469 | PASS |
| Distance to B Plane (PB) - inches | 0.469 | PASS |
| Pitot OD ($D_t$) - inches | 0.375 | |

$1.05\ D_t < P < 1.5\ D_t$ PA must Equal PB

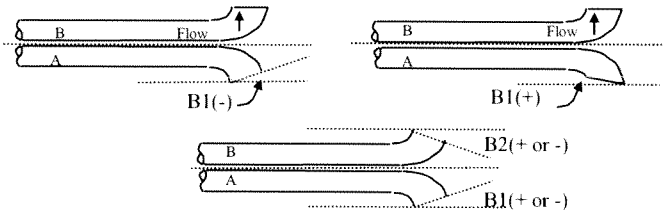



Are Open Faces Aligned Perpendicular to the Tube Axis: ◉ YES ○ NO — PASS



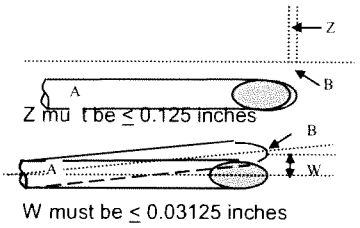

| | | |
|---|---|---|
| Angle of Q1 from vertical A Tube- degrees (absolute) | 1 | PASS |
| Angle of Q2 from vertical B Tube- degrees (absolute) | 1 | PASS |

Q1 and Q2 must be ≤ 10°

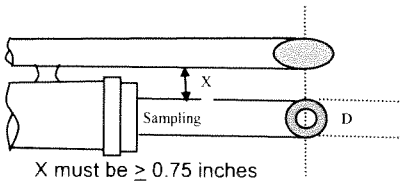



| | | |
|---|---|---|
| Angle of B1 from vertical A Tube- degrees (absolute) | 2 | PASS |
| Angle of B1 from vertical B Tube- degrees (absolute) | 1 | PASS |

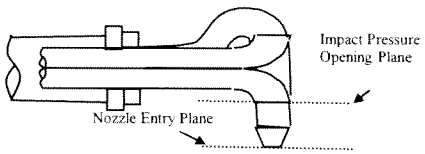
B1 or B2 must be ≤ 5°



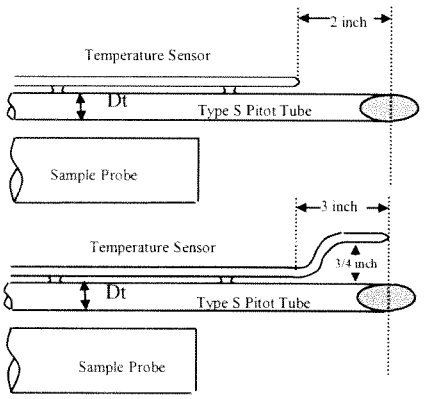

| | | |
|---|---|---|
| Horizontal offset between A and B Tubes (Z) - inches | 0.006 | PASS |
| Vertical offset between A and B Tubes (W) - inches | 0.012 | PASS |




| | | |
|---|---|---|
| Distance between Sample Nozzle and Pitot (X) - inches | 0.9325 | 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

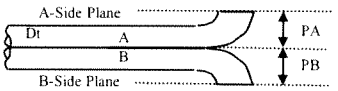
Thermocouple meets the Distance Criteria in the adjacent figure: ○ YES ○ NO ◉ NA

# Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: **P-694**

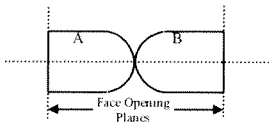
Inspection Date 2/19/18 Individual Conducting Inspection KS

If all Criteria PASS
Cp is equal to 0.84

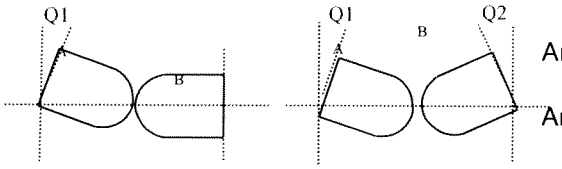



| | | PASS/FAIL |
|---|---|---|
| Distance to A Plane (PA) - inches | 0.432 | PASS |
| Distance to B Plane (PB) - inches | 0.432 | PASS |
| Pitot OD ($D_t$) - inches | 0.375 | |

$1.05\ D_t < P < 1.5\ D_t$ PA must Equal PB



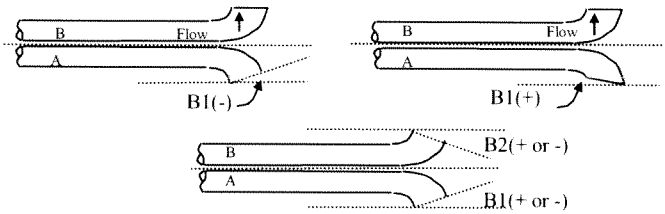

Are Open Faces Aligned Perpendicular to the Tube Axis: (●) YES ( ) NO — PASS




Angle of Q1 from vertical A Tube- degrees (absolute): 4 — PASS

Angle of Q2 from vertical B Tube- degrees (absolute): 3 — PASS

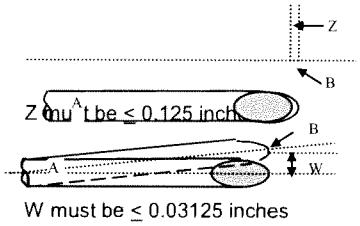
Q1 and Q2 must be ≤ 10°




Angle of B1 from vertical A Tube- degrees (absolute): 4 — PASS

Angle of B1 from vertical B Tube- degrees (absolute): 2 — PASS

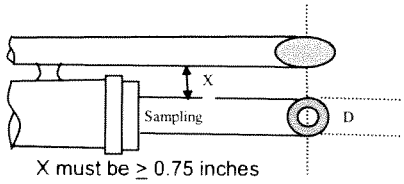
B1 or B2 must be ≤ 5°




Horizontal offset between A and B Tubes (Z) - inches: 0.024 — PASS

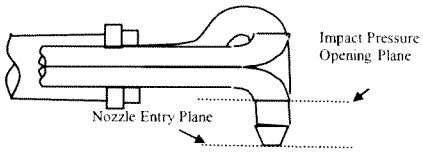
Vertical offset between A and B Tubes (W) - inches: 0.028 — PASS

W must be ≤ 0.03125 inches

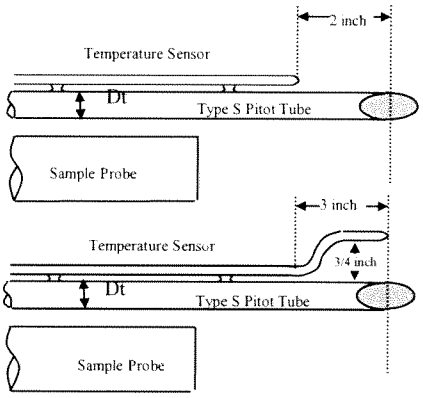



Distance between Sample Nozzle and Pitot (X) - inches: 0.962 — PASS

X must be ≥ 0.75 inches




Impact Pressure Opening Plane is above the Nozzle Entry Plane: (●) YES ( ) NO ( ) NA




Thermocouple meets the Distance Criteria in the adjacent figure: (●) YES ( ) NO ( ) NA

Thermocouple meets the Distance Criteria in the adjacent figure: ( ) YES ( ) NO (●) NA

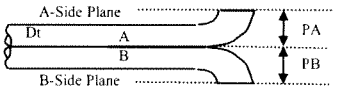
# Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: **P-695**

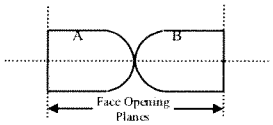
Inspection Date 1/5/18 Individual Conducting Inspection PM

If all Criteria PASS
Cp is equal to 0.84

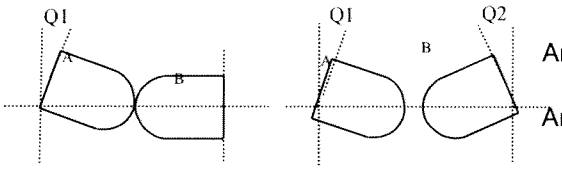
| | | PASS/FAIL |
|---|---|---|
| Distance to A Plane (PA) - inches | 0.46 | PASS |
| Distance to B Plane (PB) - inches | 0.46 | PASS |
| Pitot OD ($D_t$) - inches | 0.375 | |




$1.05\ D_t < P < 1.5\ D_t$ PA must Equal PB

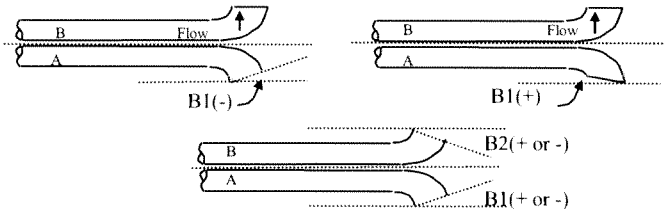



Are Open Faces Aligned Perpendicular to the Tube Axis: ◉ YES ○ NO — PASS




| | | |
|---|---|---|
| Angle of Q1 from vertical A Tube- degrees (absolute) | 0 | PASS |
| Angle of Q2 from vertical B Tube- degrees (absolute) | 1 | PASS |

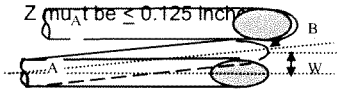
Q1 and Q2 must be ≤ 10°




| | | |
|---|---|---|
| Angle of B1 from vertical A Tube- degrees (absolute) | 0 | PASS |
| Angle of B1 from vertical B Tube- degrees (absolute) | 0 | PASS |

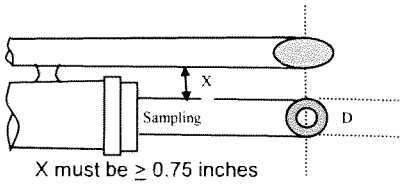
B1 or B2 must be ≤ 5°

Z must be ≤ 0.125 inch



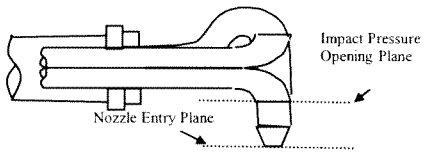

W must be ≤ 0.03125 inches

| | | |
|---|---|---|
| Horizontal offset between A and B Tubes (Z) - inches | 0.006 | PASS |
| Vertical offset between A and B Tubes (W) - inches | 0.018 | PASS |

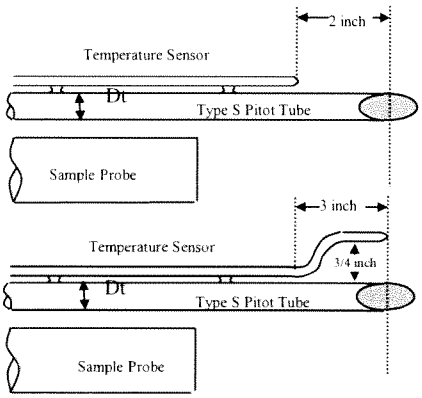



X must be ≥ 0.75 inches

| | | |
|---|---|---|
| Distance between Sample Nozzle and Pitot (X) - inches | 0.78 | 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

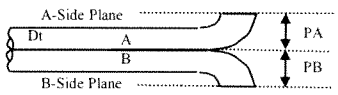
# Type S Pitot Tube Inspection Data Form

Pitot Tube Identification Number: **P-697**

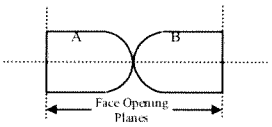
Inspection Date 1/5/18 Individual Conducting Inspection PM

If all Criteria PASS
Cp is equal to 0.84

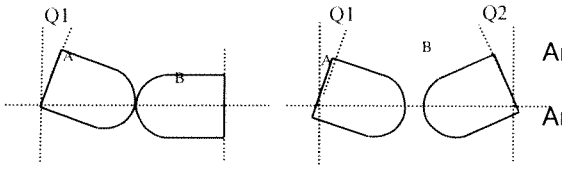
| | | PASS/FAIL |
|---|---|---|
| Distance to A Plane (PA) - inches | 0.46 | PASS |
| Distance to B Plane (PB) - inches | 0.46 | PASS |
| Pitot OD ($D_t$) - inches | 0.375 | |




$1.05\ D_t < P < 1.5\ D_t$ PA must Equal PB



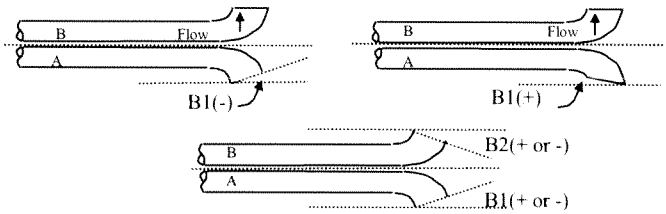

Are Open Faces Aligned Perpendicular to the Tube Axis: (●) YES ( ) NO — PASS




Angle of Q1 from vertical A Tube- degrees (absolute) 0 PASS

Angle of Q2 from vertical B Tube- degrees (absolute) 0 PASS

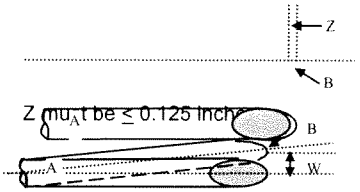
Q1 and Q2 must be ≤ 10°




Angle of B1 from vertical A Tube- degrees (absolute) 0 PASS

Angle of B1 from vertical B Tube- degrees (absolute) 0 PASS

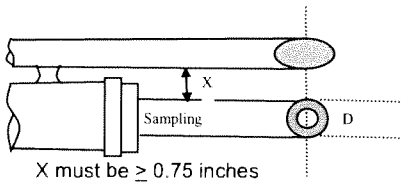
B1 or B2 must be ≤ 5°



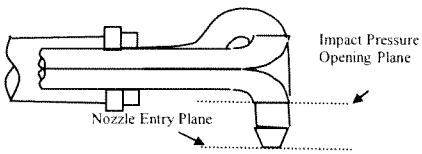

Horizontal offset between A and B Tubes (Z) - inches 0.007 PASS

Vertical offset between A and B Tubes (W) - inches 0.018 PASS

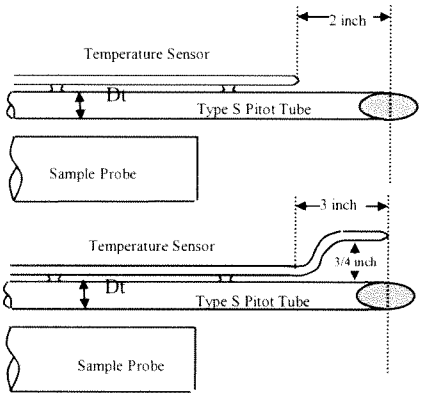
W must be ≤ 0.03125 inches




Distance between Sample Nozzle and Pitot (X) - inches 0.8 PASS




Impact Pressure Opening Plane is above the Nozzle Entry Plane: (●) YES ( ) NO ( ) NA




Thermocouple meets the Distance Criteria in the adjacent figure: (●) YES ( ) NO ( ) NA

Thermocouple meets the Distance Criteria in the adjacent figure: ( ) YES ( ) NO (●) NA

Airgas
an Air Liquide company

Airgas USA, LLC
600 Union Landing Road
Cinnaminson, NJ 08077-0000
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI79E15A00E4 | Reference Number: | 82-124627728-1 |
| Cylinder Number: | CC62094 | Cylinder Volume: | 150.5 CF |
| Laboratory: | 124 - Riverton (SAP) - NJ | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B52017 | Valve Outlet: | 590 |
| Gas Code: | CO2,O2,BALN | Certification Date: | Jul 10, 2017 |

**Expiration Date: Jul 10, 2025**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON DIOXIDE | 9.000 % | 8.911 % | G1 | +/- 0.7% NIST Traceable | 07/10/2017 |
| OXYGEN | 12.00 % | 12.00 % | G1 | +/- 0.5% NIST Traceable | 07/10/2017 |
| NITROGEN | Balance | | | | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 12061336 | CC360792 | 11.002 % CARBON DIOXIDE/NITROGEN | +/- 0.6% | Jan 11, 2018 |
| NTRMplus | 09060208 | CC262337 | 9.961 % OXYGEN/NITROGEN | +/- 0.3% | Nov 08, 2018 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Horiba VIA 510-CO2-19GYCXEG | NDIR | Jun 30, 2017 |
| Horiba MPA 510-O2-7TWMJ041 | Paramagnetic | Jul 07, 2017 |

**Triad Data Available Upon Request**

Signature on file

**Approved for Release**

Airgas USA, LLC
600 Union Landing Road
Cinnaminson, NJ 08077-0000
Airgas.com

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

| | | | |
|---|---|---|---|
| Part Number: | E03NI62E15A0224 | Reference Number: | 82-401044874-1 |
| Cylinder Number: | SG9169108 | Cylinder Volume: | 157.2 CF |
| Laboratory: | 124 - Riverton (SAP) - NJ | Cylinder Pressure: | 2015 PSIG |
| PGVP Number: | B52017 | Valve Outlet: | 590 |
| Gas Code: | CO2,O2,BALN | Certification Date: | Nov 18, 2017 |

**Expiration Date: Nov 18, 2025**

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

| Component | Requested Concentration | Actual Concentration | Protocol Method | Total Relative Uncertainty | Assay Dates |
|---|---|---|---|---|---|
| CARBON DIOXIDE | 17.00 % | 16.58 % | G1 | +/- 0.7% NIST Traceable | 11/18/2017 |
| OXYGEN | 21.00 % | 21.00 % | G1 | +/- 0.5% NIST Traceable | 11/18/2017 |
| NITROGEN | Balance | | | - | |

### CALIBRATION STANDARDS

| Type | Lot ID | Cylinder No | Concentration | Uncertainty | Expiration Date |
|---|---|---|---|---|---|
| NTRM | 12061336 | CC360792 | 11.002 % CARBON DIOXIDE/NITROGEN | +/- 0.6% | Jan 11, 2018 |
| NTRM | 09061415 | CC273526 | 22.53 % OXYGEN/NITROGEN | +/- 0.4% | Mar 08, 2019 |

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model | Analytical Principle | Last Multipoint Calibration |
|---|---|---|
| Horiba VIA 510-CO2-19GYCXEG | NDIR | Oct 30, 2017 |
| Horiba MPA 510-O2-7TWMJ041 | Paramagnetic | Oct 27, 2017 |

**Triad Data Available Upon Request**

Signature on file

**Approved for Release**

## NOZZLE CALIBRATION DATA FORM

**Date:** 2/26/18 **Calibrated by:** SK

| Nozzle Identification Number | Nozzle Diameter, Inches[1] | | | $\Delta D$,[2] | $D_{avg}$[3] |
|---|---|---|---|---|---|
| | $D_1$ | $D_2$ | $D_3$ | | |
| 6-300 | .300 | .300 | .300 | 0 | .300 |
| 6-189 | .189 | .189 | .190 | .001 | .189 3 |
| W-189 | .188 | .189 | .190 | .002 | .189 |
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Where:

1 D1,2,3 = Three different nozzle diameters, inches; each diameter must be measured to nearest 0.001 in.
2 $\Delta D$ = Maximum difference between any two diameters, inches. $\Delta D$ must be $\leq$ 0.004 in.
3 $D_{avg}$ = Nozzle diameter = average of $D_1$, $D_2$, and $D_3$.

# APPENDIX F
# LIST OF PROJECT PARTICIPANTS

The following WESTON employees participated in this project.

| | |
|---|---|
| Paul Meeter | Senior Project Manager |
| Steve Rathfon | Team Leader |
| Kyle Schweitzer | Team Member |
| Matt Winkeler | Team Member |